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BULLETIN No. 53

BIOLOGICAL SERIES, No. 15

A Faunal Investigation of Southern Baffin Island

BY

J. Dewey Soper

OTTAWA
F. A. ACLAND
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1928

Price, 25 cents

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CONTENTS

CHAPTER I

CHAPTER II

CHAPTER III

Illustrations

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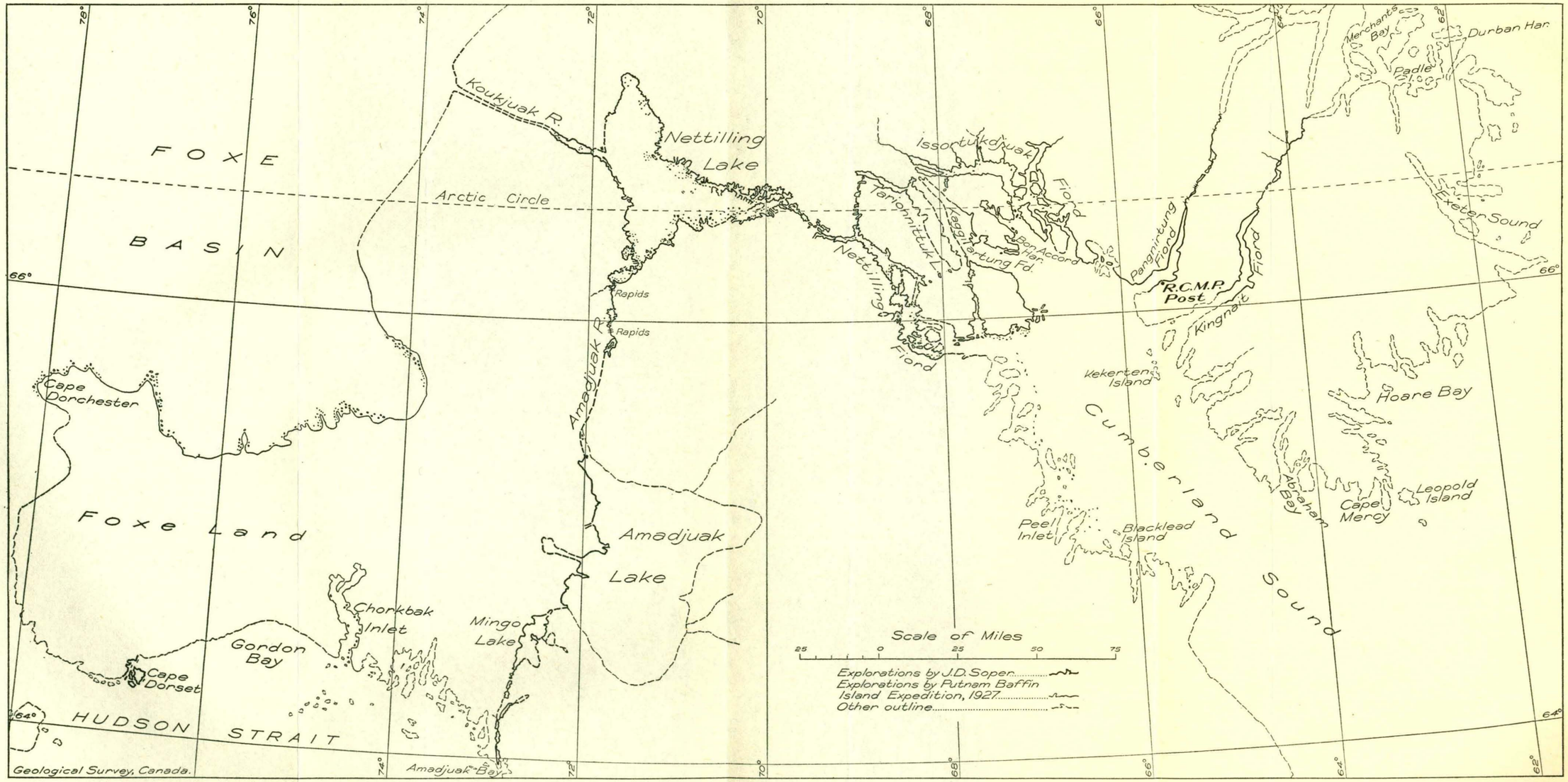
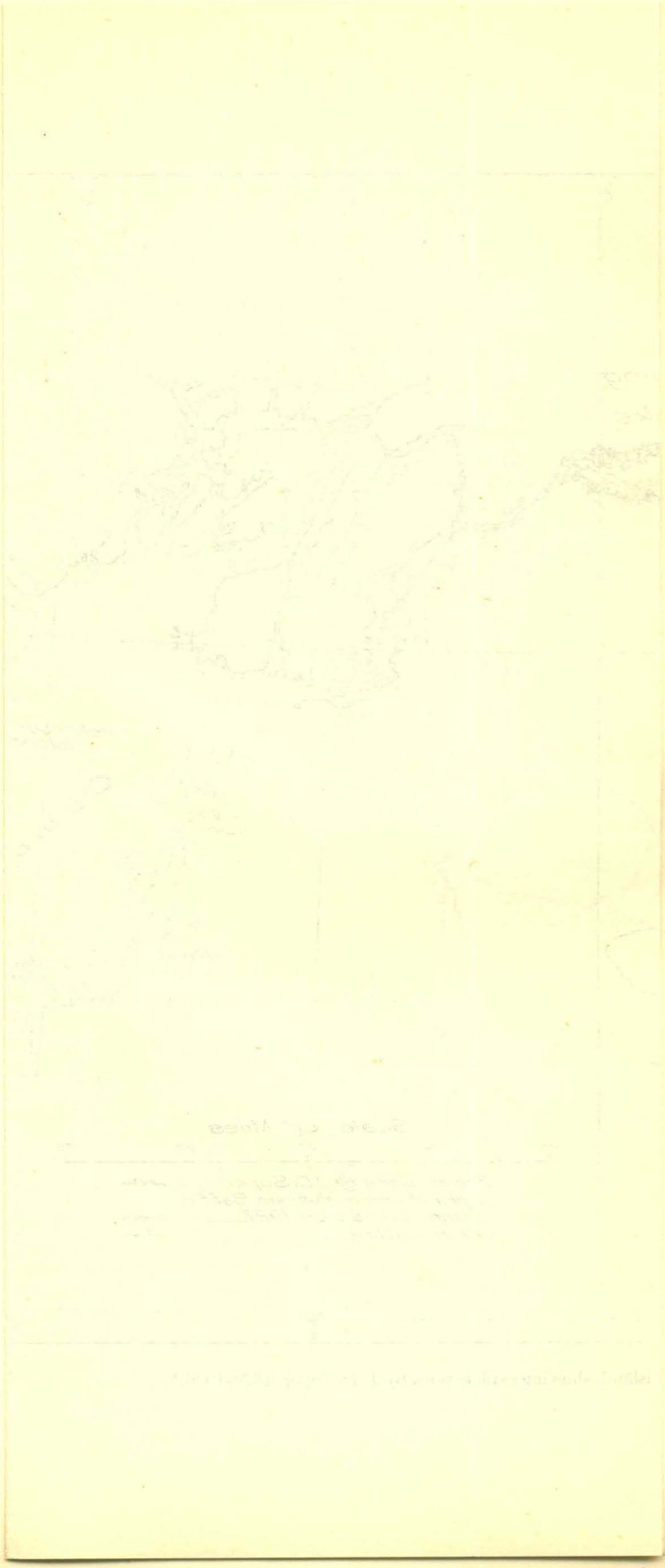


Figure 1. Portion of southern Baffin island, showing explorations by J. D. Soper, 1924-1926.



A FAUNAL INVESTIGATION OF SOUTHERN BAFFIN ISLAND

CHAPTER I

INTRODUCTION

The following report presents the known essential facts concerning the fauna of Baffin island. The information contributed by the writer was mainly secured during a continuous two-year period of exploration lasting from the summer of 1924 to late summer of 1926. The surveys represented on the accompanying map were made by compass and by boat log when practicable or by estimating the rate of travel.

Without the kindly assistance of numerous friends, the present work would have been impossible. On the 1923 Canadian Arctic Expedition, the work was greatly facilitated by the kindness of Mr. J. D. Craig, Officer-in-Charge, and Captain J. E. Bernier. In 1924 every courtesy possible was again received from these gentlemen, as well as from Mr. J. D. Henderson, Officer-in-Charge of the expedition. Mr. George P. Mackenzie, Officer-in-Charge of the 1925 Canadian Arctic Expedition, rendered all possible aid in re-outfitting at Pangnirtung for another year in the Arctic. Every kindness was shown by the members of the Royal Canadian Mounted Police in furthering the aims of the exploration. Especially should mention be made of Sergeant J. E. F. Wight with whom headquarters at Pangnirtung were shared for nearly two years. Through his direct aid many points of interest in Cumberland sound were reached, and his unselfish concern is responsible for twice risking in the autumn of 1925 the passage of Nettilling fiord in order to return the party from the interior to Pangnirtung fiord. Constable S. H. G. Margetts, engineer of the *Lady Borden*, rendered much assistance, as did also Constable T. Tredgold, a travelling companion on the long trip to the interior during the summer of 1925. Corporal F. McInnes furnished valuable notes on the wild life of northern Baffin island, and many personal favours were received from Staff Sergeant A. H. Joy (now Inspector), of Ponds inlet, Constable G. T. Makinson of Craig Harbour, Ellesmere island, Constables F. Fielder and E. F. Tutin of Pangnirtung, and Corporal H. G. Nichols of Port Burwell. The officers of the Hudson's Bay Company rendered every possible assistance toward the successful achievement of various journeys. Especially is it desired to acknowledge the kindness of Mr. F. Heath of Pangnirtung, Mr. David Wark of Amadjuak bay, and Mr. James Aitken of cape Dorset.

Physical Features

Baffin island, the largest and probably the most valuable of the Canadian Arctic islands, stretches northwesterly for 960 miles; the widest part is about 420 miles, the narrowest, 150 miles. Its area is about 200,000 square miles, the island being the third largest in the world, exceeded in size only by Australia and Greenland. Precambrian granitic rocks form most of the island, but the high, plateau area of the northwest part, and the low plains which in the south extend east from Foxe basin to the region of the great lakes of the interior, are floored with nearly horizontal

Palæozoic measures. Coal-bearing Tertiary strata occupy an area bordering Eclipse sound.

The southern and eastern coasts are exceedingly irregular, in many places are fringed by numerous islands, and in most places are indented by deep, narrow fiords and wider bays. The whole east coast is high and rugged. The mountains rise directly from the sea, springing upward in many places, in cliffs a thousand feet high. Inland the upward rise is much more gentle. The mountains attain their greatest development in the Penny highlands north of Cumberland sound where the general elevation is 3,000 to 4,000 feet and individual peaks and ranges rise to between 5,000 and 8,000 feet above sea-level. The high, rugged country extends north into Bylot island where, in the southern interior, the mountains exceed 5,000 feet in height. South of Cumberland sound, the general elevation is lower, between 2,000 and 3,000 feet, and the country is a tableland, gradually sloping down to the northwest to the plains of the interior region. The southern coast, along Hudson strait, is high in the east, but though still rugged, is considerably lower over the western part and inland falls away to the level of the low interior plain.

The high land of the northeast coast extends inland south of Eclipse sound and, probably, Cockburn land, still unexplored, is a deeply dissected region with a general elevation of 1,500 to 2,000 feet. To the southwest the land falls away and along the north shore of Foxe basin is believed to be very low and to merge in the south into the great plain which extends from the east shore of Foxe basin, eastward past Nettilling lake to not far from the head of Cumberland sound, and southward to within 60 miles of Hudson strait.

The highlands referred to in the preceding paragraphs and the lowlands into which they merge and which border the north coast of Foxe basin, are underlain by Precambrian rocks. The plains that form the southern interior are occupied by flat-lying Palæozoic limestones buried in most places beneath a thick cover of drift. This plain stretches east from Foxe basin, occupies all the country west of Nettilling lake, extends south past Amadjuak lake to Mingo lake, and west into Foxe land. The area of the lowland is about 16,000 square miles. Directly west of Nettilling lake, it is a level, swampy tundra of about 3,000 square miles. In the south the plain rises somewhat and becomes gently rolling. Amadjuak lake drains to Nettilling lake which discharges west through Koukjuak river into Foxe basin. Koukjuak river is 48 miles long, flows northwest, and falls $1\frac{2}{3}$ feet a mile; the current in the upper part is fast but smooth, whereas the lower part, so the Eskimo report, is swifter and is broken by slight rapids. Nettilling lake measures 56 miles east and west, and 72 miles north and south. The eastern part lies within the low edge of the Precambrian region of the east coast, and holds very many low islands. The elevation of Nettilling lake is 85 feet above sea-level. Amadjuak lake, of about equal size, lies 300 feet above sea-level and drains northward into the south end of Nettilling lake, by way of the rapid Amadjuak river, 52 miles long. The natives report low, rolling land east of Amadjuak lake, a continuation of the plains that sweep around the lake and past Mingo lake on the south. Mingo lake, much smaller than the others, lies at an elevation of 300 feet and drains to Amadjuak lake. North of Nettilling lake, the Eskimo report the existence of a large lake, Tessilukdjuak, said to drain west to Foxe basin by way of Kukdjitariak river.

The northeast part of Baffin island is a plateau formed of flat-lying Palæozoic shale and limestone. In the north the land rises abruptly from the sea in cliffs 1,000 feet high. Along the west coast, along Prince Regent inlet, the plateau declines in altitude southward and finally merges into the low area of Precambrian granitic rocks bordering Fury and Hecla strait and the north shore of Foxe basin. The Palæozoic strata border Admiralty inlet and extend east to Navy Board inlet. The south shore of Eclipse sound is the edge of a rolling plain of coal-bearing Tertiary strata that extend inland to the abruptly rising edge of the Precambrian area of Cockburn land.

An ice cap of unknown extent covers Penny highland, northwest of Cumberland sound. A few small glaciers are said to reach the coast north of Cumberland sound, but attain their greatest development along Navy Board inlet in the north. Several isolated ice caps are said by Eskimo to exist inland from the northeast coast. Another is reported from Saumia highlands south of Cumberland sound. The Grinnell glacier occupies the southeast extremity of Baffin island and discharges along a small front into Frobisher bay.

Narrative

On behalf of the National Museum of Canada, the writer accompanied the Canadian Arctic Expedition of 1923 in the C. G. S. *Arctic* which sailed from Quebec, July 9. Baffin island was touched on August 19, at Strathcona sound, Admiralty inlet. After a stay of twelve hours, the *Arctic* sailed via Navy Board inlet to Ponds inlet and remained there from August 21 to September 3. Pangnirtung fiord, Cumberland sound, the next place called at, was reached on September 11. Twelve days were spent there, the ship setting sail for Quebec on September 22.

The 1923 trip was a reconnaissance affording few opportunities for the collecting of biological or other specimens. The information acquired indicated the desirability of work being done in the eastern part of the Arctic archipelago and on Baffin island in particular. Plans were completed by the Museum during the winter of 1923-24 for the writer to return to Baffin island for one or more years for the purpose of collecting biological material and making geographical explorations of districts that might be reached.

In 1924, the writer sailed on the C. G. S. *Arctic* which left Quebec on July 5. Pangnirtung fiord, Cumberland sound, which had been selected as a base, was reached on July 22. There supplies and equipment were put ashore. The Royal Canadian Mounted Police provided accommodation at their Pangnirtung post which became home, at intervals, until April, 1926.

Pangnirtung fiord is on the northeast side of Cumberland sound. It is 28 miles long and averages $1\frac{1}{4}$ miles in width. The lower part of the fiord runs northeast, the upper part runs north. The tide rises 18 to 22 feet. The country in the vicinity of the fiord is mountainous. For the first 10 miles up the fiord, the mountains average 2,000 feet in height. Higher up the fiord and continuing inland beyond its head, loftier sections rise to between 3,000 and 5,000 feet.

The lower elevations are rounded and undulatory, with numerous signs of glaciation. Small, clear lakes and streams abound. The higher mountains are jagged and irregular of outline and in many places rise

precipitously from the sea. Talus slides are common and many start from more or less precipitous faces which terminate in jagged peaks, or narrow divides, with deep clefts and V-shaped valleys between. The rocks, as is the case all about Cumberland sound, are Precambrian, mainly granites and granite-gneisses.

Snow remains permanently on the higher mountains flanking Pangnirtung fiord, but does not develop true glaciers. Some snow fields occupy relatively considerable areas, but most of them are small. Near the upper end of Pangnirtung fiord, on the edge of a sea-facing precipice, is a sheer face of ice and snow fully 200 feet thick. The upper part is white; the lower is of old ice with a greenish tint. A number of the higher valleys must contain from 100 to 600 feet of ice and snow. A short distance inland from the head of the fiord, two glaciers extend down valleys of gentle gradient, to within 400 or 500 feet of the bottom of the main valley.

The Royal Canadian Mounted Police and Hudson's Bay Company's buildings are on a gently undulating flat rising some 20 feet above high tide mark. This bottom land is about 1½ miles long by ⅔ mile wide, and forms a cape. Few areas of this character and extent are found in Cumberland Sound region. In summer the flat is soft and oozy under foot, and is covered with grasses, Arctic cotton, saxifrages, and various mosses. Immediately behind the flat, the abruptly rising, talus-free slope rises to 2,150 feet. Mount Duval, a short distance northeast, is 2,300 feet high.

A long excursion on July 25, showed that the Arctic summer was far advanced, for most of the flowering plants were more or less profusely in bloom. The Arctic cotton-grass (*Eriophorum angustifolium*) was perhaps the most conspicuous. It thrives in wet situations in broad, isolated patches, and reaches a height of a foot or more. Saxifrages of many species bloomed among the boulders along the streams and on the sides of the mountains. The Arctic poppy (*Papaver nudicaule*) had just passed full bloom. Along Duval river in the warm, sheltered flats under the banks, the fireflower (*Epilobium latifolium*) was in flower and was attracting numerous small butterflies and bumblebees.

On July 28, travelling in the Hudson's Bay Company's power launch *Ungava*, a brief visit was made to Kekerton islands, 40 miles distant. Winds of considerable violence rise suddenly in this region and, therefore, travel in any small craft is exceedingly venturesome. The islands are on the eastern side of the sound immediately south of Kingnait fiord. A long tramp over the desolate hills disclosed little of interest, except a few species of dwarf plants not previously collected. A light-coloured variety of the fireflower was found near the old whaling station; this variety was not observed again until two years later at Amadjuak bay.

The islands have an irregular surface and are indented by innumerable bays, miniature inlets, and fiords. The altitude varies from a few feet to 500 feet. The islands are rugged, and almost destitute of vegetation. The higher parts are barren expanses and domes of rock. In places the lower slopes and foreshore support a meagre growth of mosses, lichens, dwarfed grasses, and various other plants. In a few places along the coast small, isolated areas of fairly good growth occur. Vegetation is invariably more luxuriant near, or on the sites of, Eskimo villages of long standing where offal, refuse, and the excrement of numerous dogs, add to the fertility of the soil. As a result, growth is more rapid and virile, and plant life attains to goodly proportions before the early frosts and snow end

the season of growth. The general dearth of vegetation is due not so much to climatic conditions as to the lack of proper soil.

Thick ice was seen in a deep gully. The ice could not possibly melt entirely away before the coming of cold weather a few weeks later.

Bird life on Kekerton islands was as scarce as plant life, though the Eskimo assert that certain islands in the sound are inhabited, during the breeding season, by great numbers of eider ducks, terns, and guillemots.

Again through the courtesy of the Hudson's Bay Company a trip was made on the launch *Ungava* to Kingua, Issortukdjuak fiord, distant, by boat, about 70 miles. The run was made during the evening and night of July 30 and the earlier part of the following day. The coast all the way is high, rugged, and barren except over limited areas low down near the sea, where the usual dwarfed, Arctic flora prevails. The general altitude along the coast approximates 2,000 feet, but north and northeast of American and Quickstep harbours, the elevation is much greater. Many peaks appear to reach at least 6,000 feet. Far inland, the Penny highlands probably attain a much greater height.

From American harbour on to Kingua the course followed was through a labyrinth of channels among islands, and between them and the mainland. Even if heavy seas are running in the open waters of the sound, this sheltered route is navigable for comparatively small boats. The islands are barren. They range in size from a few acres to many square miles in extent, and in height from a few feet to 1,000 or more feet. In many places the rock rises from the water in lofty cliffs. Owing to tidal currents, fast water develops in some of the narrows. At one such narrows a few miles south of Nunatuk, the current, when swiftest, runs at a rate of about 10 miles an hour.

Nunatuk, a small native village on an island near the entrance to Kingua, was passed early in the forenoon of July 31 and Sirmilling bay was reached and anchor dropped at 10 a.m. The ruins of the old German International Circumpolar station, established in 1882, are on a bench overlooking the bay and on their site is a small Hudson's Bay Company's outpost. During the several days spent at this outpost the weather at times was warm, and bees and butterflies were in evidence.

Midlualik bay, a deep bay a short distance northeast of Sirmilling bay, was visited. A small mountain stream entering the head of the bay was followed inland for several miles. In sheltered positions, plant life was surprisingly luxurious. The Arctic willow was, perhaps, the prominent species; individual plants covered as much as a couple of square feet of ground, with trunks upwards of an inch thick. All are practically prostrate. A diminutive birch (*Betula nana*) was found growing in fair abundance on wide gravel flats near the mouth of the river. The crowberry (*Empetrum nigrum*) and the white heather (*Cassiope tetragona*) were both common, the former heavily in fruit.

In restricted areas in the deep, sheltered valleys in the vicinity of the old German International Circumpolar station on Sirmilling bay the flora was found to be more luxuriant and sturdy than at Pangnirtung. *Ledum*, *Cassiope*, *Arctostaphylos*, and *Empetrum* were the dominant genera, aside from the willows, which are found, usually, in the most discouraging situations. From near sea-level up to 600 feet, *Empetrum* and *Arctostaphylos* were seen in flourishing stands, many of the plants heavily in fruit.

The berries of neither were ripe, as yet, though those of the former seemed nearly so.

In the vicinity of Sirmilling bay very little wild life was seen, with the exception of white whales which were numerous each day in the bay at flood tide. In early July about 700 of these animals were killed in a drive conducted in Midlualik bay. Old caribou trails were observed some distance up the river entering Sirmilling bay. To obtain light summer skins for clothing the Eskimos journey in August, from the heads of Kingua and Nettilling fiords, to the interior where, in the vicinity of the big lakes and to a limited extent, also, in the hill country of Saumia and Talirpia, the caribou spend the summer and bring forth their young.

Pangnirtung was returned to on August 5. At this time, birds were scarce and of mammals all that could be secured were a few hares, lemmings, and seals. On the lowlands along the coast, the flowering plants were in bloom. The low stretches were various shades of green, and a pale green coloration extended up the bounding slopes to the edges of the piles of barren talus. In Baffin island the flowers begin to bloom in late May and the birds, in general, commence to nest a short time after, but the summer season is not fully developed until late July, or early August.

Winds and breezes of varying strength kept passing up and down the fiord. Days of dead calm were few. It was not uncommon during a day to have winds from every point of the compass. While a very strong wind was blowing in the fiord, a little distance inland the wind may have been light or entirely wanting. At times, while almost a calm prevailed in the fiord, light breezes poured out of tributary valleys. It was not uncommon to note a strong wind steadily setting up the fiord while the clouds moved rapidly in the opposite direction.

On August 17 and 18 a trip was made on the Hudson's Bay Company's launch to Blacklead island. The sound was crossed from Kekerton islands and the southwest coast was reached at a point about 20 miles north of Blacklead island. The islands in this vicinity, like those elsewhere in the sound, are rugged. On little tablelands, or in basins, enough soil has accumulated to support the usual flora. The surface is as a rule muskeggy and small pools are not uncommon. Around the latter various species of grasses are in many places a foot or more high. The Arctic cotton is seldom absent. According to the writer's experience, the flora of the outlying islands is invariably more dwarfed, and of fewer species than in the adjacent mainland valleys. The latter situations, having greater protection, are warmer. The islands are constantly surrounded by cooler air, or fogs, or swept by cold winds off the sound where the water is never more than a few degrees above freezing point, and icebergs are always present. Snow buntings were the only birds seen on the land. Glaucous and Kumlien gulls frequented the coast in fair numbers.

Hundreds of islands fringe the southwest coast of Cumberland sound and a nearly continuous inside passage exists, from Blacklead island to the entrance to Nettilling fiord. The whole length of this side of the gulf is rugged and lofty, but decreases in altitude to the north and west. The general elevation in the vicinity of Blacklead island is between 2,000 and 3,000 feet, but in Nettilling region it is only a few hundred feet and the country is less rugged. At this time large patches of snow still persisted on the higher land in Blacklead Island region.

Blacklead island is about 1½ miles long with a maximum width not exceeding one-half the length. It is roughly wedge-shaped. The broad end is to the north where a rounded hill rises to 600 or 700 feet. The south part of the island is low and rocky, with a meadow-like area along the west side on which the mission, whaling station, and Eskimo village are situated. Springs and streams are absent except for a few small rills.

Plant life was poor and scanty, though representatives of most of the commoner species were found. A single individual of dandelion (*Taraxacum ceratophorum*) was seen growing at the base of a cliff with a southern exposure. This was the first example of the species seen by the writer, and it was not again observed until more than a year later when it was noted west of the head of Nettilling fiord.

The bird life on the island at this time consisted solely of those omnipresent land species, the snow bunting and pipit. At sea were a few glaucous gulls, guillemots, and an occasional fulmar.

On August 24 the 8-mile passage from Blacklead island to Niantilic harbour was crossed. In this neighbourhood were found beds of the crowberry (*Empetrum nigrum*) loaded with ripe fruit. The best stands of dwarf birch (*Betula nana*) seen by the writer in the Arctic were also found here. Many groups were still green, but the majority were turning scarlet and a few already had shed their leaves.

On August 26 a trip by launch was made to the head of Kaseejuak fiord (Bear sound), 25 miles southeast of Blacklead island, where Eskimo had recently killed the first caribou of the season. The sides of the fiord in places rise in cliffs to a height of 1,000 feet or more. The party landed at the head of the fiord and ascended a low divide profuse with the usual Arctic shrubbery, but including the Arctic cranberry (*Vaccinium vitis-idaea minus*) which was abundant and freighted with berries. From the ridge summit the valley continuing the fiord inland to the west was visible. The higher bounding slopes were barren and bare of snow, the valley bottom faintly green because of vegetation. After several hours hunting, three bull caribou were killed. On the return trip, while passing down the fiord, a polar bear was seen swimming and was killed.

On September 8, the writer returned to Pangnirtung post.

On October 12, sufficient provisions and gasoline to make possible, later in the year, a sledge-trip across Baffin island to Foxe basin, were taken by launch to the trading outpost on Sirmilling bay. At this time, caribou were secured towards the head of Pangnirtung fiord, the first of the season to come to the coast. Up to this time none had been seen in the Kingua country. A few had been killed earlier in Nettilling fiord. As previously stated, they had appeared in the fiords of the Blacklead Island country. They were reported to have arrived around cape Mercy.

On October 21, taking advantage of a quiet spell of weather, stores and equipment, including a canoe, were forwarded by launch to a trading outpost at Kangertlukjuak bay, Nettilling fiord. These supplies were intended for use on a contemplated expedition in the spring of 1925, to Nettilling lake.

Snow flurries were now of common occurrence. Between October 22 and 25, the caribou began coming in large herds to the Pangnirtung coast. The animals killed displayed all gradations from fawns with prongs in the velvet, to old stags with magnificent antlers.

Following this, a couple of weeks elapsed during which travelling was impossible. Ice formed daily in the fiord in large quantities and drifted about in extensive fields. Near the sea a few gulls, eider ducks, and guillemots were occasionally observed.

On November 12 the Eskimo first ventured on the new ice to go sealing and on November 20 the first sledges were used. The ice was now 4 to 6 inches thick, with many open leads and extensive areas of elastic-ice about an inch thick. By November 24 the ice had increased in many places to 8 inches and afforded safe sledging up and down the fiord for many miles. The gulf was still open beyond cape Nasauyak.

In late November the temperature registered around zero and occasionally 12 to 15 degrees above; on the first of December it fluctuated from zero to 16 below.

Commencing on December 3, a three-day trip was made up the valley of Koukdlik river. The distance travelled inland was approximately 40 miles; the route throughout was a deep valley flanked by mountains ranging from 1,000 to 3,500 or 4,000 feet altitude. Eight miles from the coast, the river flows from a small lake at an altitude of 825 feet. This is connected by a rapid stream to a similar lake about 5 miles above and at an altitude of 1,050 feet; the second lake is followed by another lake of small size a mile or so away, and at an altitude of 1,100 feet. There is a low saddle here, which constitutes the height of land at 1,250 feet, and beyond it, in a distance of 12 or 15 miles, are two more lakes with altitudes, respectively, of 1,050 and 850 feet. They drain by rapid streams in the opposite direction. Numerous trails of caribou, wolf, fox, and hare were observed.

Between December 11 and 19, the temperature was surprisingly uniform, ranging each night between 20 and 23 degrees below zero, and usually rising a couple of degrees during mid-day. By December 20 the upper part of the sound was apparently frozen solidly from coast to coast.

During the last week of December, the weather was almost continuously calm and clear, with temperatures ranging between 30 and 40 degrees below zero. Cumberland sound was covered with thick ice, the snow on the land was deep and firm enough to permit building igloos.

On December 27 a sled-load of dog food was sent to Sirmilling bay as it was reported that seals were scarce in that district.

On January 6 in company with one Eskimo and a team of fourteen dogs hauling about 1,000 pounds, a start was made on the proposed trip across Baffin island to Foxe basin, by way of Issortukdjuak fiord. American harbour was reached the first day, Nunatuk the following night, and Sirmilling bay at noon of the succeeding day, a distance all told of about 80 miles. Sledging conditions were excellent, except for a restricted area of lightly raftered ice between American harbour and the "Sarbuk", southeast of Nunatuk. The temperature was around 50 degrees below zero, but the air was calm. The sledge route is much longer to Kingua than the corresponding boat journey in summer, for the large tide-rifts in this region enforce a wide detour to eastward.

The dogs were rested for a day and the journey resumed on January 10. It had been planned to add, at Sirmilling bay, another Eskimo and a second dog team to the party, but it being reported that, owing to lack of wind, the snow remained soft and deep, making travel impossible, the Eskimo refused to join the expedition. The temperature was minus 40

degrees with a moderate breeze from the north. In the evening, owing to the prevalence of soft snow, much difficulty was experienced in finding suitable snow for the building of an igloo.

The head of the fiord was reached in the morning of January 11. From Sirmilling bay westward the general elevation of the land decreases and at the head of the fiord the flanking ridges are not more than 300 or 400 feet high with occasional higher hills reaching to 800 feet. The valley continuing the fiord inland, to the west, was followed and for several miles travel was very good along the river which wound down the valley. But farther inland soft snow in increasing quantity was encountered, making progress very slow. About 15 miles inland, and near dark, the course followed by the river narrowed to a gorge about 100 feet wide. Camp was made here. The snow was soft, powdery, and waist deep. The stream valley some distance beyond was seen to bend to the northeast with no visible exit to the northwest, the direction it was desired to travel. It was obviously impossible to continue the proposed journey. The next day the return journey was commenced and on the second day the outpost at Sirmilling bay was reached. The weather was now colder, the temperature being 45 degrees below zero.

On January 16, the trip from Sirmilling bay to the Eskimo village Nunatuk was made. January 17 was spent exploring Ekaluardjuak fiord, an arm of Issortukdjuak fiord. The Eskimo state that large, isolated ice-fields occur in the valleys north and east of Ekaluardjuak fiord.

On January 18, Bon Accord harbour was reached. On the way, seals were searched for in the large, open tide-races at the entrance to Issortukdjuak fiord, but none was found. A flock of eiders and six guillemots were seen in the water. At one time walrus were common on islands near Bon Accord, but none has been seen for many years.

The journey was continued on January 19 and the trading outpost on Kangertlukjuak bay, Nettilling fiord, was reached the following day. The outpost was left on January 22 and Pangnirtung post was reached January 25. At Bon Accord harbour, on the way back, a number of seals were secured by trade, as dog food is scarce at Pangnirtung during the winter months.

After returning to Pangnirtung fiord, an Eskimo was sent to hunt for seals at the nearest open water west of Kekerten islands. He returned in several days with a load of seal meat. On February 6 in company with two Eskimo and two dog teams, the post was left on a trip across Penny peninsula to the main east coast of Baffin island. The route follows the valley leading from the head of Pangnirtung fiord and is so difficult that it is usual to take, in advance, dog food to a point a day's journey or more inland. Camp, a snow house, was built late in the afternoon at a point several miles up the valley from the head of the fiord. The valley at this point is narrow and is flanked by high, rugged mountains. Near the camp site, four glaciers were visible in as many tributary valleys. Pangnirtung river flows along the main valley and where the day's journey ended had cut its channel in a morainic deposit 150 feet high and stretching across the valley.

On February 7, the steep rise of about 100 feet, to the top of the moraine, was overcome by hitching both dog teams to each sled in turn. Beyond the rise, the valley for some distance is flat and over it the river, judging by the ice, appears to flow in numerous, shallow branches which

in a mile or two upstream are replaced by a single channel. The mountains on either side of the valley rise to 4,000 to 5,000 feet in sharp, angular peaks. The valley bends sharply to the northeast and the walls in places rise nearly vertically for 1,000 feet or more. Ice-fields occupy many of the tributary valleys and are visible high up in basins. After an hour's travel, the foot of another moraine was reached. The river bed here rises 300 feet in half a mile. At the edge of the moraine, the ascent is abrupt and it was necessary to unload the sleds, and to backpack the equipment. Three hours were spent making the ascent. A short distance beyond the edge of the moraine, the river is expanded into a long, narrow lake. While traversing the lake, a strong wind was encountered, the first since leaving Pangnirtung post. The Eskimo state that this and Kingnait pass are the windiest places known to them. The ice on the lake was bare except for wind-blown sand. Camp was made a mile up a small stream draining into the upper part of the lake.

Next day, February 8, the journey was continued along the stream bed by which camp had been made. For a mile or so the rise is undulatory. This stretch was succeeded by a steep rise in the form of three ice-covered, steep slopes. The first rise was 80 feet and the slope a comparatively gentle incline. The two succeeding rises were steep and in order to scale them it was necessary to cut steps in the ice. The sleds were hauled up the sharp rises by using long rope traces, which permitted the combined dog teams pulling while on the gentler slopes beyond the brow of the steep rises. The altitude of the valley bottom beyond the three abrupt ascents is 1,200 feet. The second Eskimo with his dog team turned back at this point. Beyond, the stream winds through a comparatively flat stretch and takes its rise in Summit lake, a narrow body 6 miles long. The snow was hard from the action of the wind. Numerous caribou trails were seen on the lake. The lake at its head divides and the western bay is the one to follow. The valley at the head of the lake is filled with a moraine formed by a glacier coming from the west, which in places forms a 20-foot high ice front along the west bay at the head of the ice. Camp was made at the foot of the moraine.

On February 9, about two hours were required to backpack the bulk of the equipment and food up the edge and over the worst part of the moraine. A small stream issuing from the glacier on the far side of the moraine was reached. Its smooth, ice-covered surface provided a good route to a lake, Glacier lake, 4 miles long. A branch of the glacier debouches into the lake. The surface on the lake was hard and undulatory, and near the shore was covered with pebbles and sands. Evidently violent winds sweep this district. The outlet of Glacier lake was followed. The stream drops 200 to 300 feet through a gorge, boulders protrude through the ice, and the descent, in places, is abrupt. Beyond this stretch a wide, ice-covered flat was entered which extended a considerable distance along the valley with a gradual northward decline. The ice-sheet in places was several feet thick. To the north it was succeeded by a sandy flat on the edge of which camp was made.

On February 10, by following along ice-covered patches, the sand-covered flat was crossed. A stream course was then followed to a wide flat, covered with hard, but hummocky snow. Beyond this, the route to the seacoast led along the bed of the river draining the district. The river course is cut in an accumulation of sand, gravel, and boulders and falls

gently northward to sea-level. Travel was very difficult in places owing to the profusion of boulders.

The east coast at the head of northern Pangnirtung fiord, was reached in the morning of February 12. Travel on the fiord was very good, though a couple of inches of fresh snow had fallen and camp was made at a place about 8 miles from the mouth of the fiord. On February 13, after reaching the entrance to the fiord, a north course was followed along the tide-crack paralleling the coast. Along this crack, with the rise and fall of the tide, there is in many places more or less flooding, and the water on freezing forms a narrow, hard track affording good travelling conditions. After following the tide-crack for a few miles, it was left and the mouth of Meartajene fiord was crossed in order to reach the mainland south of Broughton island. Crossing the fiord, deep, soft snow was encountered.

On February 14, a blizzard was blowing and very little progress was made. The next day, the storm having abated, the Eskimo encampment at Kekertukjuak was reached. On February 17, the journey northward was resumed. For the length of Broughton island, the ice between it and the mainland was very fair. Off Kingnelling, however, much rough ice was encountered. Here the coast is open to Davis strait, and in the autumnal gales the ice had raftered for some distance off the coast. Numerous small bergs were frozen in the ice-fields. Giant bergs could be seen farther out to sea. Beyond the big cape north of Kingnelling, smooth ice lay between the outer pack-ice and the shore. The outpost of the Sabellum Trading Company at Kevetuk, was reached about noon on February 18.

On February 21, Kevetuk was left and the return journey commenced. The weather was cold, clear, and the wind light. Kekertukjuak was reached the following day. On February 23, a southeastward course was followed towards Kekertallukjuak on the way to Merchants bay. Camp was made north of Kangerlloaping fiord. The mainland is high with many rounded summits rising to at least 3,000 feet.

On February 12, travelling conditions remained good for several miles to where rafted ice and soft snow were encountered. Over large areas the ice had been forced into ridges and hummocks 6 feet and more high. Many icebergs were visible. Rough ice continued to some little distance within Merchants bay. February 13 was a day of wind and snow which so delayed progress that not until late afternoon was Padle reached, an Eskimo village on a small island lying several miles southeast of Padloping island and almost exactly in the entrance to Kangertlukjuak fiord.

During the night of February 27, between 1½ and 2 feet of snow fell and snow continued to fall the following day and night. The resulting heavy cover of soft snow made travelling impossible until winds should have packed the snow. On March 6 the journey was resumed with the help of two Eskimo and their dog teams to break trail ahead of the loaded sled. By evening Padle fiord had been entered and followed inland for some miles to where occasional small areas of old crust showed through the new snow. On March 7, travelling conditions continued to improve and the evening camp was made at a place several miles up Padle river beyond the head of the fiord.

On March 8, the two added Eskimo and their teams turned back and the writer with his Eskimo companion and one dog team continued the journey southward through Kingnait pass. About 8 miles up, the pass

is a wide valley through which Padle river meanders. Farther up, where camp was made, the river leaves a lake set in rolling land. West of the lake a gap in the bordering upland permits a view of high mountains probably bordering Pangnirtung fiord. The mountains along Kingnait pass are much lower, are more rounded, and no glaciers lie among them.

On March 9 a second lake, a mile or so above the first, was traversed. At its head a rocky ridge about 200 feet high crosses the pass and forms the divide. Terrace lake lies at the foot of the north side of the ridge. The lake is small and so shallow that sedges project above the ice in many places. The lake is the source of the stream draining Kingnait pass northward. The stream on issuing from the lake or pond passes through a rocky canyon and in a short distance discharges into a second lake. Beyond the foot of the lake, the ground falls abruptly for 75 feet in the form of a rough, rock slope down which a sledge must be lowered with ropes and drags. Beyond this there is a less steep descent of about 100 feet. A pond, a few hundred yards long, lies at the foot of the incline. Beyond this the course lies along the stream bed which for a few miles is very rocky.

The head of Kingnait fiord was reached the morning of March 10, and Pangnirtung post in the evening of March 11.

Owing to the heavy snowfall which made it impossible to travel with a heavy outfit, and because of other considerations, the journey to Nettilling lake was not commenced until April 22, by which time the snow was fairly well packed by the wind. The writer was accompanied by Constable Thomas Tredgold. In addition, the party consisted of an Eskimo with his wife and child, and another Eskimo with his wife. A 23-foot surf boat provided with a sail was loaned by the police, for navigating Nettilling lake and had to be transported from Pangnirtung fiord. An 18-foot canvas canoe with other equipment had been, in the previous autumn, forwarded as far as Kangertlukjuak bay, Nettilling fiord.

For the hauling of the boat and heavy supplies over the 150 miles to Nettilling lake it was necessary to enlist the temporary services of four native drivers with their dogs. Their teams, with those of the main party, raised the number of dogs to seventy. Twenty of these were used to haul the boat which was mounted on a wide, remodelled sledge.

Pangnirtung post was left late in the morning of April 22. Cape Nasauyak was passed at noon. From here a course was laid across the sound from Imigen, about 40 miles distant. The snow and ice in Pangnirtung fiord, and for a few miles out in the open, made smooth and excellent travelling, but were succeeded by raftered ice and high undulating snow banks that reduced the rate of progress by half. About 28 miles of the way was covered by night.

April 23 was clear and cold. The travelling conditions were a repetition of those of the previous day. The high drifts, which ran at right angles to the course, were more abrupt and caused the boat-sledge considerable trouble. Extra dogs were taken from the teams ahead and put in the boat-team, after which progress somewhat improved. Four men walked beside the boat to steady it. The Eskimo village at Imigen was reached in late afternoon.

On April 24, at a place about 15 miles west of Imigen, open water was encountered that hugged the coast and ran brokenly for a long distance south across Nettilling fiord. There was no evidence of open water at

this point when passed in January. It was necessary here to make a detour over a rocky ridge, using more than forty dogs and all available hands on the boat. A couple of miles beyond, water underlay the snow and this condition prevailed for the remainder of the day. The water and slush over wide areas were fully a foot deep, lying on top of the ice, and covered by a thin layer of dry, crusted snow. So long as this crust is strong enough to support loaded sledges, no difficulty is experienced. If not, the sledges break through, causing great delay and exertion. In the present instance the crust was strong enough to support the ordinary sledges, but the boat kept breaking through. In one instance it was two hours before the boat and sledge could be extricated from the slush and started off again on sound crust.

April 25 was thickly overcast, and there was a fresh southeast wind. The temperature was 16 degrees above zero. Progress was good during the forenoon, as the snow was hard and smooth, and there was no indication of underlying water. Shortly after noon the entrance to Kangertlukjuak bay was reached. Leaving the boat behind, and travelling light, the party headed for the Hudson's Bay Company's outpost a number of miles up the bay. A thick snowstorm arising, a forced camp was made and the post was not reached until late the following day.

On April 27, the Eskimo were sent to hunt seals for dog food at the nearest tide-hole 18 miles to the west. The stores previously forwarded to the post were taken to, and cached at, the tide-hole. The hunters returned to the post in the evening. On April 28 the journey was resumed, the snow having been fairly well packed by the wind. The boat, with the supplies left with it on April 25, was reached early in the afternoon and by evening the whole outfit was brought to the cache at the tide-hole. Canvas tents were pitched that evening for the first time.

The morning of April 28 was fair and calm, the temperature 28 degrees above zero. At an early hour snow began to fall and continued to do so the rest of the day. Travelling was further slowed down by the presence of water beneath the crust of snow. At four o'clock in the afternoon, after travelling only about 6 miles, a tide-hole spanned a narrows between two rocky shoulders. The boat was launched at the slack of the tide and the freight ferried across the opening. The tents were pitched and some of the men returned for the remainder of the freight left at the last camp spot.

April 30 was cloudless. Apart from trouble with deep snow early in the forenoon, satisfactory progress was made. This part of the fiord holds many islands and in appearance resembles a lake rather than an arm of the sea. Camp was made at the tide-hole in the narrows leading to Kassigidjen, one of the routes to the upper part of Nettilling fiord. Another route lies a short distance west over a low pass and through Emalteuil lake. These routes are followed to avoid the great tide-hole, Sarbukdjuak.

May 1 was the mildest, most spring-like day of the year. Camp was not moved as some of the men had to return to the last camping spot to freight forward the remainder of the outfit.

Evidence of wild-life had been very scarce all along the way. Occasional trails of caribou were seen after passing Nauyarping, and wolf and fox trails somewhat increased, but were never common. Hare trails were nearly absent. Of bird-life two or three snow buntings had been seen and

a few glaucous gulls were observed at the Nauyarping tide-hole. On the afternoon of May 1, a flock of about a thousand king eiders passed going northwest. Later, several dozen alighted in the tide-hole nearby.

On May 2 the temperature was between 30 and 34 degrees. The journey was continued by the Kassigidjen route, crossing from the head of the bay over a low isthmus to the fiord 2 miles distant. Camp was pitched 3 miles beyond at the Kognung tide-hole. This is the last tide-hole on the route, with the exception of a small hole which sometimes exists a mile or so farther ahead. Seals for dog food must, therefore, be secured at this point. Caribou cannot be relied upon for this purpose.

May 3 was clear, the temperature 45 degrees above zero, rising but little even at mid-day. Part of the outfit was sent on to Kaugia, at the end of the fiord, but camp was maintained at the tide-hole in order that the procuring of dog-food might be continued. In the country around the camp snow lay in the larger valleys, in many places 20 to 30 feet deep. The higher ridges were practically bare, having been cleared by the winds. The hills were much lower than farther east, though just as rugged. The average height is 400 or 500 feet. A little to the northeast some heights appeared to reach 1,000 feet.

May 4 was clear. Travelling was good and the end of the fiord was reached by evening. Camp was pitched on the edge of the first small lake of the chain constituting the route to Nettilling lake. It lies 30 feet above sea-level and its southeastern end is only about 65 yards from a bay on the fiord, which extends for several miles to the southwest. The rise and fall of the tide at the head of the fiord is only 8 feet.

May 5 was cloudless. A cache of food, gasoline, etc., was made and part of the outfit left temporarily at the camp site. Isoa, at the head of Nettilling lake, was reached in the evening.

The first lake along the route is 2 miles long and lies between two steep, broken ridges about 500 feet high. At the northwest end of the lake the land rises brokenly and a stream 840 yards long enters from the second lake to the west. This lake lies 130 feet above the sea. A small stream with a waterfall enters on the north shore from a series of lakes in that quarter. The second lake is half a mile long. A portage of 495 yards separates it from the third lake, which is $1\frac{3}{4}$ miles long and lies at an elevation of 200 feet. A narrow, rocky stream connects the two. The surrounding hills are bold and broken, with an average height of about 400 feet. The next and largest lake of the route is Amittok, which is 8 miles long and lies at 180 feet above sea-level. The drainage of the first three lakes is to Nettilling fiord. The height of land is a low, rocky ridge 250 yards wide.

Fairly fresh trails of caribou were encountered after leaving the fiord, and a band of seven caribou was seen in early afternoon half-way up Amittok lake.

The shoreline of Amittok lake is irregular, with deep, irregular arms. The northwest end is bounded by slopes so gradual that with deep snow on the ground it is difficult in many places to determine where the land begins and the lake ceases. The adjoining hills and ridges are much lower and more rounded than at the fiord, or even a few miles away at the farther end of the lake. The greatest elevations do not exceed 300 feet; the general average is nearly 150 feet.

Amittok lake discharges at its northwestern extremity, by a river three-quarters of a mile long, into Takuirbing lake, a body 2 miles long and 100 feet above sea-level. Rapids, at one point, can be avoided by portaging over the flat, valley floor on the southeastern side; lower down the trail is on the north side, along the base of a rocky hill. The valley is comparatively narrow. Takuirbing river is short and discharges into Nettilling lake.

May 6 was overcast. On this day the extra Eskimo with their teams started on their return journey. Seven dogs were retained. A high snow wall was built about the two tents. All the freight was built into a compact cache on a dry, elevated table of rock and covered with a tarpaulin. For several weeks after arriving at Nettilling lake, cooking for the whole party was done with gasoline, but with the disappearance of the snow the natives depended entirely upon the white heather (*"Keeokta"*) for this purpose.

The country at the head of Nettilling lake is very rough, abrupt hills and ridges alternating with narrow valleys and long, gentle slopes with here and there low tundra. The average altitude of the hills above Nettilling lake (itself 85 feet above sea-level) is about 150 feet. Many isolated domes and ridges probably rise 250 feet. Small lakes are very numerous.

For many days after the arrival at Nettilling lake the weather remained dull with occasional flurries of snow. Nights were cold and the temperature invariably fell below 32 degrees. As much as an inch of ice would form in a water bucket in a single night. During this period the Eskimo hauled to camp the freight that had been left at the head of Nettilling fiord.

At the date Nettilling lake was reached, May 5, there were several open spots in Takuirbing river where the current was strongest. These openings probably had formed during the mild spell about April 20. The river is 300 yards long and falls 15 to 18 feet. The ice on it was about 30 inches thick. On Nettilling lake the ice was estimated to be, on an average, around 7 feet thick.

On May 6 small pools of water were observed in rock depressions on the tops of the hills, and thawed mud an inch deep was encountered on a slope with a southern exposure. In numerous places the snow was seen to be melting from around tufts of grass and heather.

The night of May 12 turned wild and tempestuous, with driving snow. With only brief pauses the gale continued until May 20.

On May 22 the noon temperature was 44 degrees. Small brooks and rills developed in myriads. The first frostless nights were those of May 22 and 23. The end of the month was stormy.

By June 1, patches of tundra were bare and a couple of hundred yards of open water ran in the nearby river. The temperature hovered around freezing-point much of early June. On most of the nights thin ice formed on the tundra pools. The first week of June brought the first observed development in the flora—principally the small velvet catkins of the dwarf Arctic willow. The lousewort, *Pedicularis*, was pushing up through the scanty soil of gravelly ridges that had been free of snow not more than ten days. But the first flower of the spring was the little purple saxifrage, *Saxifraga oppositifolia*. The plant is very small, grows in mats over rocky slopes, and bears a profusion of minute purple blossoms. By the middle of June patches of ground were covered with its colour.

After June 20, morning temperatures were between 45 and 50 degrees and slightly higher some days. The highest temperature in June was on the 27th, 60 degrees at eight in the morning. The mid-day temperatures average about 5 degrees higher. Insects were countless by latter part of June. Butterflies of several species, bumblebees, spiders, several species of gnats, flies, and mosquitoes were common.

The end of June was characterized by rapidly melting snow, nesting activities of the birds, and the quick development of vegetation. Grasses, in particular, made fast headway in moist depressions. Actual bloom was not particularly noteworthy until early July. On June 28 the white heather, *Cassiope tetragona*, began sparingly to bloom. On June 30 the mountain avens, *Dryas integrifolia*, and the Arctic blueberry, *Vaccinium uliginosum*, suddenly burst into bloom. The Arctic Labrador tea, *Ledum palustre*, was just on the point of bloom on June 30.

The last snowstorm of the season occurred on June 17 and the first rain the following day. Very thin ice continued to form in the tundra pools at midnight until June 25. This feature continued in the open water of Nettilling lake off and on throughout July. After June 24 a period of fine, sunny weather set in which persisted until the middle of July. Floral development, and the decay of the ice in Nettilling lake were now very rapid. The smaller lakes were mostly free of ice by the latter date. The ice on Nettilling was safe for travelling (though badly honey-combed) until early July. By June 20 about three-quarters of the country was free of snow. Takuirbing river began noticeably to swell in volume about the middle of June and by the last of the month was a torrent at its maximum volume, which it maintained until far into July. During this period Nettilling lake rose 2½ feet.

Caribou were frequently seen, and short hunts almost any time were usually attended by success. The camp was never without fresh meat after early May. Long after sledging was done on the land, the ice on Nettilling lake was still available for travel. Probably the ice never leaves Nettilling before mid-July.

The temperature during July was fairly uniform, mornings registering from 50 to 60 degrees and at mid-day, 10 to 14 degrees higher. The average temperature at 8 a.m. was 52 degrees.

The Lapland rose-bay, *Rhododendron lapponicum*, reached the zenith of its beauty and abundance in late July and early August. A few other common flowering plants at this time were: the fireflower, *Epilobium latifolium;* Arctic Labrador tea, *Ledum palustre;* white heather, *Cassiope tetragona;* Arctic cranberry, *Vaccinium vitisidaea;* Arctic poppy, *Papaver nudicaule;* shinleaf, *Pyrola grandiflora*, and the Arctic bearberry, *Arctostaphylos alpina.*

In early August the main body of Nettilling lake was still filled with ice as far as the eye could see. The smaller lakes were rapidly opening, and it was possible to travel by canoe on an arm of Nettilling lake which extends to the north. It is connected with Nettilling by three very narrow channels. Old camp sites of the Eskimo were seen in many places. In recent years the Eskimo seldom come to Nettilling lake. They obtain sufficient caribou skins by hunting in Talirpia to the west of Cumberland sound, in Saumia to the east, and about Nettilling fiord and Kingua. No Eskimo were on the lake in the summer of 1925. Two families from cape

Dorset lived in and about Nettilling in the winter of 1925-26 hunting caribou and making occasional visits to Nettilling fiord to secure seals.

In the old days a tribe of the Talirpingmuit inhabited Nettilling fiord and Nettilling lake. Of all the tribes in Baffin island, they were the only ones whose residence was not confined to the seashore. These people had three or four settlements on Nettilling lake; at Tikerakdjung, near the south end of the lake; at the outlet of the Koukjuak, on the left bank of the river; at Karmang; and probably a fourth one on the north shore. The greater part of the tribe spent the winter in Nettilling fiord near Imigen. About the first of May they started inland and returned to the sea again about December.

Nettilling lake between the mouth of Takuirbing river and the western islands became free of ice on the evening of August 9. On August 10 the writer with Constable Tredgold and one Eskimo, and employing the canoe, started for Nettilling fiord which was reached the night of August 13. Messages for the police patrol, due to arrive on August 15, were left there and the Nettilling Lake camp was returned to on August 17. The next day the party embarked on the boat with the canoe in tow. For about 8 miles the course was southwest with the mainland to the east and a maze of islands to the west. Beyond the course turned gradually to the west and then northwest across the mouth of a large bay. All about were numerous islands on one of which camp was made.

The mainland here is low, in few places rising over 150 feet above the lake; much of it is only 25 to 75 feet high. Few of the islands are over 25 to 50 feet high.

The voyage was continued on August 19 with a heavy sea running and by evening the open lake was reached beyond the maze of islands at its head. The land is low. On August 20, the wind was light and westward progress was slow. On August 21, a strong breeze improved sailing conditions. The elevation of the mainland continued to fall in a westerly direction and for several miles inland the height is not more than 10 or 20 feet above lake-level. A strong gale on August 22 prevented travel. On August 23, the wind having moderated, the narrows at the south head of the lake were reached early in the afternoon. The narrows are about 300 yards wide with a slight current. The surrounding lands are flat, or gently rolling, with an average elevation of only a few feet above the lake. A number of low ridges cut across the country. The ground is covered scantily with moss, lichens, and various shrubs and grasses, the moss predominating.

To the south, the lake broadens again to form the elongated bay of Kangidlirn, the southern extremity of Nettilling lake. It is dotted with low, small islands which, like the mainland, appear to be composed of loose material.

Camp was made at evening on August 23 on an island a couple of miles southwest of the narrows. A strong gale developed during the night. It was still in force in the morning and the island could not be left. On August 25, the wind and sea having materially subsided, the south coast was reached, but the mouth of Amadjuak river could not be found. A ridge parallels the lake shore at a distance of 1½ or 2 miles. The intervening ground is swampy with many shallow ponds and low hummocks of gravel and rock. The ridge is about 80 feet high. From the top, the isolated hill, Pingualuik, was the most notable feature in sight. Between

it and the base of the ridge lay a plain of a delicate green, sprinkled with small ponds and lakes. To the south a low ridge could be seen and a range of hills, perhaps 15 to 20 miles distant, could be seen running along the eastern horizon.

In the morning of August 25 the south shore was coasted, passing in and out among low islands, until finally the mouth of Amadjuak river was found. The entrance is completely screened by numerous small islands and reefs and complex points in the coast line. The channel is about 100 yards wide and for some distance from the mouth parallels the lake shore. The river was ascended for some distance and camp made beside the ridge formerly mentioned. The river has cut two channels through the ridge, leaving a long gravel island between. Amadjuak river was explored for several miles to the south and found to be very fast with numerous rapids. A small stream, called by the Eskimo, Koukdala, discharges into the Amadjuak on the west about 2 miles from the lake. The natives say it has its rise in the region southwest of Pingualuik.

The weather at this time was very unsettled. On August 27 the temperature was 34 degrees and there were repeated flurries of snow. The wind at times attained a velocity of about 60 miles an hour. Before night Pingualuik was covered with a thick mantle of snow and the following morning the whole region was white. This was the first snowfall of the season, though earlier in the month all the higher elevations were, one night, lightly covered.

On the top of the ridge near camp were found old remains of stone igloos and meat-caches. The Eskimo assistants declared that these were built and occupied by the ancient Tunit—a legendary race of very thick-set, strong men who occupied Baffin island in the long ago. The foundations of these dwellings are built of large boulders to a height of 2 feet or more. Parts of the walls had fallen in, but in one or two instances the doorways with their heavy, rock lintels were well preserved. The exact nature of the interior was indeterminable owing to the accumulated humus and mat of vegetation. The foundation rocks were black with lichens. Undoubtedly they are of great age. The morning of August 28 was raw and blustery and an inch of snow still covered the ground. With a good wind behind, the narrows were reached at noon, and the west coast followed north all afternoon. The west coast is very low and the water in many places is shallow.

The northward journey was continued on August 29, camp being pitched in the evening on the site of a very old Eskimo settlement. The shore along this stretch of the coast is marked by a gravel ridge which averages about 12 feet in height. Numerous lagoons occur nearly, if not quite, severed from the lake. Many caribou, of both sexes but chiefly females accompanied by fawns, were seen on the tundra. On the whole wild life was scarce.

Continuing northwest on August 20, Nikosiving island in the entrance to Koukjuak river was reached at noon. The river was descended about 10 miles and camp made there. The river appears to average 2 to 3 feet in depth. The current is very rapid, but the surface is of smooth water. There is a low, muddy foreshore of varying width, behind which, in places, is a slight gravelly elevation; beyond is a swamp of oozy moss and innumerable ponds. The river in some places is 2 miles wide; where narrowest it measures about half a mile.

The party remained at Koukjuak river until September 5. The morning of September 1 was calm and cloudless. The temperature during the night dropped much below freezing point; the ground was frozen hard, the tundra pools were solidly frozen over, and along the edge of the river were wide reaches of thin ice. September 2 continued calm. The land is low as far as can be seen westward. A great deal of the country along the river is only a few inches above stream-level. On September 3, the sky was thickly overcast and there were spells of rain and snow. More ice had formed the night before. This day the ascent of the river was commenced and the entrance was reached at noon, September 5. The return journey southward along the west coast was continued in the afternoon. On September 9, the base camp at the east end of the lake was reached.

The collections made during the summer were cached near the base camp. The surf boat was taken to the southeast end of Amittok lake and there hauled out for the winter. Nettilling fiord was reached on September 13. The police patrol with their launch arrived on September 20 and Pangnirtung post was reached in the evening of September 21.

The remainder of 1925 was spent at Pangnirtung post, the period being one during which any extensive travelling is impracticable.

On January 9 Pangnirtung post was left and a sledge-trip to the west coast of Baffin island commenced. At the start the party consisted of the writer and four Eskimo with three dog teams and sledges. It was proposed that two of the Eskimo and one dog team should go only as far as Nettilling lake and should bring back the collections made in 1925 and cached there.

The night of January 9 was spent at the Eskimo village Ushuatuk, north of Quickstep harbour. On January 10 Bon Accord was reached in spite of poor travelling conditions because of rough ice in the open part of Cumberland sound. On January 11 the Eskimo hunted for seals for dog food. On January 12, camp was made 30 miles up Kaggilartung fiord on the east coast opposite the mountain valley which gives access to Tarionnittuk lake. This lake is not indicated on maps, though it is of considerable area. The natives say it discharges through a narrow gorge not far north of Tornait bay. It is impossible to reach the lake by following the river because the tidal currents keep the gorge open from wall to wall. The lake is very little above sea-level, but is said to be salty only near the outlet. The ringed seal (*Phoca hispida*) inhabits the lake the year round. Boats can be taken to Tarionnittuk in summer through the river gorge.

On January 13 the valley leading to Tarionnittuk lake was traversed. After a quick rise of 275 feet at the valley mouth, the valley floor rises gently inland for 1½ miles between walls 300 feet high. Two miles inland the valley floor is 350 feet above the sea, and a little farther, the divide is crossed at an altitude of 400 feet. From the divide a steep slope leads down to the north part of Tarionnittuk lake. On reaching the lake, the northern shore was followed. The bordering country is rugged, the hills are about 500 feet high. The lake, from where it was entered upon, reached far southeast.

The temperature on January 9 and succeeding days ranged between 30 and 36 degrees below zero, but on January 13 it sank below 42 degrees.

On January 14 the journey was continued westward up an arm of the lake for 5 miles. There a valley on the south side was entered, as it appeared to offer a route to Nettilling fiord. The lake continues beyond this point for 3 or 4 miles as a narrow bay surrounded by high hills. After a half mile gentle ascent a small lake trending southeast was reached. From this a valley was followed a few hundred yards to a small, narrow lake running east and west. From the south side of this a narrow stream was followed a few hundred yards to a pond running southwest. A tributary to this was traversed a short distance southwest to a larger lake with a diameter of about a mile. The rise along the short streams was very little.

From the south side of the last-mentioned lake a stream 150 yards long and rising 25 feet was followed to a narrow lake a mile long and extending to the south. The snow here was deep and soft. At the south end of the lake, a valley rising steeply for 50 or 60 feet was followed south to a small lake of irregular outline. The western shore was followed to and into a westward projecting bay. From the end of the bay a steep hillside was ascended, and next a shallow valley and an easy upward slope were followed to a height of land with an approximate elevation of 600 feet above sea-level. The hills around rose only 40 or 50 feet.

From the height of land a declivity half a mile long and falling about 300 feet leads to a narrow lake $1\frac{1}{2}$ miles long and running east and west. From the east end the river draining the lake was followed for half a mile through a narrow valley with steep walls. The river in this distance falls about 150 feet, mostly in one sudden drop. The river ends in a small lake with two arms extending, respectively, to the southeast and to the west. The west arm was followed a short distance and camp made there.

On January 15 finding no feasible exit from the west arm, the lake was recrossed and the southeast arm followed to where a stream came in from the south. This was followed to a small lake which was crossed to a low valley leading south. After travelling along this valley for a distance of one mile, a very small stream was encountered and this was followed down to a wide bay on Nettilling fiord. The northeast shore was followed to the entrance of the bay and from there east along the coast. Camp was made about a mile from Kognung tide-hole. On January 16 the Eskimo hunted for seals at the tide-hole but secured only one.

On January 17 camp was moved to the tide-hole and a large snow house was built for use while securing the ton of seal meat needed for dog food on the trip across the interior. Nine days were spent securing the dog food. Seals were scarce and it was necessary to hunt all the tide-holes for 15 miles eastward.

On January 25 the journey was resumed and Nettilling fiord was followed westward, facing a strong wind at 32 degrees below zero. Attitukdjuan lake was reached in the evening.

On January 26 the temperature was 41 degrees below zero. A strong wind blew from the west. Nettilling lake was reached in the afternoon.

January 27 was spent in a fruitless endeavour to locate the snow-buried cache of collections left the previous autumn.

On January 28 one Eskimo and his team turned back east. The rest of the party started west across Nettilling lake. Following a bearing of 290 degrees (astronomic) and after passing through a maze of islands, an open part of the lake was entered. From there a northwest course was

followed to a gap between far distant islands. This gap was the entrance to a passage 4 miles long and running 302 degrees (astronomic). For the remainder of the day a general course of about west-northwest was followed along long passages among islands and across intervening open stretches, some of which extended long distances northwards as bays in the mainland. The country is very low and seems to fall away to the north where it does not rise above 30 or 40 feet.

On January 29 a course of 290 degrees (astronomic) was followed so as to strike across the lake. As the mainland receded, the islands became smaller and more and more widely scattered. At a distance of 18 miles, the last islands were passed. Camp was made on the lake 21½ miles from the last camp site.

On January 30, the westerly course was continued and in the afternoon the western shore of the lake was reached at a place thought to lie north of Koukjuak river.

On January 31 the westward journey was continued, following a course of 290 degrees. The land continued flat and except for the presence here and there of stalks of grass projecting above the snow, the impression was as if the route still lay over the ice-covered lake. Towards noon, higher land was visible ahead; this was a range of hills seen from Koukjuak river the previous autumn. By afternoon the low outskirts of the hills, rising almost imperceptibly from the tundra, were reached. The hills proved to be about 30 feet high and gently rolling. Their upper parts were swept nearly free of snow. The route followed led across a part of the edge of the "hills", the boundary of which runs west-northwest. Camp was made on the tundra and here all supplies, except those required for a five day trip, were cached.

On February 1 the westward journey was continued with the lightened loads. In the course of a couple of miles a southward projecting spur of the "hills" was crossed. Beyond this the edge of the hills turned north and the course continued across the flat tundra. Towards evening, the dark cloud of vapour hanging over the open water of Foxe basin was visible. Camp was made a short distance from the seashore.

On February 2 the coast was found to run northeast in one direction and southeast in the other. It was bordered by a wide tidal flat packed with broken ice resting on mud. To the south and southeast a line of vapour extended inland, probably indicating the course of the lower part of Koukjuak river which is reported to have a swift current. Back from the shore the land rises very slowly.

As a result of the journey, it appears that Foxe Basin coast in about latitude 67 degrees lies, approximately, at 73 degrees west longitude instead of at 75 degrees as hitherto represented on maps. From the east end of Nettilling lake to Foxe basin, the distance is about 110 miles along a bearing of 295 degrees. Nettilling lake is about half the size it has been represented to be.

The shore was followed northeast for 5 miles. About 6 miles ahead, what appeared to be low hills were seen. They may be a continuation of those crossed inland. The night of February 2 was spent in the camp of February 1.

On February 3 the return trip was commenced. Nettilling lake was reached in the afternoon of February 4 and the shore followed north. The lake shore is bordered by gravel ridges rising to 15 to 20 feet.

On February 5 the west shore was followed north to the northwest corner of the lake. The shoreline is very regular without prominent points or embayments. The land along the lake is low, few of the ridges exceed 30 feet in height, but some distance north there appear inland bluffs and high land rising perhaps 100 to 200 feet and continuing to the northwest. At the northwest corner of the lake Precambrian granitic rocks outcrop. Similar rocks occur along the north shore and were observed, in the summer of 1925, along the south shore as far west as the mouth of Amadjuak river. No rock outcrops were seen along the west shore either in 1925 or 1926.

According to the Eskimo, it is possible to cross in a day from the head of the lake to Foxe basin, the intervening distance being much shorter than farther south.

On February 6 the traverse of the north shore commenced. A general southwesterly course was followed. The shoreline is indented by many bays and fringed with numerous low islands. The country inland in a short distance rises rather abruptly to an uneven tableland averaging about 200 feet in height.

On February 7 the general course followed was a little west of south. The land to the east continued to be low. The shoreline is indented by deep, crooked bays, and islands are numerous.

Early on the morning of February 8 the trail made when travelling west was struck. It was followed west to the cache at the east head of the lake. On February 9, the head of Nettilling fiord was reached. The following few days were partly spent hunting seals for dog food and in descending Nettilling fiord as far as the entrance to Kangertlukjuak fiord which was reached at midday February 13. The head of the fiord was reached in mid-afternoon and a short valley at its head was followed to a lake-like body, one-quarter mile long, into which the sea flows at spring tides. A stream course entering the northern end was followed to a lake a mile long and lying at an elevation of 30 feet above sea-level. From this lake the route passes northward from the middle of the lake, up the slopes of a ridge 400 feet high and down its northern slope to a valley into which a river enters from the west through a canyon. Camp was made some distance down the valley. The surrounding hills do not rise more than 400 or 500 feet.

On February 14 the river course was followed downward. In a short distance it expands into a lake 2 miles long and a mile beyond empties into Tornait bay. The Eskimo encampment at Bon Accord was reached in the afternoon. On February 15 the trip was ended at Pangnirtung post.

On March 5 a third journey to Nettilling lake was commenced. The objectives were to recover the collections made during the summer of 1925, but left there in a cache; to bring out to Nettilling fiord the surf boat; and to establish a cache of supplies for further work. The party, in addition to the writer, consisted of four Eskimo and was provided with three sledges and dog teams. On March 19, after being stormbound for several days and spending parts of days securing seals for dog food, the head of Nettilling fiord was passed and Amittok lake reached where the surf boat had been hauled out the previous year. On March 21, the trip was continued to Nettilling lake. On this day the morning temperature was 10 degrees below zero, at noon the temperature rose to 4 degrees above zero and rocks with southern exposures became glazed with ice.

On March 22 the writer with one Eskimo started with a load of seal meat. In the evening of March 23, the seal meat was cached for future use as dog food, at a place a few miles east of the mouth of Amadjuak river. The following day the return trip was commenced and the base camp at the east end of the lake was reached in the evening of March 25. On the way, a hind quarter of caribou meat was secured from a small band of Eskimo. With the exception of an occasional hare and some seal liver, the writer had been without fresh meat for several months. On the various winter trips the meat used was buffalo pemmican and beans, cooked together and frozen in cubes. For use, this ration only needs heating over a gasoline-burning stove.

The Eskimo who had remained at the base camp had succeeded in locating, beneath the deep snow, the skins and other collections cached in 1925. On March 26, everything was moved back to Amittok lake to the camp beside the boat. On the following day the boat and outfit were hauled to Nettilling fiord. The following days the journey down Nettilling fiord was continued, but on March 31 at a place a few miles east of Kangertlukjuak fiord, the ice was so rough that no progress could be made with the sleds laden with the boat. With much difficulty, the boat was hauled to the shore and left there above high tide mark. Pangnirtung post was reached in the evening of April 1.

On April 11, Pangnirtung post was left and a trip commenced to Amadjuak bay on Hudson strait. The writer was accompanied by two Eskimo with two dog teams. Nettilling lake was reached April 15 after being stormbound for one day. Camp was made at the mouth of Amadjuak river at the southwest corner of Nettilling lake, in the evening of April 17.

On April 18, while one team brought forward the seal meat cached in March, some miles to the east, the writer made a side trip southwest to Pingualuik hill. It was reached at about noon after travelling about 9 miles. The approach is over gently rising slopes succeeded by a series of benches which rise to a general altitude of 150 feet above the tundra. Pingualuik and adjacent hills rise from the rolling tableland with sharp slopes, to heights of from 175 to 300 feet. They appear to be morainic, composed of gravel, principally limestone, with a slight matrix of sand and clay, and many boulders of limestone and granite.

To the west and north of Pingualuik hill, a low, gently rolling plain extends as far as eye can see. It is sparsely covered with poor grasses and plants. Higher land can be seen about 25 miles south and appears to be a western extension of low hills lying between Nettilling and Amadjuak lakes. Pingualuik hill can be easily discerned at a distance of from 20 to 30 miles, even though only 300 feet in height above the lake. Its bearing from the mouth of Amadjuak river is 333 degrees magnetic.

The morning of April 19 was clear with a gentle wind from the north and a temperature of 4 degrees above zero. Two inches of fresh snow had fallen during the night. Leaving camp, Amadjuak river was followed for a mile or so. A due south course west of the winding river was then adopted. The ground is low with here and there low, rounded ridges. The snow was somewhat soft; most of it was crusted, but large areas were underlain by soft, granular snow with a thin crust, which, although supporting a man on snowshoes, gave much trouble with a heavily loaded sledge. In the early afternoon a lake about 4 miles long was reached and was

followed along its west shore to the south end. From there a river was followed southwest. The hills of granitic rocks rise here to a height of about 40 feet. Inside of a mile a small lake expansion was entered, beyond it the river, after a sharp turn to the east, bears south for approximately 3 miles with numerous open rapids on the way, then turns abruptly east and after a broad curve toward the southwest opens out into a lake about 5 miles long with an average width of a mile and trending southwest. Camp was made just before entering the lake.

On April 20 the lake was travelled to the southern end and what appeared to be a river bed was followed south-southwest to where it was lost among low hills. Proceeding southward, a long, narrow lake bearing southeast was entered and followed. The country here is rugged, though the hills are not more than about 30 feet high. They are close-set with narrow, tortuous, intervening valleys deep in snow and littered with boulders. From the lake a due south course was followed and in the evening camp was made about 36 miles south of Nettilling lake. At this point the country is more open and gently rolling, the ridges wider spaced, and the valley broad and shallow. This bettered travelling, which had been slow and difficult over the rock-strewn ridges farther north. This section of country appears to be entirely destitute of game. In the two days' journey not a single track was observed.

On April 21 the morning temperature was 2 degrees below zero. After travelling 13 miles south over gently rolling land, the north end of Amadjuak lake was seen in the distance, with dark walls on the west afterwards found to be limestone cliffs. Nearby to the southwest lay two conical hills. Camp was made 4 miles south of them.

On April 22, after travelling 2 miles about southwest, the west shore of Amadjuak lake was reached. The land is low and gradually falls to lake-level. Nine miles of good travelling south along the lake brought the party to the escarpment seen the day before and which proved to be of flat-lying Palæozoic limestone rising with a cliff face varying from 25 to 60 feet in height. The face is nearly a mile long. Other cliffs of varying lengths occur along the coast. The limestone is exposed, also, in ledges of a few feet in many places along the low valleys. The land back from the lake rises in long, gently rolling ridges to a height of 100 feet or more. There were collected from the limestone a few concretionary-like nodules and some fossils since determined by Miss A. E. Wilson to be poorly preserved bryozoa and in one case *Illaenus* sp. indicative of an Upper Ordovician or Silurian age.

In the afternoon of April 22 a southeast course over the lake and away from the shore was followed for 10 miles and camp made there. The low northern coast many miles away and trending southeast was visible from camp, but no land could be seen to the east. The Eskimo say that the lake extends a long distance in that direction. Mr. W. T. Lopp, who also was in this district in April, 1925, states that a deep bay in the northeast coast extends towards Cumberland sound for perhaps 50 or 60 miles. According to Major T. L. Burwash, who in the spring of 1924 had made the journey from Cumberland sound to Amadjuak bay, there is at the foot of the lake a deep bay extending many miles northwest and from whose head Amadjuak river flows northward.

On April 23, a course about south-southwest was followed for 16 miles to a low point on the east shore. Flat-lying limestone forms a low face

on the point. The land to the east is very low. From the point a southwest course was followed for 10 miles to a narrow point projecting eastward from the west lake shore. The point is of Precambrian granite. The country to the south and southwest is broken and some hills rise to heights of 200 or 300 feet. Ten miles farther south the head of the lake was reached and camp was made there.

On April 24, leaving Amadjuak lake, a course of 210 degrees (astronomic) and 8 miles long was followed across the tundra to Mingo lake. A long, narrow bay stretches northeast, out of which Mingo river discharges to Amadjuak lake. The first spur of Mingo mountains lies directly to the west and marks the west and south sides of the lake. The north and east shores lie in low, rolling country that stretches between Amadjuak lake and the base of the Mingo range. Mingo lake lies about 330 feet above sea-level. It is about 16 miles long. Its south edge is bordered by abruptly rising hills about 700 feet high. The rocks are Precambrian granites. The route to Amadjuak bay passes south through these hills by way of a deep valley down which a river flows to Mingo lake. Camp was made at the south end of the larger of several lakes draining by this river.

A gale with snow prevented travel on April 25. It was noticeable there was much more snow on Amadjuak and Mingo lakes than on Nettilling lake.

On April 26, the journey was resumed up the valley and past several small lakes to the divide at a height of 530 feet above sea-level. The land beyond falls away 200 feet, in a distance of one mile, to a narrow lake 4 miles long and running a little west of south. The country is broken, but the hills appear lower than farther north. The route follows a tortuous stream running from the south end of the lake to a second lake, about 2 miles long and lying at an elevation of 320 feet. A deep bay extends southwest, and from it, so it is said, Alice river runs to Gilbert lake 8 miles south. The route followed by the writer left the lake, however, at the southeastern corner and ascended a stream for 2 miles in a southeasterly direction; there passed up a short slope and then down a stream course with a 200-foot drop to McGee lake, near its northern end. The height of McGee above the sea is estimated at 100 feet. The hills about McGee rise to heights of from 200 to 500 feet. McGee lake is 6 miles long and extends 210 degrees (astronomic). It is connected with Gilbert lake by a very short stream having a fall of 10 feet. Gilbert lake lies north and south, and has a length of about 4 miles. A short stream connects it with Stevenson lake 15 feet lower, nearly 4 miles long, and running north and south. Stevenson lake discharges by a short stream into Boas lake, which lies about 30 feet above sea-level, has a trend of 170 degrees, and is approximately 6 miles long. It discharges into Amadjuak bay by a rapid stream flowing through a narrow, rocky course a half mile long. The surrounding hills have an average altitude of between 300 and 400 feet.

The Hudson's Bay Company's post on Amadjuak bay was reached in the evening of April 26. On April 29 the two Eskimo, who with their dog teams had accompanied the writer, set out on their return journey to Cumberland sound.

Through the kindness of Mr. Wark, the writer was finally supplied with two sleds and fourteen dogs in addition to the seven brought from Pangnirtung. On May 14, accompanied by two Eskimo, Amadjuak bay

was left for cape Dorset. The temperature was now as high as 22 degrees above zero. Progress was slow and camp was made at the entrance to Amadjuak bay, 18 miles from the post. The country bordering the coast is rugged, though few hills exceed 700 feet in height.

During the next two days, progress was slow. A tent was pitched at night instead of building an igloo. The temperature during day time ranged between 30 and 34 degrees. The Eskimo encampment on Tikoot islands, not far west of Jubilee and Diamond islands, was reached in the evening of May 16. It being learnt that the sea was open westward it was decided to make use of a large whale boat which, fortunately, was available at Tikoot. On May 17, sleds, dogs, and equipment were loaded on the boat, and, with two additional men, the journey westward was continued. Though considerable trouble was caused by floating ice and tidal currents, good progress was made.

On May 18, after continuing in the boat for some distance, a landing was made on the ice and the boat hauled up on an island where camp was pitched.

On May 19 the journey was continued by sledge, the two Tikoot Eskimo accompanying the party. A blizzard arising, it was necessary to camp early in the day. On May 20 a start was made at 3 a.m. (the sun rose not long after midnight). In the forenoon the Hudson's Bay Company's post at cape Dorset was reached.

Through the kindness of Mr. Aitken, postmaster, quarters were provided in the post.

The morning temperatures for the last ten days of May ranged between 20 and 58 degrees. Most days were sunny and the snow began to melt rapidly. May 29th was gloomy with squalls of rain; the temperature, 24 degrees. The following forenoon was clear and the temperature 58 degrees.

During the first week of June bright days prevailed, with temperatures between 34 and 58 degrees. The snow melted rapidly. The only sign of budding vegetation was the small, woolly catkins of the dwarf Arctic willow. Snow still lay deep on the land, except for small, detached areas of brown upland, or tundra valley.

The first bloom of that earliest of Arctic flowers, the purple saxifrage (*Saxifraga oppositifolia*) was observed on June 6. Inland the date is earlier. On this same day the first butterfly was seen.

June 12 was thickly overcast, with squalls of snow; the temperature was 38 degrees. For a week the weather remained overcast, with many gales and also squalls of snow, sleet, and rain.

Islands are very numerous along the coast, but terminate to the west in the group known as Fox islands. Most of them are low and rounded. The mainland north of Fox islands is a land of gently rolling hills seldom exceeding 100 feet in height, but in the vicinity of cape Dorset the general level abruptly rises. This is Kingnait to the natives—the land of big hills. According to information received from the Eskimo, this hilly tract occupies only the southwestern corner of Foxe land. In places the hills rise abruptly from the sea to about 800 to 1,000 feet and are characterized by steep slopes, sheer cliffs, and deep, narrow valleys. At a little height above sea-level the region is poor in vegetation, or completely barren. The coast is marked by innumerable bays and deep, narrow fiords. Cape Dorset proper is separated from the mainland at high tide by four or five narrow channels. At low tide, bars connect these several islands.

On June 19 a boat trip to Fox islands was commenced. A large whale boat was hired from the Hudson's Bay Company, and two Eskimo with their wives were engaged as a crew. At this date the open water at the post was about a mile from shore. The outermost island of the Fox group was reached in the evening. The rest of the month was spent among the islands. Cape Dorset post was returned to on July 1. The fringe of ice was now only half a mile broad. By ten days later the whole land floe had disappeared.

The first part of July was spent at the post and its vicinity. In the middle of the month a trip was made to a series of lakes about 7 miles north of the post. There are at least four lakes; the upper two were seen from a distance only, the lower two were given the name, Aitken lakes. The lakes are discharged by Elik river, which is about half a mile long and falls 30 feet in that distance. The lakes and stream lie in a valley bounded by hills rising from 500 to 600 feet.

July 24 to July 27 were spent making a boat trip west to Bowdoin harbour and return. The hills about Bowdoin harbour rise to heights of from 200 to 500 feet.

On July 28 Cape Dorset post was left and travelling in a gasoline launch, the post at Amadjuak bay was reached in the morning of July 29.

On August 11 the S.S. *Nascopie* arrived at Amadjuak bay. Passage was secured on her as far as port Burwell, which was reached August 23. The S.S. *Bayrupert* reached port Burwell on September 12 and left, with the writer aboard, on September 14. St. Johns, Newfoundland, was reached September 30.

CHAPTER II

FAUNA

Mammals

Knowledge of the animal life of Baffin island is limited, although the island has been visited by many explorers and whalers. The comparative dearth of information is due, in part, to the fact that former explorers, with one or two exceptions, merely cruised along the coasts or if they wintered in the region, remained confined to their winter quarters.

Many of the marine mammals are imperfectly known. The available information is, in the main, compounded from isolated observations of different observers. This is particularly true in the case of the cetacea, various species of which have become scarce, and the information about them has been largely furnished by whalers whose statements are not always reliable. Direct information obtained by the present writer relates mainly to the white porpoise or "white whale", *Delphinapterus leucas*. Information bearing on the other cetacea has been drawn from Low[1] (1906, pp. 258-276), Kumlien (1879, pp. 64-67), and Hantzsch (1913, pp. 141-160). Whaling was active in Kumlien's day, declining at the time of Low's visit, and has now ended except as carried on by the Hudson's Bay Company in the cases of the white porpoise and the narwhal.

In the following list no reference is made to the musk-ox, *Ovibos moschatus*. The animal does not occur on Baffin island and, so far as known, never did so. Its presence was assumed by earlier writers because utensils of musk-ox horn were possessed by Eskimo of various northern and some southern localities. The horn material, however, was obtained by, for instance, hunting parties crossing to Devon island where musk-oxen were once comparatively common. The animals live, or did live, on Greenland, Ellesmere, Devon, Melville, and other islands, and once were numerous on the mainland northwest of Hudson bay. It is strange that of the major islands of the Arctic archipelago, only Baffin island, the largest but one and with a climate more favourable than some, has not been occupied by musk-oxen.

While on the Canadian Arctic Expedition of 1923, the writer was told by Mr. William Duval that Eskimo on the west coast of Baffin island had killed a silver-grey animal somewhat smaller than a muskrat and with a naked, round tail. The Eskimo name the animal, "sicsee". What animal this may be, is not apparent; probably the hearsay description is inaccurate.

Corporal F. McInnes, who has spent several years in the Arctic service, states that the Eskimo at Igloolik (an island off the northeast shore of Melville peninsula) told him of an animal having food pouches in the cheeks and otherwise answering to the description of a ground squirrel. This, undoubtedly, is *Citellus p. parryii* which does not appear to have been previously recorded nearly so far north. Since Fury and Hecla

[1]The date following an author's name will enable the reader to find the complete bibliographic reference in the list of papers quoted at the end of the chapter, page 122.

strait, separating Baffin island from Melville peninsula, is narrow it is not unlikely that the animal occurs on Baffin island in the vicinity of the strait.

The following annotated list of 25 species records all the mammals known to occur on Baffin island and in adjacent seas. The nomenclature followed is that adopted by Miller (1924). The identification and study of specimens, and the preparation of the following list, were made with the aid and counsel of R. M. Anderson.

1. **Thalarctos maritimus maritimus** (Phipps). POLAR BEAR.

Eskimo: *Nannok*; *Nennok*, according to Hantzsch.

Polar bears occur on all coasts of Baffin island and in largest numbers on the east, north, and northwest coasts. They seem to be most numerous along the shores north of Cumberland gulf in the vicinity of cape Mercy, Exeter sound, and Merchants bay.

According to the Eskimo, polar bears are rarely present in winter along the east coast and occur in largest numbers in April when the males, after spending the winter hunting seals on the ice of Baffin bay and Davis strait, approach the shores and the females with their cubs leave their hibernating quarters. The Merchants Bay Eskimo state that adult bears and cubs are fairly common every spring in that region and increase in numbers southward. Cape Mercy is a great bear resort as the animals coming south on the drifting ice during spring and early summer land thereabouts and afterwards slowly wander northwards along the coast and over the pack-ice. The 1925 Canadian Arctic Expedition observed, in July, a number of bears on moving ice-fields off the cape.

A number of years ago, a party of four Eskimo, during three weeks in March, shot fourteen bears in Exeter sound. On another occasion, during one week in March, three hunters secured thirteen bears. The natives assert that every March offers about the same opportunities. In 1924, in Merchants bay, the first adult male was shot on March 19, near Durban island; on March 21, two cubs only a few days old were captured; on March 27, a cub was taken in a snow den on Padloping island; on September 30, an adult and a well-grown juvenile were shot; and on November 13, five adult bears were killed. The Eskimo state that every year, during October and November, bears may be seen frequenting the shifting ice-floes, but that when the ice becomes fixed the bears travel seaward to where open water may be found and are rarely if ever observed in Merchants bay during December, January, and February.

Kumlien (1879, p. 48) writes:

"It is a rare occurrence to find a bear any distance up Cumberland sound, they are common about cape Mercy, Shaumeer (Saumia) and Nugumeute, but seldom stray above Niantilic, or the Kekerten islands. Below Niantilic, on the southern side of Bear sound, in the vicinity of what the Eskimo call Okaglik and Kokaluyah, they are quite plenty. Many are captured here every year, especially in the spring, by the Eskimo, who fearlessly attack them in their frail kyacks, but are afraid of them on the ice or land. From Nugumeute to Hudson straits they appear to be even more plenty, and westward, in the northern waters of Hudson bay, whalemen often procure seventy or more skins in a season."

Hantzsch (1913, p. 155) recorded the presence of a bear in the vicinity of Kekerten islands in 1908. Though bears rarely proceed any distance up Cumberland gulf, and of late years have been exceedingly scarce towards the head of the gulf, a small male bear was killed on August 26, 1924, in

Bear sound, south of Blacklead island, and on October 3, 1924, trails of two bears were seen in the new snow on Aulatsivik peninsula in Pangnirtung fiord, heading north up the fiord.

At Pangnirtung in early April, 1926, two cub bear skins were obtained from an Eskimo who said he killed the animals late in March, near cape Mercy. These skins (Nos. 6230 and 6231) are approximately 32 inches long from nose to tail. The pelage is a creamy white, slightly lighter below. One skin exhibits, in good light, a pale brown tinge over the dorsal region, with the tips of the guard hairs somewhat dusky. The hair over the back averages about 60 mm. in length.

Along the northern coasts of Baffin island, polar bears are only occasionally met with in Eclipse sound. Corporal F. McInnes states[1] that during the spring months bears are found in Navy Board inlet. On the 1923 Canadian Arctic Expedition, many bears were observed during the middle of August, in Lancaster sound. On August 15, six were seen on an ice-field north of Admiralty inlet; later the same day, several cubs accompanying adults were seen, and individual bears were seen at intervals throughout the time of voyaging on Lancaster sound, by far the best polar bear region entered during the voyage. Alfred Tremblay (1921, pp. 75-78), in March, 1911, killed several polar bears between capes York and Crawford. One of these, said to be the largest ever seen by the Eskimo, measured more than 11 feet in length from nose to tail, with a height at the shoulder of 4½ feet. Its paws were more than 13 inches long. The animal is said to have weighed about 1,800 pounds. Tremblay states that nine bears, females with their cubs, were killed by Eskimo, in April, 1913, near Button point, Bylot island; they were frequenting glaciers and had dug deep dens in the snow.

On the 1923 Arctic Expedition, a male bear, killed on August 7 in Smith sound, measured 7 feet 2 inches from nose to tail and weighed 900 pounds. Another male killed on August 12, in Glacier strait, was 7 feet long and weighed about 900 pounds.

J. C. Ross[2] in 1835 found polar bears at Port Bowen, Prince Regent inlet, on the northwest coast, and Eskimo report that a considerable number are still found along the inlet. J. T. Lavoie (1912, p. 94) stated that in March, 1911, many bears were observed in Prince Regent inlet north of cape Kater and that at one point the ice-covered strait was "literally covered with their tracks". Lavoie (1912, p. 87) states that very few polar bears were seen in the districts of Whyte inlet and Agu bay, on Fury and Hecla strait.

Along Hudson strait, polar bears occur sparingly about Resolution island and west to Big island, but are still rarer to the west. It is said that they never occur in the Amadjuak Bay district. The species is not mentioned in the list of mammals observed by the MacMillan expedition in the vicinity of cape Dorset and Bowdoin harbour (Allen and Copeland, 1924).

Eskimo annually kill a small number of bears along Foxe Channel coast, north from cape Dorset, and also on Mill, Salisbury, Nottingham, and Southampton islands. Hantzsch (1913, p. 155) states that he saw on September 23, 1910, fresh tracks of polar bear at the mouth of Koukjuak river on the Foxe Basin coast, and that he also saw bear tracks on November

[1]Personal communication.
[2]Biol. Invest. of the Athabaska-Mackenzie region, by E. A. Preble; N. A. Fauna, No. 27, p. 225 (1908).

14 in the vicinity of Koukdjitariak river farther north along the same coast. It is thus evident that polar bears occur, at least occasionally, on the flat, tundra coast of Foxe basin. That this should be so is rather unexpected, as low tide leaves bare a wide mud flat along the coast and, according to the Eskimo, seals do not frequent the waters for a long distance north and south. Over a long stretch of coast, therefore, it is likely that bears could obtain no food except an occasional lemming or shrimps stranded in shallow tidal pools.

The food of the polar bear chiefly consists of seals, especially the plentiful, widely distributed ringed seal, *Phoca hispida*. These are caught by waiting their appearance at breathing holes in the ice, by crouching at the edges of floes, or by creeping up to the animal as it sleeps on the ice. The Eskimo assert that the polar bear also catches seals and young walrus by seizing them in the water, from underneath, and dragging them onto an ice pan. It is debatable whether or not the polar bear ever attacks an adult walrus. Hantzsch (1913, p. 155) cites a case, reported to him by Eskimo, of a large bear in the vicinity of Kekerten islands, Cumberland gulf, attacking three walruses and killing a large male which he greatly tore about the head. Such cases must be rare. Bears, no doubt, kill many of the young of the ringed seal after their birth in snow chambers on the ice along the coast. Even the white fox, it is said, is able to capture young seals in the dens during late March and early April. Bears also live to some extent on lemmings and even vegetable matter. Tremblay (1921, p. 79) mentions that in early June a female bear was observed on the east coast of Bathurst island, overturning blocks of sandstone so that her cubs might secure lemmings.

2. **Mustela arctica arctica** (Merriam). ARCTIC WEASEL.
Eskimo: *Terreak.*

This animal, found on the Arctic coast and tundras from Alaska to Hudson bay, and on the Arctic islands, is, according to the writer's experience, comparatively scarce on Baffin island. In the course of the many winter journeys in Baffin island, not a single weasel trail would be seen for weeks at a time. During the two years spent on the island only four weasels were killed and but six skins secured from Eskimo. Only a comparatively small number of skins are annually received in trade by the Hudson's Bay Company from the Eskimo of Baffin island.

On August 19, 1923, two weasels were seen frequenting a lemming colony on Eskimo point, Strathcona sound, Admiralty inlet; one was carrying a lemming. At Ponds inlet several weasel skins were secured from Eskimo and the writer shot two weasels, in summer pelage, one on August 28 and the other on September 2. The following are the measurements of the two animals killed: No. 4904♂: length, 305; tail, 76; hind foot, 40. No. 4905 ♂: length, 270; tail, 73; hind foot, 38. The skins are pale brown above, slightly darker over face and down the middle of the back, and white below with a pale yellow tinge which extends to the fore and hind legs. The tip of the tail and more than half of its length are black. The under side is lighter in the brown part and inclined to be yellowish. The lips are whitish and a small white spot occurs at the posterior corner of each eye.

Between July 23 and December 31, 1924, no weasels and only two of their trails were observed. On a 400-mile sledge journey in the upper

part of Cumberland sound, in 1925, only one weasel trail was seen and only one hunter's skin was obtainable from the various Eskimo encampments. On the expedition to Nettilling lake during the five months of spring, summer, and autumn of 1925, not a single weasel was seen. On December 7, 1925, a specimen was secured in Pangnirtung fiord. This specimen (No. 6118 ♂) measured: length, 314; tail, 76; hind foot, 46. On December 29, 1925, another specimen (No. 6123 ♂) was secured in the same district; it measured: length, 325; tail, 93; hind foot, 44. The tail to the end of the pencil measures in the case of specimen No. 6118, 150 mm., of which 100 mm. are black, and in the case of specimen No. 6123, 262 mm., of which 120 mm. are black. Both specimens are in winter pelage of white. On No. 6118 there is no trace of the yellowish tinge on the underparts such as characterizes some more southern species in winter pelage. On No. 6123 there is a very pale lemon-yellow cast on the inside of the front legs and over part of the hind legs and the base of the tail.

On a journey from Pangnirtung to Foxe basin, via Nettilling lake, and return, in January and February, 1926, only two weasel trails were seen: one on the height of land between Kaggilartung and Nettilling fiords, and the other among the low islands in the east end of Nettilling lake. On a journey extending from March 4 to April 1, 1926, into the Nettilling Lake region, only two weasel trails were seen. On a traverse in April, 1926, from Cumberland sound to Amadjuak bay, only one weasel trail was seen. During the spring and summer of 1926, spent on the south coast of Baffin island between Amadjuak bay and King cape, but mainly at cape Dorset, not a single weasel was observed.

Kumlien, during the winter spent in Cumberland gulf, procured two specimens from Kingnait fiord. Kumlien (1879, p. 53) writes: "Appears to follow the lemming in their migrations; is nowhere abundant in Cumberland, and even unknown to some of the Eskimos". The weasel is the animal listed by Hantzsch as *Putorius cicognanii*. He failed to secure any specimens during the winter of 1909-10 in Cumberland sound. In November, 1910, he saw tracks of the animal, usually in the rocky highlands in the vicinity of Foxe basin, far north of Koukjuak river. During December, 1910, trails were rarely met with in the vicinity of the mouth of Koukdjitariak river, Foxe basin. Writing of the same locality during January, 1911, Hantzsch (1913, pp. 154-155) states:

> "During this month no tracks of the animal were observed by my people. The lack of ptarmigan and the exceptionally rare occurrence of hares may have caused migration of the individuals existing here earlier. Indeed the snow is everywhere drifted so hard and frozen, that tracks of such a light animal could seldom leave behind an impression."

In February and March, 1911, according to Hantzsch, conditions remained the same and signs of weasels were rarely seen.

3. Gulo luscus (Linnaeus). WOLVERINE.

Eskimo: *Kubbing.*

The wolverine is the rarest mammal inhabiting Baffin island. Most Eskimo have not seen the animal alive or dead. Kumlien (1879, p. 71) wrote: "among the Eskimo there is mention of an animal that from their descriptions and drawings seems to be a *Gulo*". As a result of inquiries made in 1923, it was learned that in 1922 the skin of a wolverine was traded by an Eskimo, at the Hudson's Bay Company's post, Ponds inlet. Mr. Georges Hérodier, then manager of the post, stated that the skin was

undoubtedly of a wolverine. Mr. William Duval, for forty years a resident of Cumberland sound, asserted positively that the wolverine occurred at various places on Baffin island. Mr. J. H. Nichols, manager of the Hudson's Bay Company's post, Pangnirtung, stated that in the early winter of 1922 a wolverine skin was traded by an Eskimo from Imigen. This skin, unquestionably, was of a wolverine. In 1924, the writer talked with the Eskimo from Imigen who shot the wolverine and with several other natives who saw the animal, the first of the species seen by them. At first the Eskimo did not know what the animal was, but after much consultation and comparing of points with the older people, they agreed it was *Kubbing*, the Eskimo name for wolverine.

The writer on April 22, 1926, saw on a hillside at the south end of Amadjuak lake, tracks of the wolverine. The two Eskimo of the party agreed that the tracks could have been made only by the "*Kubbing.*" This was the first wolverine trail they had seen.

The above is all the available information bearing on the presence of *Gulo luscus* on Baffin island.

4. Vulpes fulva (Desmarest). RED FOX.

John Hayward of the Hudson's Bay Company informed the writer that a few years ago, a black fox was captured by an Eskimo at cape Dorset. The animal must have strayed there either on drifting ice from Ungava, in which case it might possibly be *Vulpes rubricosa bangsi* Merriam, the Labrador red fox, or by way of Southampton island from Keewatin, in which case the animal undoubtedly would be *Vulpes fulva*. Mr. Hayward said that at least two red foxes have been taken on the south coast of Baffin island. Sergeant Wight, R.C.M.P., is under the impression that either a red or a "cross" fox was taken in recent years in the Lake Harbour region. The following notes were made by F. Milton, Amadjuak Hudson's Bay Company's post: "March 28, 1923, a red fox traded at the post. January 31, 1924, Red fox skin traded at the post."

It is evident that the accidental occurrence of the red fox on Baffin island is a comparatively common incident.

5. Alopex lagopus innuitus (Merriam). ARCTIC FOX, WHITE FOX, BLUE FOX.
Eskimo: *Terriginiak; Terrienniak*, according to Hantzsch.

Periodically the Arctic fox is comparatively abundant on Baffin island and large numbers are traded at the Hudson's Bay Company's posts.

Not a single live fox was observed by members of the 1923 Canadian Arctic Expedition. A fair number, however, were trapped and traded at the various posts during the winter of 1922-23. In August, 1923, the writer saw numerous fox trails several miles inland of Strathcona sound. Foxes were reported to be rather common at Ponds inlet and Pangnirtung fiord. At the latter place, the blue variety was said to constitute about 5 per cent of the total catch.

During 1924-25, foxes were decidedly scarce throughout Cumberland Sound region. In the vicinity of Pangnirtung fiord, comparatively few trails were seen from October until December. In early December trails were observed to be fairly common in isolated areas on the mountains bordering Koukdlik river, Pangnirtung fiord. Probably no more than twelve fox trails were seen in January, 1925, during a 400-mile sledge

journey about the head of Cumberland sound. At this time, at two Hudson's Bay Company's outposts—Kingua and Nettilling—one post had only seven fox skins and the other only five, after nearly three months of trapping. On January 25, 1925, the writer trapped a blue fox and a white fox. They measured and weighed as follows: No. 5727, ♂: length, 820; tail, 280; hind foot, 140; weight, 6 pounds. No. 5728, ♀: length, 810; tail, 275; hind foot, 140; weight, 5 pounds. To the close of January, blue foxes formed 25 per cent of the foxes caught at Pangnirtung post.

In February and March, 1925, the scarcity of foxes was evident during a trip to the east coast of Baffin island. Between February 7 and 12, while traversing Pangnirtung pass, not a single fox trail was seen. Exceedingly few foxes were on Broughton island; a few were found in Meartajene fiord a short distance south, but they were almost absent from Kevetuk district and Merchants Bay region. One of the best hunters at Padle, in Merchants bay, had failed, up to late February, to catch a single fox. Two other hunters had one each. The Eskimo at Padle up to this date had caught only fourteen foxes, five of which were blue foxes. One hunter who had caught only one fox, said that in the winter of 1922-23, he trapped forty-six foxes. A number of fox trails were seen in early March, 1925, in Kingnait pass, more than in any other locality visited during the winter. A live fox was seen on March 10, on Kingnait fiord.

In the spring of 1925, fox trails were seen at intervals toward the head of Nettilling fiord and less commonly about the chain of lakes along the route to Nettilling lake. Throughout the greater part of May, fox trails were observed to be common in the vicinity of Isoa on Nettilling lake. On September 4, 1925, the writer shot a young fox on Koukjuak river. This specimen, No. 6036, ♂, measures: length, 585; tail, 190; foot, 110. A strip along the back from crown of head to tip of tail is a rich brown, the same colour also extends down the fronts of the legs. The face and throat are a brownish grey; the sides and underparts, creamy white, lighter below.

Early in the 1925 season, fox signs were fairly common and a large catch was anticipated. J. Hayward, of the Hudson's Bay Company, saw many trails near American harbour, but none around Bon Accord on the north shore. However, despite the favourable indications, from the beginning of the trapping season to December 18, only ten foxes were traded at Pangnirtung post; of these only one was a blue fox. On December 18 a fox trail was seen to cross the top of Ptarmigan mountain, near the post, at an altitude of about 2,300 feet. As there were no signs of lemmings on the mountain top it was concluded that the animal was travelling across country by a direct route.

In January and February, 1926, on a journey from Cumberland sound to Foxe basin and return, a few fox trails were observed in the hilly country east of Nettilling lake and were most noticeable along Nettilling fiord. Trails were seen at very wide intervals in the island district of Nettilling lake; only a few were crossed on the tundra, between the lake and Foxe basin, although according to the writer's observations the fox and the lemming are the only animals living on the tundra during the winter. Along the hilly, northern shore of Nettilling lake, a few trails were noted.

In March, 1926, during a 28-day trip to Nettilling lake, numerous fox trails were seen; they were much more common along the fiords of Cumberland sound than inland. On April 18 they were observed to be

common on the tundra southwest of the mouth of Amadjuak river, Nettilling lake. Along the route south to Amadjuak bay, Hudson strait, fox signs were scarce in the broken country south to Amadjuak lake, but several trails were seen in the vicinity of Amadjuak and Mingo lakes.

Natives reported that in August, 1925, foxes were fairly numerous on the south side of Amadjuak lake where they had seen burrows in sandy ground near Mingo river. Eskimo reported that late in the summer of 1925 there were abundant signs of foxes about the head of Frobisher bay. Eskimo also said that fox signs were plentiful January 1 to 5, 1925, at Markham bay, Hudson strait, but became scarcer after that time; that not until late in January were fox signs seen on the outside islands in Amadjuak bay; and that in late January, foxes were scarce inland, but on February 26 and continuing into March, trails were numerous on the lakes. It is said that southerly winds bring foxes across Hudson strait to the southern coast of Baffin island. Eskimo reported that in early June, 1922, foxes, still in winter fur, were plentiful around Mingo lake. The 1921-22 season is said to have been a big fox year in at least south Baffin island and to have occurred out of the regular cycle.

J. C. Ross (1835, pp. 92-93) recorded that foxes were taken at Port Bowen in the winter of 1824-25. Kumlien (1879, p. 49) reported Arctic foxes to be common in 1877-78 in suitable localities on both sides of Cumberland sound. Hantzsch (1913, pp. 153-4) stated that during the winter of 1909-10, between one hundred and fifty and two hundred foxes were caught in Cumberland sound and that only three were blue foxes. During May and June, 1910, he saw numerous tracks everywhere along his route from Blacklead island to Nettilling lake. Throughout October he found fox tracks everywhere he went along Foxe Basin coast, but by January foxes were no longer numerous in the vicinity of Koukdjitariak river and in March they were rare. Lavoie (1912, p. 103) reported the existence, in April, 1911, of numerous fox tracks near Whyte inlet. Tremblay (1921, p. 225) was told by Eskimo in 1913 that foxes were plentiful in Patricia Lake region north of Maxwell Murray bay. Allen and Copeland (1924) state that forty fox skulls were collected by the MacMillan expedition in 1921-22, at cape Dorset, Bowdoin harbour, and elsewhere.

The Arctic fox lives largely on lemmings throughout the year. These they easily catch during the summer. In winter they dig through the snow for them or catch them as they wander on the surface. Ptarmigan may constitute part of the diet and, rarely, the Arctic hare, especially the young. In winter, foxes are often very thin, thus indicating their difficulty of making a living during this season. The writer noticed that toward spring, the foxes frequent the tide-formed ice crack along the coasts, possibly for the purpose of eating the seaweed which here and there has been brought to the surface. During March and April, the foxes capture very many of the helpless young of the ringed seal in their snow dens on the ice. Kumlien (1879, p. 50) writes:

"I have often found the remains of the (young) seals so well skinned and cleaned that it seems impossible it could have been done by an animal. They begin by biting the skin around the mouth, and drawing the entire animal through the aperture and turning the skin inside out; even the flippers are drawn through to the nails, and every vestige of the meat removed. Nor is the skin bitten in the least, although it is finely cleaned of all fat. But the most remarkable part of all is, that the skeleton remains intact and finely cleaned. When the Eskimo find such skins they always make use of them, as they are quite as well skinned as if they had done it themselves. The white variety appears to be

much more abundant than the blue. According to the Eskimo the two varieties interbreed, and the young are sometimes dark and both parents white, and vice versa. During the winter months they congregate in considerable numbers about any carcass, especially a whale, and get themselves thoroughly begrimed with grease".

The foxes are said to follow the polar bears in order to benefit by anything remaining of the seals killed by the bears.

The Arctic fox, like other foxes, has the habit of mounting knolls, and crossing and running along low ridges. They are surprisingly unsuspicious and will blunder into an unconcealed trap about as readily as a hare. At times they are very bold, especially in winter. Kumlien (1879, p. 49) writes:

"During the winter they often fare badly, and become quite impudent when pressed by hunger, even coming upon the schooner's decks at night. They were a source of annoyance as well as amusement to us around our observatory. We were not the fortunate possessors of enough glass to let the light in through the wall of snow that surrounded our tent, so we had recourse to oiled sheeting stretched over the aperture, borrowing the idea from the Eskimo window of seal intestine. But as we had no dogs about our snowhouse, the foxes became so bold during the long cold nights of winter that they often came and sat around the stovepipe that projected through the roof of the hut. Our cloth windows had to be repaired very often, as they would tear them down and eat them for the oil the cloth contained."

Hantzsch (1913, p. 153) tells of a fox entering his camp at Nettilling lake on June 11, 1910, coming quite close to the tents and tracking some young dogs kept in a tent-kennel. David Wark, manager of the Hudson's Bay Company's post at Amadjuak bay, informed the writer that on June 8, 1922, a fox entered a dog kennel near the post and ran off with a very small pup.

The change from winter to summer coat occurs in early June. The animals begin turning white in late September. The winter pelage is complete between October 10 and 15, except, perhaps, in the case of a comparatively few individuals.

The proportion of blue foxes increases northward and, it is said, in northern Ellesmere and Greenland the blue variety predominates.

Forty fox skulls from southern Baffin island were brought back by the MacMillan expedition and were reported upon by Allen and Copeland (1924, pp. 7-13) as follows:

"Those of the same sex show more or less variation in size, length of nasals, and degree of flatness of the forehead. They resemble the Point Barron and northern Alaska specimens in their slightly shorter nasals and blunter, thickened postorbital processes as compared with the Labrador form, *ungava*. As a rule, however, the lower anterior premolars are not in contact, but very slightly spaced as in the latter. All the characters used in separating the different races are variable and of slight average value only. Merriam refers to this race a single specimen in the United States National Museum from Cumberland island, in eastern Baffin land, remarking that the lower premolars are somewhat larger than those of Alaskan skulls. In the MacMillan series, however, there is apparently very little actual difference in the size of teeth as compared with specimens from northern Alaska, but the lower premolars are very slightly spaced instead of being in close contact.

The weight of an adult male from Bowdoin harbour is recorded on the label as 6 pounds; four others weigh from 5 to 9 pounds, and the average of the five is a little over 7."

The present writer obtained very few specimens of skins, but did acquire a large series of perfect skulls from Eskimo trappers of Cumberland sound and elsewhere.

6. Canis tundrarum Miller. BARREN-GROUND WOLF.
Eskimo: *Amarok.*

The barren-ground wolf occurs more or less commonly throughout Baffin island, but according to the writer's experience is not, as has been stated, abundant. In some past years, the animal may have been more in evidence, but it is questionable if the wolves ever were truly numerous. The accumulations of pelts at a trading post may give a false impression of abundance, for the skins usually come from wide areas. It is thought that conclusive evidence of the comparative abundance or non-abundance of any animal active the year round, is furnished by the animal's winter trails as displayed over extensive stretches of country. The writer had unusual opportunities to collect such evidence and it indicates that over large areas in southern Baffin island wolves are not very numerous.

Mr. Duval, in 1923, stated that wolves were moderately common in Cumberland Sound regions. He said that, many years ago, he saw a pack of thirty to forty wolves travelling at a considerable distance offshore in Cumberland sound and that amongst them were several very dark animals. Mr. Duval said that wolves were not numerous near the coast, but were rather common inland. A bounty of $30 is now paid for a wolf; this is twice the sum received by an Eskimo for a fox skin and, therefore, the trapping of wolves has been considerably accelerated and, in a few years, should result in marked reduction in their numbers. Eskimo considered them to be harmless.

In 1924, in some localities about Cumberland sound, wolves were not uncommon even along the coasts, and packs of many individuals were frequently observed by winter travellers. Eskimo reported them to be more common inland. Major Burwash reported that in April, 1924, he found wolves fairly common inland along the route from Cumberland to Hudson strait via Nettilling and Amadjuak lakes. Early in December, 1924, the present writer observed, inland along Koukdlik river, Pangnirtung fiord, the tracks of a party of three wolves. The fresh remains of several caribou, presumably killed by these wolves, were seen. In January, 1925, signs of wolves were found to be comparatively scarce about the upper part of Cumberland sound.

In February, 1925, while traversing Pangnirtung pass, only one wolf trail was seen and none thereafter during thirty-two days spent on the east coast and on the return journey to Pangnirtung. The Eskimo on Broughton island, at Kevetuk, and Merchants bay had not secured a single wolf as late as the middle of February. In April, 1925, many wolf trails were observed along Nettilling fiord; they were decidedly more numerous than had been observed elsewhere. Very many trails were crossed along the small lakes on the route to Nettilling lake. On May 23, a pack of four wolves were seen a few miles west of Takuirbing river. On June 10, two wolves, and on June 14, one wolf, were observed near camp. After June 14 not a single wolf was seen during the stay, which lasted to September, in Nettilling Lake region. Such a scarcity was unexpected as wolves had been reported to be abundant in the interior.

In January and February, 1926, during the journey to Foxe basin, only two wolf trails were seen; one in late January in the upper part of Nettilling fiord and the other on February 9, along Auntak river. The wolves, like the caribou, apparently are absent from the western tundra during winter. In March, 1926, during a 28-day trip into Nettilling Lake

area, only two wolf trails were seen—both between Takuirbing river and Tikerakdjuak point. In April, 1926, on the journey from Cumberland gulf to Hudson strait only two or three wolf trails were noted.

F. Milton, formerly of the Hudson's Bay Company's post at Amadjuak bay, has furnished the substance of the following notes: Between March 27 and April 6, 1922, while on a trip to the north end of Amadjuak lake, many wolves were seen; on February 22, 1924, wolves were numerous at Amadjuak lake; on September 22, 1924, two wolves were killed near Amadjuak bay; on October 13, 1924, wolves were troublesome around the reindeer herd.

Kumlien (1879, p. 52) writes: "Wolves are frequently seen during the winter months on both sides of Cumberland gulf; their principal resorts, however, are farther inland where the reindeer herds abound". Hantzsch (1913, pp. 151-153) states: that he, during June, 1910, while travelling to Nettilling lake and at Nettilling lake, saw several wolves; that in July, 1910, at Tikerakdjuak point he saw a female with five young; that on November 7, 1910, he saw tracks of two wolves, and on December 10, 1910, the trail of a pack of ten, in both cases near the mouth of Koukdjitariak river; that on April 8, 1911, he saw the tracks of two wolves north of the aforementioned river. Corporal McInnes, R.C.M.P., informed the writer that in recent years wolves were numerous in Admiralty inlet and that Eskimo reported seeing two black animals. The Eskimo of Ponds inlet annually kill a number of wolves; Mr. Herodier of the Hudson's Bay Company's post at that place, in 1923, presented a summer skin to the Museum.

Coloration varies considerably, both with the seasons and as between individual animals, some of whom are very light, and others conspicuously dark coloured. Underparts, sides, and legs, according to the writer's observations, are, however, invariably very light coloured. A number of skins at Pangnirtung post, in October, 1924, were, on the whole, creamy white, but some had a pronounced blackish brown, dorsal stripe from head to tail. A creamy white specimen showing such a stripe was taken on December 10, 1924; the stripe is composed of long, dark, guard hairs thinly dispersed through fur of the creamy white colour exhibited over the rest of the body. The length of the specimen over all is 5 feet, the tail measures 16 inches, and the hind foot, 11 inches.

A hunter's skin, examined March 18, 1925, had a total length of 6 feet, the tail measured 18 inches and the ear 5 inches. The general colour was whitish cream; the dorsal region, buffy with many dark-tipped hairs, especially in a narrow, line-like band down the spine; the buffy colour faded to, on the sides, a pale cream with short, slaty coloured, under hairs. The hairs of the back were 7 inches long, white to whitish cream at the base, slate-coloured above, whitish towards the end, and tipped buff and black. A narrow area on the sides was whitish and the hairs there were whitish throughout their length. The underparts were creamy white. The tail was creamy white freely sprinkled with grizzly-tipped guard hairs, slaty at the base. Legs and face were distinctly buffy. The backs of the ears were pale buff. On March 23, 1925, Eskimo brought seventeen skins for bounty payment, to the R.C.M.P. post at Pangnirtung. Two colour phases were represented; fifteen skins were of the dark, black variety, two were a creamy or dirty white. The dark varieties varied, but even the lightest was easily distinguished from the pale-coloured

variety. The hunter's skin mentioned above as having been examined on March 18, 1925, when compared with the collection of seventeen skins, was unhesitatingly referred to the dark variety, although it was decidedly lighter-coloured than the average. The skins of the dark variety are, in general, whitish cream below, merging into buff on upper parts of sides, buff on the back with a median band of black guard hairs, 4 to 6 inches wide and extending the length of the animal. The pale-coloured varieties lack even a suggestion of a dark band along the back. Hantzsch (1913, p. 151) on June 10, 1910, while on the way to Nettilling lake, saw a yellowish white wolf with abundant, brownish black hairs on the back.

7. **Lynx canadensis canadensis** Kerr. CANADA LYNX.

John Hayward, of the Hudson's Bay Company's post, Pangnirtung, informed the writer that a lynx was shot by an Eskimo, during the winter of 1918, at Lake harbour. It was supposed that the animal was carried on moving ice, across Hudson strait from the Ungava side. About the same time a lynx was caught on Coats island, by Stephen J. Stewart, and another was shot by an Eskimo on ice-floes off Wakeham bay on the south side of Hudson strait. These records seem to indicate that, for at least a time, a northward movement prevailed among the lynx.

8. **Phoca vitulina concolor** (DeKay). HARBOUR SEAL.
Eskimo: *Kassigiak.*

The harbour seal is one of the rarer of the pinnipedia inhabiting the seas about Baffin island. Nearly a year passed before the writer even saw a skin in the possession of the Eskimo. An Eskimo of Pangnirtung fiord said that in his lifetime he had shot only six harbour seals, whereas he had killed hundreds of the common species, *Phoca hispida.*

On March 13, 1926, a specimen was secured at Sardukdjuak, Nettilling fiord. Its length was, approximately, 5 feet 3 inches, and its weight was estimated to be between 300 and 400 pounds. It contained a fœtus in an advanced state, which probably would have been born early in April. None of the four Eskimo of the writer's party had ever seen the young of the species, although hundreds of those of the ringed seal are handled every year by Cumberland Sound Eskimo. The fœtus was smoky-grey and the hair was smooth.

The Eskimo state that harbour seals have been seen in the summer on Kassigejut lake, situated near Nauyarping. The lake, at spring tides, is entered by salt water, in small quantities, from Nettilling fiord.

Kumlien (1879, pp. 55), referring to this species, writes: "The so-called fresh water seal of the whalemen is one of the rarer species in the Cumberland waters. They are mostly met with far up the fiords and in the fresh water streams and ponds, where they go after salmon." Hantzsch (1913, p. 156) knew of only three or four of these seals having been taken during the winter of 1909-10, by the Eskimo of Blacklead island. Eskimo state that this seal is occasionally taken at Ponds inlet. Seals are mentioned in most writings dealing with the Arctic and although the exact species in many cases is not indicated, it is altogether probable that the harbour seal occurs, at least sparingly, the whole length of Baffin island.

The skin of the harbour seal, because of its appearance, is prized by Eskimo women more highly than that of any other species. Kumlien (1879, p. 55) remarks: "It is said, possibly with a shade of exaggeration, that the affections of the Eskimo damsel can be secured by a present of

Kassigiak skins, when all ordinary means of persuasion have failed to move her." Since enough skins are rarely available for a whole costume, the skins of the harbour seal are mainly used as trimmings.

The young of the harbour seal are said to be pupped on the ice, fully exposed, later in the season than is the case of the ringed seal, *Phoca hispida.*

9. Phoca hispida Schreber. RINGED SEAL.

Eskimo: *Netsek*, adults in general; *Tigak*, adult males; *Netsiavik*, young after shedding and until one year old.

The ringed seal is abundant in the Baffin Island seas and to the Eskimo is more important than any other form of life. When all else fails, the ringed seal is usually procurable. The meat is the most important source of food; the skins are used for clothing, tents, mats, light lines, various receptacles, dog harness, and, when more suitable material is lacking, kayak covers; the fat, burned in lamps, furnishes light and warmth; the bones are in many cases fashioned into parts of implements and utensils; and the intestines are used as windows in igloos.

The species is especially abundant in Cumberland sound where, every spring, thousands are born in small, snow dens on the ice. Many of the young, while still helpless, are killed by the Eskimo. Their skins are white and are soft like fur or wool rather than hair. They are extensively used as under-garments, the hair next to the body. Thousands of the baby seal are annually killed and their skins sold to the traders. How long the species can withstand this yearly slaughter without imperilling the food supply of the Eskimo is a grave question. Restrictive measures may be necessary in the near future to ensure the continuance of a species of so great importance to the Eskimo.

Ringed seals are comparatively abundant at all times in some regions such as Cumberland sound, but in other areas they may be scarce. In February and March, 1925, the ringed seal on the east coast was found to be everywhere and was reported to be so at all seasons. At Kekertukjuak on Broughton island, the natives were securing just enough to meet their needs. The seals were being obtained at breathing holes (ugluts) located with the aid of dogs. It was noted that, although among the seals being killed there were many small animals, yet there appeared to be a larger percentage of large seals than among those killed in Cumberland Sound waters. One large male, measured at Kevetuk, had a length of 5 feet 4 inches and a girth of 5 feet. Many others were seen of the same general size. At Padle, in Merchants bay, seals were about as numerous as at Broughton island, but because of the existence of a large tide-hole between Padloping and Durban islands, seals were more easily procured than to the northwest.

Both from former accounts and hearsay, it was understood that ringed seals were plentiful in Nettilling lake, but this was not found to be so during five months of 1925 spent in the vicinity of the lake. Nettilling lake was reached on May 5, but no signs of seals were observed until May 29 when a breathing hole was discovered near the mouth of Takuirbing river at the east end of the lake. On June 1 the animal frequenting this hole was harpooned. The specimen was a female, 4 feet 9 inches long and having a girth of 2 feet 6 inches, measured back of the fore flippers. The hair was notably cleaner and more silvery of colour than

in the case of the salt-water ringed seals. During June and early July, a number of seals swam in a stretch of open water at the mouth of Takuirbing river, or sunned themselves upon the ice. On July 10 a small seal was shot. This specimen, No. 6025 ♂, was 4 feet 1 inch long and had a girth back of the fore flippers of 2 feet 9 inches. The stomach contained a char, *Salvelinus alpinus*, 10 inches long. On July 27, two seals were shot in the mouth of Takuirbing river. Specimen No. 6026 ♀ was 4 feet long and had a girth back of the fore flippers of 3 feet 2 inches; specimen No. 6027 ♂ was 3 feet 9 inches long and had a girth of 3 feet. The stomachs contained only a few small char. During August only two or three seals were seen. On August 27, a small seal was killed at the mouth of Takuirbing river. After August 27, only one seal was seen on the lake during the trip to the outlet and return. This seal was seen 4 miles southwest of Takuirbing river. The observations made, indicate that the ringed seal remains in the lake throughout the year.

Comparison of skulls of Nettilling Lake seals with the skulls of salt-water seals from Pangnirtung fiord and Amadjuak bay clearly indicated that no material differences existed. The upper part of the cranium of juvenile, salt-water ringed seals is markedly variable in shape, but this feature is almost negligible in adults. Of the series of twenty-one skulls available for study, twelve are obviously skulls of young; three of the five skulls from Nettilling lake are greatly damaged. All the Nettilling Lake skulls are decidedly large, possibly because little shooting is done on Nettilling lake and the animals, therefore, have a chance to mature, whereas on Cumberland sound very large numbers are killed every year. The differences that exist between the skins of the freshwater and salt-water seals is slight. Kumlien (1879, p. 55) writes: "I have seen skins from lake Kennedy (Nettilling lake) that I could not distinguish from those found in Cumberland sound." The Eskimo consider the Nettilling Lake animals as being the same as those in Cumberland sound, although they say the freshwater seals have larger eyeballs. Hantzsch (1913, p. 160), referring to the Nettilling Lake seals, writes: "Eyes also larger on inside than in *Phoca hispida*." The same author states also that the outer opening of the eye in the Nettilling Lake seals is smaller than in *Phoca hispida*. These differences in the case of the eyes, if it exists, is so slight that it escaped notice by the present writer.

Skull Measurements, Phoca hispida

Museum No.	Sex	Species	Locality	Basal length	Occipito-nasal length	Palatal length	Zygo-matic breadth	Mas-toidal breadth	Inter-orbital breadth	Maxil-lary tooth row	Length of nasals	Mandi-bular tooth row
5699	.....	*Phoca hispida*.....	Pangnirtung fiord...	147	140	68	97	101	7	38	34	
6144	.....	"	" " ..	159	142	70	102	101	6	36	40	35
6145	.....	"	" " ..	165	147	77	105	101	5	40	35	36
6222	.....	"	Amadjuak bay.....	156	144	70	110	107	7	34	38	32
6016	♀	"	Nettilling lake.....	165	149	74	106	106	5	41	40	31
6023	♂	"	" "	.....	.....	74	.....	.....	.....	40	.....	39
6025	♂	"	" " ..	.....	.....	75	101	108	4	38	38	35
6026	♀	"	" " ..	170	151	78	109	107	6	39	40	36
6027	♂	"	" " ..	.....	.....	.....	.....	.....	.....	40	.....	37

The occurrence of seals, in considerable number, in winter time, at the water-holes in the ice of upper Cumberland sound presents some puzzling features. These water-holes result from the action of the tide; individually they are not large and they are separated from one another by long distances. Some of them are frequented by a considerable number of seals, especially during flood tide when the animals are easily shot and harpooned. But, though a comparatively large number of seals may, in a short time, be killed at any one water-hole and the supply may, apparently, be exhausted, yet in a few days or weeks the supply may be found replenished. How the second and succeeding lots of seals reach the water-holes is not known. The original lots are supposed to resort to these water-holes from the beginning of winter.

The ringed seal was found in fair numbers at most of the water-holes in Nettilling fiord in the spring of 1925 and in January and February, 1926. At the Kognung water-hole or "sarbuk", fifteen seals were shot in January, 1926. At a small water-hole 7 miles east, eleven seals were taken in one afternoon. These sarbuks were worked until the supply of seals was exhausted for the time being, but in March they again yielded a number of seals. The animals were quite common at the "sarbukjuak" (the great water-hole) of Nettilling fiord, but were scarce at some of the sarbuks on the detour route via Kassigidjen, although in fair numbers at other water-holes only a few miles away. The Nauyarping sarbuks are usually well stocked, but the large sarbuk 5 miles north of these has very few seals. The thirty to forty seals obtained by the party in this region during January and February, 1926, were all ringed seals and nearly all were small, averaging in weight between 75 and 100 pounds.

Natives say that ringed seals occur in Tarionnittuk lake, a big lake south of Kaggilartung fiord. The lake is said to be perfectly fresh except for a small area near the exit, which receives a small amount of salt water at spring tides by way of the short river draining the lake.

J. C. Ross (1835, p. 94) reports the occurrence of ringed seals at Port Bowen. Kumlien (1879, p. 55) writes that the species is very common in the fiords and bays along the coast from Hudson strait northward to the head of Cumberland sound, on the outer islands about cape Mercy, and north along Davis Strait shore. Low (1906, p. 279) states that it is the common seal of all coasts. Hantzsch (1913, pp. 157-160) writes that it is the common seal at Blacklead island and that it is numerous in Nettilling fiord. In an entry dated June 21, 1910, he says: "Daily from our arrival at the lake (Nettilling) in weather to some degree favourable, some animals observed upon the ice at some distance from the land. They have breathing-holes just like *Phoca hispida* which, according to the statements of the Eskimos, they completely resemble." He took two adults, a male and a female, on June 25. Hantzsch lists, with a query, the Nettilling Lake seals as a species of *Phoca* distinct from *hispida*. Allen and Copeland (1924, p. 8) state that the MacMillan expedition brought three skulls of this species, collected in June at Bowdoin harbour. In the summer of 1926, the present writer saw many ringed seals along Hudson Strait coast between Amadjuak bay, cape Dorset, and Bowdoin harbour.

The first of the young of *hispida*, born in 1925, taken on Pangnirtung fiord, was secured on March 18. This specimen, No. 5746♂, is 615 mm. long and from the tip of the nose to end of flippers measures 750 mm. The entire coat is of soft, woolly hair an inch long. The upper and underparts

are whitish lemon-yellow tinged pale grey. The face is grey, as is also a spot on the crown. The inside of the flippers is grey. The iris is brown. Constable F. Fielder, R.C.M.P., states that he saw "whitecoats" caught on March 10 at Bon Accord, a somewhat early date. Hundreds of the young are killed by the Eskimo of Cumberland sound, during the latter part of March and all April. Corporal F. McInnes states that at Ponds inlet, in 1925, the first young seal was caught on March 28; it is assumed the seal was of this species.

Kumlien (1879, pp. 57-58) says:

"The first young found in the upper Cumberland waters was during the early days of March; still I have taken a fœtus from the mother in the middle of April. The most profitable time for hunting the young seal is during the month of April; after this date they have shed so much that the skins are nearly worthless till the hispid hair has got to be of the proper length, when they are considered as the prime article, and second only to the young of *Callocephalus vitulinus* [*Phoca vitulina concolor*] in quality. The first young one I procured that had begun to shed was April 15. I have seen examples that were nearly or quite destitute of the white coat, but still not having the next coat in sight. Such specimens on close examination will be found to have a very fine coat of the new hair, but so short as not to be perceptible except on close examination, still showing the exact location and distribution of the dark and light markings; the *skin* at this time is very black, and often much scratched up, probably by the mother in trying to make the young one shift for itself. I often examined the stomachs of young as well as adults, but still after they had begun shedding the white coat, and were, in all probability, 25 to 30 days old, I found nothing but the mother's milk. After they begin to shift for themselves, their food, for a time, at least, consists of *Gammari* of different species.

Before the young shed the white coat, they are from 23 to 36 inches from the nose to the end of flippers; the average the season through, from a good series of measurements, was about 30 inches. They are very variable in colour, some are pure white; others very white on the lower parts, but more or less dusky on the back; others again are a fine straw-yellow, with the same dusky variation as the white ones. The yellow is also variable in the intensity of shade. Rarely some are found that are dusky all over, especially on the head and back; these are generally small and scrawny individuals. The hair is also quite as variable in texture as in colour. In some it is fine, long, and woolly (mostly in the pure white examples). In others it is straight or wavy, while some have short and quite hispid hair. They weigh at birth from 4 to 6½ pounds, but grow at an astounding rate, becoming exceedingly fat in a few days. . . . . The season for hunting the young at latitude 67 degrees north begins about the middle of March and continues until the latter part of April. The first two weeks of April are the most productive, as later the hair is apt to be very loose, and many even have large bare patches on them."

Hantzsch (1913, p. 157) remarks that by the middle of May, 1910, the young had cast their first coat and had acquired a pelage quite similar to the old, rather long haired with almost black spots. That year, 1910, Hantzsch saw very few young seal in Cumberland Sound region.

Two embryos (Nos. 6741 and 6742) of *hispida* were secured October 20, 1925, at Pangnirtung; one was 5 inches long, the other 7 inches. They were pink and hairless. Another (No. 6738) was taken on December 31 and was 16 inches long and had very short hair. From January 1 onwards, numerous fœtuses were collected. A considerable variation existed in the sizes irrespective of the dates of collection.

As spring approaches and the daily temperature rises, the seals enlarge the breathing-holes and come out onto the ice to sleep and sun themselves. Seals following this custom were first observed in 1926, on March 29, in Nettilling fiord. Some years, it is said, they appear on the ice earlier than this date. Such seals are designated by the Eskimo as "ootuk". They are comparatively easily captured by the Eskimo who, keeping behind a white cotton screen, crawl towards them as they sleep, until within 40 or 50 yards and then shoot them in the head killing them instantly. Many "ootuks" were seen during late April, 1925, in Nettilling fiord.

The variations in size, markings, and colour, due to age, have led in the past to the erection of several species. The Eskimo recognize the differences and apply different names to the animals of different ages, but are aware of the fact that all belong to one species. Some indication of the variations exhibited is afforded by the following descriptions of individuals killed in mid-September in Pangnirtung fiord.

Example 1. Length, 4 feet 4 inches. Dark bluish black above with large, oval, yellowish rings, and vermiculations of the same colour. Sides and underparts, silvery white very faintly yellowish; the sides with round, black spots irregularly distributed. Spots absent from breast and belly.

Example 2. Length, 4 feet. Greenish slate-colour above with small yellowish rings, mostly ill-defined, many overlapping and producing a marbled appearance; the rings vary in size from that of a small coin to several inches in diameter. Underparts, yellowish white with profuse, dark vermiculations.

Example 3. Length, 4 feet. Greenish blue-black above with large, oval, yellowish rings over the dorsal region. Ventral area, yellowish silver-coloured with smaller rings, indistinct and more or less confluent.

A distinguishing feature of *hispida* is that the first toe nail on the front flipper is the longest.

10. Phoca groenlandica Erxleben. GREENLAND OR HARP SEAL.
Eskimo: *kiolik; kairelik,* according to Hantzsch.

The harp seal is one of the rarer species of seals inhabiting the seas about Baffin island. It seems to be somewhat more numerous than *Phoca vitulina concolor,* but is very much less numerous than *Phoca hispida.* It occurs along the whole length of the island, but is scarcer towards the north. It ranges north of Baffin island for Bay (1904) states that it is occasionally met with on Ellesmere island, and Sutherland (1852, p. 293) writes that the "ocean or Greenland seal" was common in August, 1850, in the southern part of Wellington channel.

The harp seal can be distinguished at a distance from *hispida* by its habit of occasionally rearing high out of the water. Also harp seals usually travel in companies, whereas ringed seals, no matter how plentiful they may be, tend to occur scattered and singly.

During the Canadian Arctic Expedition of 1923, the writer did not see a single skin in the possession of the Eskimo of Ponds inlet and Pangnirtung. In 1924, the species was not seen until September 15 when a seal said by the natives to be a *kiolik,* was observed in Pangnirtung fiord. On September 23 a skin (No. 5689 ♂) was obtained from a Pangnirtung Eskimo who had recently killed the animal. Two harp seals were seen on October 13 between Pangnirtung and Kingua.

According to the Eskimo of Broughton island, Kevetuk, and Merchants bay, the *kiolik* occurs along the east coast only during the summer and then, though a few are shot, are never common. A young harp seal, specimen No. 6039 ♀, was taken in Pangnirtung fiord, on October 2, 1925. Constable H. Margetts, R.C.M.P., stated that he saw the skin of a large harp seal killed at Kekerten islands early in October, 1925. Eskimo stated that in summer the harp seal was sometimes moderately common in the lower part of Nettilling fiord and occasionally examples were killed

farther up the fiord, and that, in summer, it was present along the north shores of Cumberland sound, more particularly in the neighbourhood of Bon Accord.

Mr. James Aitken, formerly in charge of the Hudson's Bay Company's post at cape Dorset, reported that in the summer of 1926 occasional harp seals were secured in Cape Dorset region. While the writer was at Amadjuak bay, Eskimo on August 7, 1926, brought three harp seals which had been killed on the outer islands to the south. The largest seal weighed 320 pounds.

Kumlien (1879, p. 61) reported that the harp or saddleback seal occurred frequently in spring and autumn in the southern waters of Cumberland sound and occasionally as far up as Bon Accord. He noticed a few schools "at different times during September, 1877, and October, 1878, from the islands off the middle Labrador coast to Cumberland, at times at considerable distances from the land..... They disappear from Cumberland when the ice makes and return again in spring with open water, but stay only a short time". Hantzsch (1913, p. 156) found no evidence of a harp seal having been taken by the Eskimo of Blacklead island during the winter of 1909-10.

Sergeant J. E. Wight, R.C.M.P., reports that the harp seal is the common species at Port Burwell, Labrador; that it is very numerous during the spring and autumn periods of migration; that large catches are made in the nets in June and July, and in November and early December; that numbers occur all summer about cape Chidley and Button islands. Low (1906, p. 279) states that the harp seal

> "Supplies fully two-thirds of the seals taken annually off the coasts of Newfoundland in the spring, when the females give birth to their young on the floating ice of the Arctic pack. The harp seal is more or less common on the northern coasts and southward along the Atlantic coast of Labrador, at all seasons. In Hudson strait they are rare in summer, but are not uncommon after the shore ice forms in autumn and before it leaves in the early summer."

11. **Erignathus barbatus** (Erxleben). BEARDED SEAL.

Eskimo: *Ogjook*, *Ukjuk*; the young, *Terriglo*, according to Hantzsch.

This large seal is seldom seen by naturalists. Even when daily associated with Eskimo hunters, weeks sometimes elapse during which not a single bearded seal will be observed. But the animal is not truly rare, for a considerable number are yearly captured. According to the Eskimo they are met with, more commonly than elsewhere, about cape Mercy and Nugumeute, and in southern Cumberland waters, remaining in these places the year around if there is open water.

In 1924, the bearded seal was first noticed on September 15 in Pangnirtung fiord. On September 28, a specimen, No. 6246♂, was secured at the head of the fiord; its length is 6 feet; girth back of fore flippers, 3 feet; girth at middle, 4 feet 3 inches. On October 14, a skin was seen in the possession of an Eskimo at Nunatuk, Kingua. On October 30, three small bearded seals were shot in Pangnirtung fiord. The Eskimo between Merchants bay and Kevetuk stated that this seal was taken in moderate numbers during summer and early autumn and was never present during winter. Compared with the ringed seal it is scarce. A number were shot by Eskimo in Cumberland sound during the 1925 season. In June, 1926, a number were seen in the open sea and along the edge of the land

flow in the vicinity of Fox islands east of cape Dorset, and on July 20, two were seen in the bay opposite Cape Dorset post. A few are killed each summer and autumn at Amadjuak bay.

Kumlien (1879, p. 61) writes:

"This seal was first noticed a little to the southward of cape Chidley, and thence northward to our winter harbour in about latitude 67 degrees north. . . . On the west coast of Davis strait they are not rare, but are said by whalemen to diminish in numbers about latitude 75 degrees north. They appear to be more common on the southern shores of the west coast of Davis strait than on the northern, so that the natives go southwards some distance to secure the skins. Was noticed among the pack ice in Davis strait in July and August."

The skin of the bearded seal is highly valued by the Eskimo. Being very durable and waterproof, it is universally employed for the manufacture of boot-soles, heavy lines, lashings, dog harness, and kayak covers. The demand for the skin of the bearded seal was at one time heavier than now, for at that time the skins were used as covers for heavy boats or omiaks, fifteen skins or more being required for each boat.

The bearded seal appears to prefer the open sea and the larger bays and fiords, unlike *hispida* and *concolor*, which frequent the smaller bays and inlets. Kumlien (1879, p. 62) observes:

"They dive to great depths after their food, which is almost entirely *crustacea*, mollusks, and even clams of considerable size. This seal has the habit of turning a somersault when about to dive, especially when fired at; this peculiarity, which is not shared by any other species that I have seen, is a characteristic by which it may be distinguished at a considerable distance. During May and June they crawl out upon an ice-floe, to bask and sleep; at such times they are easily approached by the Eskimo in their kayaks and killed. An adult will often measure 10 feet between the two extremes. The colour is variable; the tawniness more or less clouded with lighter or darker markings irregularly dispersed. By July some of them become almost naked. At this season their stomachs contained nothing but stones, some of them of nearly a quarter pound weight. They seem to eat nothing during the entire time of shedding, proably six weeks. Certain it is they lose all their blubber, and by the middle of July have nothing but "Whitehorse," a tough, white, somewhat cartilaginous substance, in place of blubber. At this season they sink when shot. Some specimens were procured that had scarcely any teeth at all, and in many adults the teeth can almost be plucked out with the fingers. The young are born upon pieces of floating ice, without any covering of snow. The season of procreation is during the fore part of May. After the young have shed their first woolly coat (which they do in a few days), they have a beautiful steel-blue hair, but generally so clouded over with irregularly dispersed patches of white that its beauty is spoiled. A fœtus was procured near the Middliejuacktwack islands, April 28. Its extreme length was 4 feet 7 inches."

Hantzsch (1913, p. 156) states that the species very seldom occurs in Blacklead Island region. During the winter of 1909-10 very few specimens were taken there. He saw the skin of a young animal taken near Nuvujen which was "uniform greyish black, except where white-haired, even if somewhat shorter than in *Phoca hispida*". He states that on November 19, a female was captured with young 40 centimetres in length. In colour it was blackish grey, with three whitish spots on the back. The back of the head had a similar spot, only larger. The body was naked except for some fine hairs on the head. Bristles of the beard were already strongly developed. He states that the species was rather commonly observed along Foxe channel near the mouth of Koukdjitariak river. In January, 1911, breathing holes of this seal were seen in the vicinity of the above-mentioned winter camp, and Hantzsch remarks that they "are naturally considerably larger than those of the ordinary ringed seal". Kumlien says, "They remain in the sound only during the time there is open water

as they have no *atluk* (breathing hole)." Hantzsch records that in February several bearded seals were repeatedly observed in the open water of Foxe channel. At the end of the month they were seen on several occasions where other seals were lacking.

12. Cystophora cristata (Erxleben). HOODED SEAL.
Eskimo: *Netsivok; Netsivak*, according to Hantzsch.

The hooded seal was not seen by the present writer nor was any skin of it seen in the possession of the Eskimo. It thus appears to be by far the rarest seal of the Baffin Island seas. A hooded seal was reported to have been shot in the autumn of 1924, near Kekerten islands. Kumlien (1879, p. 64) writes:

"The bladder-nose appears to be very rare in the upper Cumberland waters. One specimen was procured at Annanactook (near Bon Accord) in autumn, the only one I saw. The Eskimo had no name for it, and said they had not seen it before. I afterward learned that they are occasionally taken about the Kekerten islands in spring and autumn. I found their remains in the old Kitchenmidden at Kingwah. A good many individuals were noticed among the pack-ice in Davis strait in July."

Hantzsch (1913, p. 155) lists the species, but makes no further mention of it, evidently never having seen the animal. Low (1906, p. 280) says "In the summer they are common at Ponds inlet and become rarer along the coasts to the southward. The hooded seal is unknown to the natives of Hudson bay, and is an exceedingly rare visitor in Hudson strait."

13. Odobenus rosmarus (Linnaeus). ATLANTIC WALRUS.
Eskimo: *Aivik; Aivek* and *Aivirk*, according to Hantzsch (1913, p. 155).

The Eskimo of the east coast when seen in the winter of 1925, said that the walrus was fairly common from Exeter sound to Nome bay. The Merchants Bay Eskimo reported that in 1921 walrus in considerable numbers resorted to some small islands half-way up Padle fiord, but that since then none had been seen in that locality. Sergeant J. E. Wight, R.C.M.P., states that in August, 1295, the patrol on the *Lady Borden* saw hundreds of walrus near cape Mercy. According to Low (1906, p. 281) "they are common along the coast of Baffin island, a considerable number being killed annually at the station at cape Haven, and in Cumberland gulf". Kumlien (1879, pp. 63-64) writes: "The walrus is quite common about cape Mercy and the southern waters of Cumberland, but at the present day (1877) rarely strays far up the sound. Their remains, however, are by no means rare even in the Greater Kingwah and many of the old Eskimo hut foundations contain the remains of the animal." Eskimo reported having seen late in March, 1926, a walrus near Kekerten islands. This was considered somewhat of an event, as walrus seldom penetrate Cumberland sound. Walrus are reported to be fairly common off Amadjuak bay, Hudson strait, where, if ice conditions are favourable, they can be taken the year around. The species is more numerous to the west, especially about King cape, Mill and Salisbury islands. In June and July, 1926, many weathered walrus bones were found at various old Eskimo campsites on Fox islands, but the animal does not now frequent this locality. In 1923, while on board the C.G.S. *Arctic*, very many walruses were seen in early August, in Lancaster sound.

The species has been found as far north as Kane basin, latitude 80 degrees north. Walruses are numerous in Smith sound, in Jones sound,

along the coast of Ellesmere island, in Lancaster sound, and in Wellington channel. J. C. Ross (1835, p. 21) states that the animal was occasionally seen in the northern part of Prince Regent inlet. They are tolerably numerous in Foxe channel and Frozen strait (Low, 1906, p. 281) and in Roes Welcome. Tremblay (1921, p. 176) states that walruses are plentiful at Igloolik in Fury and Hecla strait, where they feed on clams and small fishes found in the shallow waters surrounding the numerous islands. They are found on both shores and on the islands of Hudson strait. Four hundred years ago walruses occurred as far south as Magdalen islands in the gulf of St. Lawrence, now cape Chidley marks their southern limit along the Atlantic seaboard. In Hudson Bay region, they formerly were found as far south as Paint islands in James bay, but now their southern limit is Belcher islands.

14. **Lemmus trimucronatus** (Richardson). BACK LEMMING.
Eskimo: *Awingak; Avingak*, according to Hantzsch.

The lemming at times is more abundant than any other land mammal of Baffin island. It is subject to periodical variations in numbers, which, as is probably the case with *Lepus americanus* of the mainland, may be due to bacterial invasions resulting from over-crowding by the lemming. The diseased condition, when it arises, results in the destruction of almost the entire population. It spreads rapidly, but, as indicated by the observations recorded below, does not appear simultaneously over all Baffin island.

The following information was recorded during the 1923 Canadian Arctic Expedition. Signs of lemmings were seen in varying abundance at every point visited except Beechey island. No fresh signs were noted at Craig harbour, Ellesmere island, but the police had seen a few trails during the preceding winter and spring. At Dundas harbour, Devon island, fresh trails and burrows, probably made by *Dicrostonyx groenlandicus*, were observed. At Eskimo point, Strathcona sound, fresh signs of lemmings were abundant in the comparatively luxuriant vegetation bordering a stream; several specimens were secured at this place. At Ponds inlet, lemmings were comparatively numerous on an abandoned, Eskimo village site. Many of the animals were trapped and all these proved to be *trimucronatus*. They occupy small burrows in the partly frozen soil, connected by a network of trails. Inland, on the tundra, were seen many signs usually old and many consisting of small, round nests of grass. At Pangnirtung, Cumberland sound, old signs were exceedingly numerous both along the shore and well up the mountain slope to an elevation of at least 1,700 feet, but not even one lemming was seen or trapped during a stay of eleven days, though on September 18, after a fresh fall of snow, a new lemming trail was seen.

From the preceding statements, it will be noted that although little colonies of lemmings continued to flourish in northern Baffin island, the species was almost extinct at Pangnirtung in the south. Sergeant Wight stated in 1924, that for the past two years lemmings had been very scarce at Port Burwell, though they had been amazingly abundant at different times in earlier years.

Returning to Pangnirtung on July 22, 1924, fresh signs of lemmings were first observed on August 23, on Blacklead island, where a small colony, presumably of *trimucronatus*, was located. At Pangnirtung old signs were abundant everywhere up to altitudes of at least 1,000 feet, but

though traps were set, not a specimen was secured until September 27. It was apparent that lemmings were very scarce, but the Eskimo expected an early return. After snowfalls in late September, 1924, a number of fresh lemming trails were seen on the small, isolated flats and amongst the boulders along Duval river near the post. Persistent trapping yielded several specimens.

While travelling during the winter of 1924-25, very few signs of lemmings were seen. For days at a time not a trail was crossed. One trail was seen at Padle, Merchants bay, and a few in Kingnait pass.

From April to September, 1925, while on the Nettilling Lake expedition, very few lemmings were seen. The first specimen was secured on June 7, another was taken on June 11; both animals were shot as they sat erect on the snow at the entrance to their burrows. On July 4, a large female (specimen No. 6024) was secured at Takuirbing river. She was carrying nine embryos about ready for birth. Signs of lemmings were observed in places about Nettilling lake, but no further specimens were secured until August 29 when one (No. 6034 ♀) was taken and one other animal was seen. A few signs of lemmings were seen along Koukjuak river. The land there is very low and wet, and some of the much travelled trails and feeding-pockets were saturated with water. In September, signs at Nettilling fiord were much more plentiful than they had been inland.

On reaching Pangnirtung on September 23, 1925, signs were very conspicuous in localities where in 1923 and 1924 the lemmings had been scarce or wanting. Obviously the population was again increasing. On October 12, a mild spell set in and the snow disappeared from below a height of 1,200 feet. During a period of ten days at this time, a line of traps daily yielded specimens, and in all forty or fifty were secured. The traps were set on ground which had been trapped for eleven days in September, 1923, without yielding a specimen.

On the trip from Cumberland sound to Foxe basin and return, in January and February, 1926, lemming trails were observed at intervals along the whole route. Signs, however, were much more common east of Nettilling lake than on the plains to the west of it where trails were observed only at very wide intervals. On the return trip, lemming trails were found on February 8 to be very common on the islands in the east part of Nettilling lake where, thirteen days earlier, very few trails had been seen.

In April, 1926, signs of lemmings were more or less common along the route from Cumberland sound to Amadjuak bay. In early June, when the snow had partly disappeared, the back lemming was found to be fairly numerous and easy to trap at cape Dorset. On June 5, eighteen traps set on an old Eskimo campsite yielded eight animals. Comparable results were obtained on succeeding days and lemmings were frequently seen. Nearly matured juveniles predominated amongst the animals trapped. On June 15 the traps were still yielding the customary number of animals, for the colony was large and flourishing, and the animals, both adults and juveniles, daily were seen running about or sunning themselves at the entrances to the burrows.

The species was found in late June, 1926, on many of Fox islands east of cape Dorset. One island of about 100 acres, with scanty vegetation, and lying several miles offshore, was so overrun with lemmings that pools, streams, and the land were filthy from their excreta. On other islands, lemmings appeared to be wholly lacking.

At Aitken lakes, northwest of cape Dorset, a large number of curiously shaped burrows in sandy ground were noted in mid-July, 1926. The burrows were of a size such as the back lemming would make and scarcely could have been made by any other mammal. Their unusual feature was the mounds of sand built up at the entrances and exactly like those made by ground squirrels. The sand in some of the mounds amounted to a quart or more. Excreta and tracks in the sand indicate that the burrows belonged to *trimucronatus*. Similar burrows had not been seen previously anywhere on Baffin island, but on August 7, 1926, were seen again at the head of Amadjuak bay on low, dry, mossy ridges. The material excavated was largely brownish loam. One mound consisted of fine sand with many fine particles of graphite. Lemmings, at this time, were quite common at Amadjuak bay.

Allen and Copeland (1924, pp. 8-9) record that the MacMillan expedition secured several specimens of *trimucronatus* at Bowdoin harbour and the west coast north to latitude 65 degrees. Corporal F. McInnes, R.C.M.P., informs the writer, under date of March, 1927, that during the previous year, lemmings were very numerous at Ponds inlet. In all probability they were *trimucronatus*.

Kumlien did not find *trimucronatus* in Cumberland sound in 1877-78. At that time it may have been passing through one of its periods of great scarcity, as seems also to have been the case with *Dicrostonyx groenlandicus*, of which Kumlien secured only one specimen on Baffin island. Hantzsch (1913) makes no mention of *trimucronatus*, but does list *D. groenlandicus* which, according to the writer's experience, is decidedly scarcer on Baffin island. Perhaps the periods of abundance of the two species alternate.

Trimucronatus forms colonies in abandoned Eskimo campsites and in low, rock ground along streams; dispersed it occurs over the tundra, on low ridges, and up mountain slopes. On Ptarmigan mountain, Pangnirtung fiord, on December 18, 1925, tunnels and feeding grounds were seen at an altitude of 1,500 feet and up to heights of 1,000 feet the species appeared as prosperous as at lower levels, but above 1,000 feet the numbers gradually diminished. On a mountain north of Koukdjitariak river, Pangnirtung fiord, on December 20, 1925, a few, fresh, lemming burrows in the snow and runways on the surface were observed at a height of 2,500 feet as determined by an aneroid.

The back lemming usually travels at a walk, the footprints then being a trifle over 2 inches apart. Occasionally the animal bounds along and the footprints are in couplets 3½ inches apart with the right and left imprints separated by an inch, the trail closely resembling that made by the least weasel, except that the left and right footprints are not offset with respect to one another. The footprints in snow are considerably larger than would be expected, a peculiarity exhibited in the case of all animals, particularly after sunny weather, for the effects of the sun rays are accentuated in the hollows which in these cases are footprints. The lemming throughout the winter tunnels upward through the snow even when of considerable depth, and in a limited degree travels on the surface despite the cold. Like *Microtus*, they are very active under the snow, where they have a network of trails through the vegetation, with here and there globular grass nets, all of which is revealed when the snow leaves in June.

The young are born, it is thought, in early July. As already stated, a female taken on July 4, at Nettilling lake, contained nine large embryos. On June 15, at cape Dorset a specimen (No. 848) held eight large embryos and another (No. 849) seven of somewhat smaller size. Comparatively few of the specimens secured bore young.

If traps are not regularly tended, the lemmings eat the trapped specimens. Their food, however, consists largely of grasses.

A back lemming was observed, on June 9, at cape Dorset, to leap into a pool of water, swim to the other side, briskly mount the bank, and disappear at a run into a burrow. It was all done so unconcernedly that without doubt the animal was in the habit of taking to the water, but this was the only occasion on which a lemming was seen resorting to the water. Considering the sodden ground they frequently occupy, such as the tundra-swamp west of Nettilling lake, it would not be surprising if they were semi-aquatic in habit.

The first record of the occurrence of *trimucronatus* on Baffin island was by Allen and Copeland (1924, pp. 8-9) in connexion with the MacMillan specimens from Bowdoin Harbour district. These authors write: "The most interesting of the small mammals is the lemming, previously not known to occur farther northwestward than the Melville peninsula and the shores of Boothia Felix..... So far as we can ascertain, its presence has not been known previously on any of the islands of the Arctic archipelago". The National Museum of Canada has specimens from Victoria island (collected in 1918), Banks island (collected in 1915), and Digges and Big islands, Hudson strait (collected in 1884-85). The comparatively wide range of the species is indicated by Allen and Copeland (1924, p. 9) who wrote: "Externally the adults agree in every particular with specimens from northern Mackenzie, kindly loaned to us by the United States Biological Survey and taken to represent typical *trimucronatus*.

Measurements of Lemmus trimucronatus from Various Localities in Baffin Island

No.	Date	Locality	Sex	Length	Tail	Hind foot
				Mm.	Mm.	Mm.
4909	Aug. 19, 1923..	Strathcona sound.....	♀?	105	12	18
4910	" 19, 1923..	"	♂	102	12	18
4911	" 19, 1923..	"	♂	106	14	18
4912	" 31, 1923..	Ponds inlet.....	♀	118	14	18
4913	" 31, 1923..	"	♂	109	12	18
6020	June 7, 1925..	Nettilling lake.....	♂	132	10	15
6021	" 11, 1925..	"	♀	120	10	17
6024	July 4, 1925..	"	♀	137	10	18
6034	Aug. 27, 1925..	"	♀	124	14	20
6037	Oct. 7, 1925..	Pangnirtung fiord.....	♀	127	20	22
6038	" 7, 1925..	"	♂	125	16	20
6040	" 8, 1925..	"	♂	122	12	21
6042	" 10, 1925..	"	♀	135	15	19
6043	" 10, 1925..	"	♀	115	12	17
6044	" 10, 1925..	"	♂	115	13	18
6045	" 10, 1925..	"	♀	115	12	19
6049	" 12, 1925..	"	♂	112	12	18
6050	" 12, 1925..	"	♀	120	14	19
6051	" 13, 1925..	"	♀	125	13	19
6052	" 13, 1925..	"	♀	112	12	18
6053	" 15, 1925..	"	♀	120	13	18
6054	" 15, 1925..	"	♀	124	14	19
6055	" 15, 1925..	"	♂	121	13	19

Measurements of Lemmus trimucronatus from Various Localities in Baffin Island—Continued

No.	Date	Locality	Sex	Length	Tail	Hind foot
				Mm.	Mm.	Mm.
6057	Oct. 16, 1925..	Pangnirtung fiord.....	♂	114	13	17
6058	" 16, 1925..	"	♀	118	14	19
6059	" 16, 1925..	"	♂	115	13	18
6060	" 18, 1925..	"	♂	125	16	18
6061	" 18, 1925..	"	♂	132	16	18·5
6062	" 18, 1925..	"	♀	127	12	18·5
6063	" 18, 1925..	"	♂	125	12	18
6064	" 18, 1925..	"	♂	112	11	18
6065	" 18, 1925..	"	♂	123	12	19
6066	" 19, 1925..	"	♂	114	13	18
6067	" 19, 1925..	"	♂	118	13	19
6068	" 19, 1925..	"	♂	125	15	19·5
6069	" 19, 1925..	"	♀	112	14	19
6070	" 19, 1925..	"	♂	113	12	18
6071	" 19, 1925..	"	♀	115	13	19
6072	" 19, 1925..	"	♂	110	13	19
6073	" 19, 1925..	"	♂	116	15	19
6177	June 4, 1926..	Cape Dorest.....	♂	128	15	20
6178	" 4, 1926..	"	♂	120	15	18
6179	" 4, 1926..	"	♀	120	16	18
6180	" 4, 1926..	"	♀	105	14	16
6181	" 4, 1926..	"	♀	92	10	17
6182	" 4, 1926..	"	♀	87	11	15
6183	" 6, 1926..	"	♂	87	12	15
6192	" 9, 1926..	"	♀	112	17	19
6193	" 9, 1926..	"	♂	115	15	18
6194	" 9, 1926..	"	♂	127	16	19
6195	" 9, 1926..	"	♂	110	14	18
6196	" 9, 1926..	"	♂	100	14	18
6197	" 9, 1926..	"	♂	113	13	18
6198	" 11, 1926..	"	♀	115	20	20
6199	" 11, 1926..	"	♂	122	15	19
6200	" 11, 1926..	"	♂	125	14	19
6201	" 11, 1926..	"	♂	120	14	19
6202	" 11, 1926..	"	♂	117	17	18
6203	" 15, 1926..	"	♀	132	16	20
6204	" 15, 1926..	"	♀	140	15	20
6205	" 15, 1926..	"	♀	100	13	18
6208	" 17, 1926..	"	♀	122	16	19
6209	" 17, 1926..	"	♀	140	17	20
6212	" 21, 1926..	"	♂	110	14	18
6213	" 21, 1926..	"	♀	108	15	18
6215	" 27, 1926..	Fox islands.....	♀	138	18	20
6216	" 29, 1926..	"	♂	127	16	20

Describing the specimens from southwestern Baffin island, collected by the MacMillan expedition, Allen and Copeland (1914, pp. 8-9) write:

"Although it does not become white in winter like its near relative *Dicrostonyx*, there is nevertheless a very obvious difference between summer and winter coat. That of summer, in addition to being shorter and less silky, has a well-marked chestnut patch on the rump, standing out in contrast with the bright fulvous of the flanks; whereas the winter pelage is a nearly uniform ochraceous posterior to the shoulders, quite without the chestnut patch. This difference does not seem to have been generally noticed and a failure to recognize the two pelages is perhaps partly responsible for the account of supposed colour differences of the race *yukonensis*. Of this latter we have examined skins taken at no great distance from the type locality and do not find any characters that will separate them from comparable specimens of the brightly coloured *alascensis* of point Barrow, which is distinguishable from typical *trimucronatus* by its brilliant ochraceous-rufous sides and belly, in contrast with the pale ochraceous wash seen in the latter. The original description of the race *alascensis* seems to have been based on the winter pelage, whereas that of *yukonensis* was founded on a summer specimen."

Eighty-nine specimens of *trimucronatus* were obtained by the present writer at nearly all seasons and from various localities, from cape Dorset and Amadjuak bay on the south to Ponds and Admiralty inlets on the north. With the summer and winter specimens grouped apart, it is difficult to detect any difference between the pelages of the adults of the two seasons. The following is a description of a specimen (No. 6102 ♀) taken October 27, 1925, and answers equally well for an adult taken in late June. Nose to middle of back, yellowish grey liberally sprinkled with black hairs; followed by an area of warm buff extending from side to side; rump from bright chestnut to a rusty, cinnamon colour terminating in a buff about the tail; narrow area along the sides from cheeks to hind legs, ochreous buff, which is brightest posterior to the forelegs; the ochre colour becoming paler, extends over the upper belly and breast; throat and lower belly are greyish white; whitish hairs over the ears.

The one marked feature is the chestnut and rusty cinnamon-coloured rump which, though showing some variation from animal to animal, characterizes both the summer and winter coat. On many of the summer skins, the rump is as bright coloured as on winter specimens, others are noticeably pale, but some specimens taken in October match them. It appears, therefore, that no substantial differences exist between the summer and winter pelages of adults from Baffin island. An examination of a small number of skins, if adult autumn and winter specimens were compared with not quite full-grown summer specimens, might easily lead to the erroneous conclusion that two distinct pelages existed.

Well-grown juveniles taken from June to September are much paler and duller than adults, and possess little or no suggestion of the chestnut rump-patch. Typical of this phase is specimen No. 6185 ♀, taken on June 4, 1926. Entire upper parts dull, yellowish grey peppered with darker hairs, the general colour much like that of the anterior upper parts of adults, though averaging duller and with a more or less obscure leaden wash; very faint buffy cast over rump in good light; sides, upper belly, and breast pale buffy; throat and lower belly a trifle paler. Hair slicker and shorter than in adults.

Juveniles taken at Strathcona sound on August 19, 1923, are obviously entering the bright buffy and chestnut phase of the adult pelage, but in no instance is it so pronounced in tone.

It has been stated that the summer hair of *trimucronatus* is less silky and shorter than the winter hair. If so, the differences are scarcely detectable; in the large series of specimens examined there appears to be no substantial difference between the adults of the two seasons. On young animals the hair, of course, is much shorter in June, but by October it is nearly as long as that of adults. On immature animals taken on August 19, at Strathcona sound, the pelage is markedly short and silky. The following tables give the length of hair of juveniles, and of adults at both seasons. There appears to be no difference between the pelages of comparable male and female specimens.

Juveniles

No.	Date	Locality	Sex	Length of hair (dorsal)
				Mm.
6184	June 4	Cape Dorset	♂	15
6195	" 9	"	♂	16
4909	Aug. 19	Strathcona sound	♀	13
4910	" 19	"	♂	15
4911	" 19	"	♂	11
5703	Oct. 4	Pangnirtung fiord	♀	24

Adult (Summer)

No.	Date	Locality	Sex	Length of hair (dorsal)
				Mm.
6218	June 1	Amadjuak bay	?	28
6188	" 7	Cape Dorset	♂	22
6204	" 15	"	♀	25
6209	" 17	"	♀	30
6215	" 27	Fox islands	♀	18
6217	July 15	Cape Dorset	♀	22

Adult (Winter)

No.	Date	Locality	Sex	Length of hair (dorsal)
				Mm.
6038	Oct. 7	Pangnirtung fiord	♂	22
6042	" 10	"	♀	30
6051	" 13	"	♀	28
6057	" 18	"	♂	25
6086	" 24	"	♂	30
6102	" 27	"	♀	25

15. **Dicrostonyx groenlandicus** (Traill). GREENLAND COLLARED LEMMING.
Eskimo: *Awingak, Amilto; Avingak*, according to Hantzsch.

This species is comparatively rare on Baffin island and occurs only locally. From 1923 to 1926, only thirteen specimens were collected, although reported to be common by Kumlien and by the MacMillan expedition. Trapping failed to secure a single specimen. The species, apparently, does not live in colonies. It evidently keeps to high, rocky ground, for none was taken in traps in lower country where *trimucronatus* was abundant.

No trace of the animal on Baffin island was seen by the writer when accompanying the Canadian Arctic Expedition of 1923. It was not seen after arriving in Cumberland sound in July, 1924, until November 22 when a specimen in white pelage was found dead on the ice of Pangnirtung fiord one mile from land. The next specimen was taken on March 14, 1925, in Pangnirtung fiord. The animal was not again met until June 3, 1925,

when one, in summer pelage, was shot among the rocks at Takuirbing river, Nettilling lake. On June 6, an individual in winter coat was found dead on the tundra and, on the following day, Constable T. Tredgold, R.C.M.P., shot another among the rocks near the shore of Nettilling lake. An adult was shot on June 11. A juvenile was shot near Takuirbing river on June 23. The species was not again observed until April 22, 1926, when an adult was captured on the ice near the north end of Amadjuak lake. Two were shot at cape Dorset, on June 4 and 17 respectively, among the rocks near the sea. On August 7, one was captured with the hands at Amadjuak bay. Three adults were secured from Eskimos at McGee lake, some distance inland from Amadjuak bay.

Evidently referring to this species, J. C. Ross (1835, p. 93) states that a few were seen at Port Bowen in the winter of 1824-25. Under the name of *Myodes torquatus*, Kumlien (1879, p. 53) writes of this species at Cumberland gulf, in 1877-78:

"I procured but a single specimen of the lemming; this was caught near cape Mercy. They may yet be common somewhere along the sound, as I saw traces in different places where we stopped. According to the Eskimos they are getting less common every year. Whalemen have told me that twenty years ago some ships procured as many as four hundred skins at Niantilic, in the spring, from the young Eskimo, who killed them with bows and arrows."

Both the traces that Kumlien saw, and the skins referred to by the whalemen, may possibly be of *trimucronatus*.

Hantzsch (1913, p. 150) records that a number of *Dicrostonyx* (listed as *Dicrostonyx hudsonius richardsoni* Merriam) were noted at Blacklead island in the spring of 1909. He says: "It seems noteworthy that among more than thirty specimens which I had in hand, only a single female was found." In the winter he observed them very rarely. On the way to Nettilling lake he saw an individual in summer pelage running about over a lake on June 14, 1910. He records the species as very numerous at Tikerakdjuak (Nettilling lake) during July. The first young were observed the beginning of August. A few lemming trails were observed during December and January in the vicinity of the winter quarters on Foxe channel, near the mouth of Koukdjitariak river. Allen and Copeland (1924, p. 10), on the authority of MacMillan, state that this species is "very numerous everywhere, winter and summer" in the region of Bowdoin harbour and cape Dorset. There was evidently a great falling off in numbers between the time of MacMillan's visit in 1922 and the writer's in 1926.

The comparative rarity of *groenlandicus* on Baffin island throughout the period of the present writer's stay, rendered it impossible to ascertain anything of importance regarding the life history of the species. Allen and Copeland (1924, p. 11) writing from information supplied by MacMillan say, "He had many as pets and they were easily tamed. They fed largely on the bark of the dwarf willow. In the winter they tunnelled long passages under the snow, and these led up through to the surface with a clean, round hole about 1¼ inches in diameter. When surprised and cut off from retreat, they would stand up on their hind legs, strike their forepaws together, chatter with their teeth, and squeak. The Arctic fox and the snowy owl seemed to be their chief enemies, as well as the wolf, ermine, and rough-legged hawk". Hantzsch (1913, p. 150) writes that a snowy owl, a peregrine falcon, and a fox, which they captured, had nothing but the remains of this lemming in their stomachs.

Measurements of groenlandicus

No.	Date	Locality	Sex	Length	Tail	Foot
				Mm.	Mm.	Mm.
5718	Nov. 22, 1924..	Pangnirtung fiord	♀	120	17	15
6107	June 3, 1925..	Nettilling lake	♂	105	10	15
6019	June 6, 1925..	"	♀	108	8	17
6020	June 7, 1925..	"	♂	132	10	15
6021	June 11, 1925..	"	♀	120	10	17
6022	June 23, 1925..	"	? juv.	97	9	17
6024	July 4, 1925..	"	♀	137	10	18
6171	April 23, 1926..	Amadjuak lake	♂	120	12	18
6176	June 4, 1926..	Cape Dorset	♂	125	12	17
6207	" 17, 1926..	"	♀	120	15	18
6223	Aug. 4, 1926..	Amadjuak bay	♂	125	14	19
6224	" 7, 1926..	"	♀	127	13	18

Five distinct colour phases of the pelage are observable in the small collection of *groenlandicus* from Baffin island.

(*a*) The winter coat of white, found on specimens taken from November until April. The pelage is not pure white, but exhibits a marked greyish cast, owing to the dusky basal half of the hair. Allen and Copeland list a specimen which was taken at Bowdoin harbour on May 1, as still in full winter pelage.

(*b*) On a specimen taken on April 23, Amadjuak lake, the entire dorsal area is a pale, buffy-grey, the buff colour being very slightly more pronounced on the nape and rump, and more marked in a patch over each ear. A distinct, narrow, median line of darker hair extends from nape to rump. The remainder of the coat is in winter pelage, and the heavy claws of that season are still intact. Comparable with this transition phase are individuals described by Allen and Copeland from Bowdoin harbour. A half-grown young, March 18, has the enlarged winter claws, and its white coat already has a considerable admixture of dark hairs, particularly on the nape. An older and nearly full-grown specimen taken April 22 is similar, with the entire dorsal area a buffy grey, due to the incoming long hairs of the summer coat.

(*c*) This third phase is represented by two adults taken at cape Dorset and Amadjuak bay during the first week of June. These have entire dorsal region pale greyish with an obscure buffy wash and indistinct vermiculations of darker hairs. An obscure median line runs from crown to middle of back. Patches of ears rusty. Sides and underparts pale ochreous-buff, brightest on breast and sides of throat. A specimen procured from an Eskimo at McGee lake, probably taken in late May, has a vivid isolated area of brown, summer hair from nose to middle of the back, whereas the remainder of dorsal region is still in long, winter pelage. Sides and underparts are pale buffy, with bright ochreous on breast and sides of throat. Referable to this phase are specimens from Bowdoin harbour, described by Allen and Copeland in the following terms:

"Older specimens (Bowdoin harbour, May 5; cape Dorset, May 22) retain areas of long, white fur on the back and lower flanks, but elsewhere are much darkened by the new pelage. A second specimen from cape Dorset, May 22, probably a younger animal than the other, is in nearly complete summer pelage; an adult male from Bowdoin harbour, June 28, retains nothing of its winter coat but a small tuft of white on the lower rump. The enlarged claws of winter are still unshed at this date, though their upper portions,

have worn so as to expose the long, blackish nails of the summer condition. The variation in time and rate of moulding the winter coat is doubtless largely dependent on the age and general condition of the individual. (*See* Bull. Mus. Comp. Zool., vol. 62, p. 527 (1919))."

(*d*) A specimen taken at Nettilling lake, June 7, has entirely assumed the slick, short-haired, summer pelage. Dorsal area is a rich, bluish black, broadest and darkest over the upper rump, washed palely with buff and peppered with black and white hairs in obscure vermiculations. Sides and underparts in abrupt contrast with the dark back, a soft, creamy-buff which joins on lower rump above the tail. Darker, rusty-chestnut patch on sides of neck above forelegs. This is a strikingly beautiful pelage.

(*e*) This typical summer coat is represented by five specimens, almost uniform in every particular, taken at Nettilling lake, Amadjuak bay, and cape Dorset between June 11 and August 7. The entire upper parts from nose to tail, and extending well down the sides, a salt and pepper-like greyish buff to brown, the intermixture of whitish hairs giving the back a softly grizzled appearance; a rusty patch over the ears and a more or less obscure, fine, black median line, which in three specimens extends from nose to tail. The underpart, which merges softly into the darker area of the back, is pale ochraceous, darkest on the breast. June 11 and 17, specimens still retain a portion of the heavy winter claws; the others, taken on July 4, August 4, and August 7, respectively, have the fine black nails of summer. This lot obviously agrees with the July and August specimens described by Allen and Copeland from cape Dorset and Bowdoin harbour.

"Adults in early July are in almost full summer pelage and a single one from cape Dorset, August 15, is not essentially different. They are an almost uniform mixed grey and black above, but quite without a distinct median black line. At the sides of the body and underneath they are white with a wash of pale ochraceous and there is an ill-defined chestnut patch in the ear region. Five skins taken July 1 and 5, at Bowdoin harbour, agree closely in this coloration. A young one, about a quarter grown, is a buffy grey above with the ear spots a slightly brighter rusty. On the nape there is a short and indistinct median blackish line which, however, is so mixed with buffy hairs as hardly to be noticeable. This reduction of the median black stripe in both young and adult is characteristic of *groenlandicus*, for in all the other American forms it is strongly marked."

In the case of an immature animal collected at Nettilling lake, June 3, the entire upperparts are a uniform, brownish, ashy grey, with no suggestion of a median line. The underparts are pale ashy, with a slight suffusion of weak buff along sides and over the belly. Another specimen of an immature animal, taken on June 23 at the same place, is greyish buff over the entire back with a distinct, thin, black median line from nose to tail. Underparts ashy-grey with a soft wash of pale buff on sides and breast; face and crown browner. This specimen corresponds almost exactly with the pelage of the adults in class (*e*).

There is, it will be noted, a conspicuous difference between some of these specimens and those described by Allen and Copeland who write, "The reduction of the median black stripe in both young and adult is characteristic of *groenlandicus*". This feature, found on the MacMillan specimens from southwestern Baffin island, did not hold in the cases of two adults and an immature individual from Nettilling lake, and two adults from Amadjuak bay, all with full length median lines.

16. Lepus arcticus arcticus Ross. AMERICAN ARCTIC HARE.
Eskimo: *Ukaluk; Ukkulirk*, according to Hantzsch.

No animal is more characteristic of the barren mountain slopes of Baffin island than the Arctic hare. Over large areas it is scarce, but in many of the fiords penetrating the Penny highlands, where considerable vegetation of a kind flourishes, it is conspicuous in late summer and autumn, in its full, white, winter coat.

During eleven days spent at Ponds inlet, in 1923, only one hare was seen. It has a brownish coat and, apparently, was a juvenile. Sergeant Joy, R.C.M.P., stated that hares were quite common in the autumn of 1922 and winter of 1922-23, in the vicinity of Patricia river west of Ponds inlet, but on September 1, 1923, though old signs were fairly abundant, no hares could be found by the writer. At Pangnirtung fiord, from September 11 to 21, 1924, only two hares were seen and two others were reported to have been seen. Tracks were found in the snow up to heights of 2,300 feet. After a heavy snowfall, September 18, hares were found to be present, but rather sparingly, on the low ground bordering the seashore.

In 1924, the first hare was observed on July 31, in Sirmilling bay, Issortukdjuak fiord. The animal was bluish or slaty grey, with white legs and tail, and was so wild as to be observable only at a distance, with the aid of a binocular. On August 31, at Blacklead island, an Eskimo brought a hare shot on the mainland a few miles away. This animal was snow white except on the tips of the ears.

On September 15, 1924, Arctic hares were found to be numerous at the head of Pangnirtung fiord on the lower rocky slopes rising from the sea. The hares were snow white. Eight were easily shot in the space of an hour, as they were not in the least shy. They could be easily approached and in many cases would "freeze" while several shots were fired, after which they would leisurely bound away. Many could be approached to within twenty-five yards. In contrast, the hares near the post 18 miles away, seldom could be shot except at long range, and some could not be approached but bounded away until lost to view. Individuals were observed to run, almost without a halt, for over a half mile.

On October 3, 1924, six hares were seen on mountain slopes east of Aulatsivik peninsula, Pangnirtung fiord, but were so wild that only one was secured. During the winter of 1924-25, a few hares in Pangnirtung district were shot by white men and a number by Eskimo. In February, 1925, during the journey to the east coast, very few hares were seen. No signs of them were noted in Pangnirtung pass. The Eskimo at Broughton island and Padle said that hares were very scarce, but the Broughton Island Eskimo stated that the animals were tolerably common well up Meartajene fiord. In Merchants bay a few hare trails were seen, but natives stated that the animal was scarce. The northern entrance to Kingnait pass is reported by Eskimo to be normally a great hare country. A low, rounded mountain range on the east side of the pass is said to be usually well stocked with hares and is named Ukaluktoyou, after the species. While traversing the pass, no hares and very few hare trails were seen.

In April, 1925, along the route to Nettilling lake, hares were very scarce, though signs of the animal were seen at various places. At the lake from May 5 to June 3, hares were very scarce and only two were seen, the first in the lask week in May and the second on June 3. Both were wild.

The first seen could not be approached to within gun range, the second was shot only after tedious stalking. This animal had the general appearance of being in winter pelage, but close examination revealed the presence, beneath the white fur, of the brownish grey hair of the summer coat, about a half inch long. The white fur was in process of being rapidly shed and had disappeared from a large patch on one side. Tredgold, on June 14, saw a hare which was still white except for a greyish brown streak down the back of the ears. Another seen on June 20, appeared to be wholly white. On July 10, Tredgold saw a hare markedly bluish grey over the back. From this date to mid-September, during the traverse of the southern shores of Nettilling lake, no hares were seen.

During the autumn of 1925 and the following winter hares seemed to be more numerous at Pangnirtung than during the previous years, judging principally by the number brought by Eskimo.

On the traverse from Cumberland gulf to Foxe basin, in January and February, 1926, comparatively few signs of the species were observed. They were more common in the mountain valleys to the east than elsewhere, but sometimes miles would pass without seeing a single trail. A number of trails were seen on the Tarionnittuk route from Kaggilartung to Nettilling fiord. On the height of land (400 feet) between the two fiords, signs were more common than elsewhere. A number of trails were observed in Nettilling fiord and along the chain of small lakes via Amittok to Nettilling lake. At Takuirbing river numerous trails were seen among the rocks and over the tundra to the south, a condition which contrasted markedly with the long experience at this place in the summer of 1925. On the journey from this point through the island of Nettilling lake, across the western tundra to Foxe basin and along the north coast of Nettilling lake, on the return, not a single hare trail was seen. Evidently this animal is very scarce, or entirely absent from western Baffin island during the winter at least. Though no signs of hare were seen along the north coast of Nettilling lake, it is almost certain that the animal occurs among the low hills of the region. Like the caribou, the hare cannot obtain food on the plains west of Nettilling lake because of the deep, hard-packed covering of snow. On the windswept slopes of the hilly country food is procurable with comparative ease and certainty. On the return journey from Nettilling lake, hare signs were very common on the northwest slope of Amittok River valley and where the animals had been scratching the snow to reach the vegetation below. Hare trails were seen on February 12 near Nauyarping, on February 13 in Kangertlukjuak fiord, on February 14 at Bon Accord, and on February 15 near American harbour.

On the traverse from Cumberland sound to Amadjuak bay, in April, 1926, signs of hares were very scarce. At cape Dorset a hare was seen on June 3 and another on June 6; both animals still were white. No other hares were seen, but James Aitken, post manager, stated that they were fairly plentiful throughout Cape Dorset region and that every winter a large number were caught by Eskimo, in fox traps. On June 24, a hare was seen on one of Fox islands, 5 miles from the mainland. The animal seemed still to be in the winter coat.

Lepus arcticus was first described by J. C. Ross (*See* Allen and Copeland, 1924, p. 11) from specimens collected southeast of cape Bowen, northwestern Baffin island. Ross (1826, p. 93) records the occurrence of the hare at Port Bowen. Miller (1924, p. 449), giving particulars regarding

nomenclature, states that Ross, on page 151, appendix 4, vol. 2, "Voyage of Discovery", H.M.S. *Isabella and Alexander*, etc., applies the name *Lepus arcticus*, but that on page 170 of the same volume, the species is named *Lepus glacialis* by Leach. Kumlien (1879, p. 53) stated that the species was common in all suitable localities in Cumberland sound. Hantzsch (1913, pp. 150-151) stated that during the winter of 1909-10, a number were taken in the vicinity of Blacklead island. In early June he found them to be common along the route to Nettilling lake. During the summer of 1910, he saw a few at the lake. At the end of October he frequently observed the species on higher rock land bordering Foxe basin far north of Koukjuak river. In early December, near Koukdjitariak river, hares were scarce and extremely shy, but in January they appeared to be a little more numerous, and in February a number were killed. Allen and Copeland (1913, pp. 150-155) refer to twelve skulls of *arcticus* brought from Bowdoin harbour and vicinity. David Wark, Hudson's Bay Company, told the present writer that in 1925 hares were fairly common about Amadjuak bay. In a letter dated March, 1926, Corporal F. McInnes, R.C.M.P., states that the Arctic hare occurs nearly everywhere in the districts adjacent to Ponds inlet.

The Arctic hare appears to occur in greatest numbers in the mountainous regions and especially near the seacoast in sheltered valleys on whose southward-facing slopes the Arctic vegetation flourishes best. The species also occurs in regions of low relief, such as the hilly country which, with a general elevation of less than 300 feet, borders the eastern and northern shores of Nettilling lake, and extends west to Foxe basin. The Arctic hare throughout the year appears to shun low, flat country such as the plains west of Nettilling and Amadjuak lakes. The essential requirement is that the country be broken, so as to afford sheltered situations whereon vegetation may flourish during the short summer, and acclivities and ridges which during the winter will be wind swept and comparatively free of snow, thus permitting the animals to reach the vegetation. During winter at least, the dwarf willows, *Salix arctica* and *S. herbacea*, and the crowberry, *Empetrum nigrum*, form the chief article of diet.

One conspicuous trait of the species is invariably to run uphill, when disturbed. The animals are not confined to the valleys, but ascend to considerable heights. In 1924, trails were observed on mountain slopes up to heights of at least 1,500 feet. In October, 1924, the species was observed to be most common in rugged localities, between elevations of 500 and 800 feet. On December 20, 1925, a fresh hare trail was noted at an elevation of 3,000 feet on the top of a mountain bordering Pangnirtung fiord. Sergeant Wight states that at Port Burwell the hare in winter is found at all altitudes up to at least 1,000 feet. It does not seem to be the case, as has been stated by various writers, that the Arctic hare comes down near the sea in winter, and retires to higher altitudes in the summer.

The Arctic hare retains its white winter coat the greater part of the year. Though the summer is short in Baffin island, the species does pass into and out of a dark summer pelage in the course of a few weeks. That *all* individuals of *arcticus* effect this change has not been established. As Baffin island is 1,000 miles long, with a consequent marked difference in the climate of the two extremes, it is highly probable that the animals of the northern part and on Bylot island, tend to retain the winter pelage the year round, as is the case with *Lepus groenlandicus* on Devon

island. That this is so, even as far south as Cumberland sound, appears from the notes of Kumlien (1879, pp. 53-54), who says, "Many do not undergo any change of colour during the summer, and I doubt if it be more than partial change with any. I have seen pure white specimens during all the summer months, and occasionally one about half-grey". The latest dates on which the writer observed hares in the white pelage were June 20, in the case of an individual sighted at Nettilling lake, and June 24 on Fox islands on the south coast. The earliest autumn specimen in white was taken near Blacklead island on August 31. No hares in winter pelage were seen between these dates.

A specimen (No. 6018♂) shot at Nettilling lake on June 3, although outwardly in winter coat, had, over the dorsal region, the brownish grey pelage of summer, a half inch long, under the white fur. A large patch of the winter fur had been shed on one side. A hare observed in the same locality on June 14, had a greyish brown streak down the back of each ear, and another hare seen on July 10 was bluish grey over the entire back, with whitish legs. An individual observed through the glasses at Sirmilling bay, Issortukdjuak fiord, on July 31, 1924, was a bluish, or slaty grey, over the back, but still with white legs and tail. On June 12, 1910, at Nettilling lake, Hantzsch (1913, p. 150) says that the summer pelage was just beginning to be visible. A specimen taken showed the grey, short summer coat on the hind back—otherwise it was still white. Two individuals taken on June 19 were changing colour, but in the main still white.

The young of *arcticus* are evidently born in late June or early July. Unfortunately, no precise data are available. J. C. Ross (1835, p. XVI) states, "A female killed by one of our party at Sheriff harbour (Boothia peninsula), on the 7th of June, had four young *in utero*, perfectly mature, 5½ inches long, and of a dark grey colour. In one shot by us in Igloolik, on the 2nd of June, six young were found, not quite so far advanced." On June 19, 1910, at Nettilling lake, Hantzsch (1913, p. 150) collected two adult females in which were four embryos, which he stated were nearly ready for birth.

Measurements of Lepus arcticus arcticus

No.	Date	Locality	Sex	Length	Tail	Foot	Weight
				Mm.	Mm.	Mm.	Lbs.
5535	Aug. 30, 1924..	Blacklead island.....	♀	535	38	153	6
5681	Sept. 10, 1924..	Pangnirtung fiord.....	♀	663	39	166	6½
5682	Sept. 13, 1924..	Pangnirtung fiord.....	♂	561	39	155	6
5683	Sept. 13, 1924..	Pangnirtung fiord.....	♀?	586	38	152	7
5684	Sept. 15, 1924..	Pangnirtung fiord.....	♀	520	35	145	6
5685	Sept. 15, 1924..	Pangnirtung fiord.....	♀	560	34	162	6
5686	Sept. 15, 1924..	Pangnirtung fiord.....	?	590	36	170	6½
5687	Sept. 15, 1924..	Pangnirtung fiord.....	?	610	37	165	7
5700	Oct. 4, 1924..	Pangnirtung fiord.....	♀	545	25	160	
6018	June 3, 1925..	Nettilling lake.....	♂	560	50	154	
6078	Oct. 22, 1925..	Pangnirtung fiord.....	♀	330	43	152	

Seven other specimens weighed respectively, 5, 7, 6½, 6½, 6, 6½, and 6½ pounds. Thus the average weight of fifteen individuals of *arcticus* from Baffin island is 6⅓ pounds. The heaviest specimens weigh 7 pounds and are much lighter than *groenlandicus*, which reaches as much as 12 to

14 pounds in weight. Though not much systematic collecting has been done in northern Baffin island, it is assumed that *groenlandicus* is not present. However, F. D. Henderson, Officer-in-Charge of the Arctic Expedition of 1924, reports that a hare taken at Ponds inlet weighed 11 pounds. Though the weight strongly indicates *groenlandicus* rather than *arcticus*, probably the animal was an unusually large example of *arcticus*. The southernmost recorded occurrence of *groenlandicus* is represented by a specimen, No. 4902 ♀, collected at Dundas harbour, Devon island, August 15, 1923 (Canadian Arctic Expedition). Prior to this the species was known (*See* Miller, 1924, p. 455) only from Ellesmere island and the northwestern coasts of Greenland, although Nelson (1909, p. 60) provisionally maps its distribution as including Devon island, without, however, citing any records. It is highly probable that *groenlandicus* does not come south of Lancaster sound, although it is not yet known which hare inhabits Bylot island.

Nelson (1909, p. 60), for his revision of North American rabbits (*loc. cit.*, p. 63), had only a single "young adult" skull with head-skin, and a young skin from Baffin island, and unable to find any characters by which to separate *labradorius* (type locality Chimo, Quebec) from *arcticus* (type locality cape Bowen, Baffin island) he, therefore, considered the two synonymous. Miller (1924, p. 450) adopts this conclusion, lists *labradorius* as a synonym of *arcticus*, and gives the range of the latter as "Baffin land, and probably adjoining islands to the west; extreme north coast of Hudson bay and south across Hudson strait to include most of Ungava to Great Whale river on the east shore of Hudson bay, and Labrador north to Hamilton inlet." Allen and Copeland (1924, pp. 11-12), after studying a series of twelve skulls brought back from southwestern Baffin island by the MacMillan expedition, and comparing them with a large series of skulls from northeastern Labrador (Pamialuk, Makkovik, Rama, and Hopedale), conclude that *labradorius* is a valid race. This, therefore, excludes *Lepus arcticus arcticus* from the region south of Hudson strait and confines it to Baffin island, and, probably, adjoining islands to the west, and Melville and Boothia peninsulas.

Fifty-five skulls of *Lepus arcticus* were collected in Baffin island.

17. **Rangifer arcticus arcticus** (Richardson). BARREN-GROUND CARIBOU.
Eskimo: *Tuktoo*; *Tuktu*, according to Hantzsch.

This very important animal is widely distributed over Arctic lands and is more or less common throughout Baffin island. To the explorer it offers, over wide areas, the only means of subsistence and as a general source of food is second only to the ringed seal, *Phoca hispida*, the one great and unfailing standby of the Eskimos the year round. Important as the caribou is for food, its chief value lies in its skin, which is indispensable for clothing for use throughout the long Arctic winter.

The caribou at any particular season are unevenly distributed over the island, being governed in this respect by the occurrence of suitable vegetation and other factors. Thus in winter the caribou occur in the wind-swept hills and mountainous country of the east coast, but are absent from the level plains to the west where the deep, hard snow prevents them reaching the scanty vegetation below. Their summer distribution frequently seems erratic, as large areas holding numerous mountain valleys with, comparatively speaking, abundant vegetation, are often wholly devoid of

caribou, though such regions may be visited by the herds during the winter. Their autumn movements, which partake of the nature of migrations from the interior to the seacoast, are notoriously erratic. In recent years caribou have disappeared from areas which they formerly occupied.

No caribou were observed during the Canadian Arctic Expedition of 1923. In summer, as a rule, the caribou of the Arctic islands are far inland. Natives asserted that the caribou nearest to Ponds inlet in August, were 70 to 80 miles to the southwest. They were formerly abundant on the shores of Eclipse sound. In Strathcona sound, Admiralty inlet, numerous old caribou antlers and bones were seen on the site of a long-abandoned Eskimo village. The Hudson's Bay Company's officers reported that in 1922 large herds were present in Pangnirtung, Kingnait, and Nettilling fiords. William Duval stated that caribou in large numbers are present in June about Nettilling and Amadjuak lakes, where they give birth to their young.

The Royal Canadian Mounted Police at Pangnirtung stated that in the autumn of 1923 the first caribou appeared at the coast on October 4. They formed a herd of forty which was seen at intervals until December 18, when the herd moved inland. The next caribou were observed on April 10, when small companies appeared along the fiord. On January 26, a few caribou were seen 18 miles east of American harbour. On January 18 a police patrol saw two caribou on the ice 15 miles from shore near Nettilling fiord. The animals were observed in Kingnait fiord as late as April, 1924.

In 1924, the natives at Blacklead island killed the first coast caribou of the year in Bear sound on August 24. Two days later the present writer killed a male in the same locality. Eight were shot near here by the natives on September 3. At Pangnirtung fiord in the autumn of 1924 caribou were first seen on October 14. Large herds appeared on the west side of the fiord (for long years they have been absent from the mountains on the east side) on October 22, when a large series of specimens, including adult males and females, yearlings, and calves of the year, was secured. Another large herd appeared on November 8, when the natives killed about thirty animals. Caribou frequented the mountain valleys between Pangnirtung fiord and the upper reaches of Cumberland sound throughout the remainder of 1924 and the early part of 1925. In January, 1925, many caribou were killed by the Eskimos near American harbour, cape Nasauyak, and south of Sirmilling bay in Issortukdjuak fiord, and small herds were reported to be frequenting the upper ends of Pangnirtung and Kingnait fiords.

On the journey to the east coast in February and March, 1925, the first observed signs of caribou were a number of trails about two-thirds of the way across Pangnirtung pass. In the northern Pangnirtung fiord caribou trails were seen on February 12, in deep snow up to an altitude of 1,000 feet. According to the natives no caribou were being found near Broughton island, but numbers were said to be frequenting the valleys about Meartajene fiord. Caribou were entirely absent from Kevetuk region. At Padle, Merchants bay, the natives had been securing caribou in plenty in Kanatukjuak and Padle fiords. The Eskimos said their movements at times were odd; frequently the herds travelled into the interior one week and returned to the coast region the next week. The winds may influence such movements. The herds probably do not travel

far after reaching their winter ranges, unless much disturbed by hunters, or possibly, by wolves. In Kingnait pass, on March 6 and 7, herds of about one hundred caribou were seen. Some of the animals were very unsuspicious and allowed the dog-teams to approach within 60 yards. The region appeared to be a favourite for winter grazing.

Cumberland Sound Eskimo state that a limited number of caribou are to be found, both winter and summer, in the highlands of Saumia, Kingua, and Talirpia. Occasionally, they say, fawns are born within a short distance of the sea.

In April, 1925, John Hayward reported seeing about one hundred caribou inland some 20 miles west of Pangnirtung fiord. They do not inhabit that district in summer.

On the journey to Nettilling lake in late April, 1925, two or three trails were crossed north of Nauyarping, but no other signs of caribou were seen until the Sarbukdjuak tide-rip, in Nettilling fiord, was passed. Several fresh trails were encountered on May 4 at Kangia, at the west end of Nettilling fiord. On May 5, a band of seven were seen on Amittok lake and numerous fresh trails were noted farther west. From May 5, until August 18, while camped on the bank of Takuirbing river at Nettilling lake, caribou were observed at frequent intervals and fresh meat was always easily procurable.

According to the Eskimo, the numerous islands in the eastern part of Nettilling lake are by far the best district for caribou in late summer and early autumn. By all accounts, the caribou by late August become decidedly more numerous in this district and along the north shore of the lake. They are then slowly moving eastward toward the mountain valleys and the sea. This is an annual local migration.

The voyage on Nettilling lake commenced August 18. Numerous caribou were observed on the islands, and several were shot. With one exception, all the caribou observed in the eastern end of Nettilling lake were bulls—the one exception was a barren cow. Evidently females and calves, as a general rule, do not resort to this district during summer. The Eskimo assert this to be the case, that only pugnacious male caribou are to be met. Hantzsch had the same experience.

The first females, three cows, each with a calf, to be seen, were found on August 25 on the rolling tundra between the south end of the lake and Pingualuik. They did not display the hesitating curiosity of the bulls, but after one earnest glance, fled wildly away with their calves, not stopping until lost to view over a low ridge. A cow and calf were taken the following day near the mouth of Amadjuak river. During the several days spent in this locality very few caribou were observed. According to the Eskimo, this district formerly was a famous hunting ground, with large herds and calves in abundance.

In late August, 1925, while cruising along the west coast of Nettilling lake, caribou in small numbers were seen almost daily. Bulls and cows were in about equal numbers, and accompanied by a small number of calves. Nothing resembling a herd was seen and it was thought that the common use, by former writers, of the term, herd, had been an exaggeration. At Koukjuak river, in early September, caribou, among them fawns, were observed on the tundra, but were never numerous. On the return journey along the southern coast of Nettilling lake, caribou were only sparingly observed. On the journey from the lake to Nettilling fiord between

September 11 and 13, no caribou were seen until the fiord was reached, when, September 20, an old bull was shot.

On the traverse across Baffin island to Foxe basin, in January and February, 1926, the first signs of caribou were seen at Tarionnittuk lake, south of Kaggilartung fiord and the next at Nedluksean bay in Nettilling fiord. Several trails were observed on Amittok lake in late January, and a number crossed among the islands up Nettilling lake about 18 miles northwest of Isoa. No signs of caribou were seen between this point and Foxe basin. At the northern extremity of Nettilling lake, the trails of a band of seven animals were seen in early February among the low hills at Karmang. It is evident that the entire western plains are deserted by caribou during the winter, owing to the deep, hard snow that covers the country from November until late May. In the regions, even of low relief, the wind partly sweeps the slopes free of snow, and the caribou are able to reach the vegetation with comparatively little effort. Along the north coast of Nettilling lake trails were frequently observed on the hill sides, and on the ice between the mainland and the island. On February 12, a few trails were seen in Nettilling fiord north of Nauyarping. An old trail was crossed on February 13 on a small mountain tarn on the overland route from Kangerlukdjuak to Kaggilartung fiord.

The police on returning from a patrol to the east coast in February, 1926, reported caribou to be numerous in Kingnait pass, as they had been the previous year.

On the trip to Nettilling lake in March, 1926, several fresh caribou trails were observed in the neighbourhood of Tikerakdjuausirn point and a single animal sighted near Padle. On March 23, a party of nomadic Eskimo hunters were met, who stated that two days previously they had killed nine caribou near Meadow bay. This is conclusive evidence that caribou resort to the east side of Nettilling lake throughout the year.

On the traverse from Cumberland sound to Amadjuak bay in April, 1926, five caribou were seen near Padle in the southern part of Nettilling lake. No sign of the animals was seen in the low region between the two great lakes, until near the north shore of Amadjuak lake where several fresh trails were crossed. A band of six were observed on a point in Mingo lake, April 25; no sign of them was observed between this point and the sea.

David Wark, post-manager for the Hudson's Bay Company at Amadjuak bay, stated that caribou are usually plentiful in the district of Lake harbour during the autumn and winter and breed to a limited extent not far away in the interior. Natives have reported seeing caribou on the Grinnell glacier in summer, where they evidently go to escape the mosquitos. From statements made by Eskimo, it appears that the caribou start from Grinnell peninsula in early spring, pass in late spring between Amadjuak and Mingo lakes, continue north along the west side of Amadjuak lake during the summer, travel around the north side and south along the east shore of the lake during the autumn and early winter, and finally in late autumn arrive again in the eastern part of Grinnell peninsula. The Eskimo state that calves in considerable numbers are born on the low, rolling upland about Mingo lake.

Vague information gives a hint of another circuitous movement among caribou, this time relating to the caribou north of Kelly bay, who work northeast toward Mingo lake and probably merge in the migratory stream

from Grinnell peninsula, pass north along the west side of Amadjuak lake, strike off to the northwest, turn south into Foxe land, and finally again approach the sea in early winter.

The following notes were recorded by F. Milton, formerly post-manager, Hudson's Bay Company, at Amadjuak bay:

"May 22, 1921. Caribou plentiful around Mingo and McGee lakes.
" 25, 1921. Reindeer fawns, twelve in number; this is about a month earlier than caribou.
August 30, 1922. Caribou fairly plentiful at Amadjuak lake.
October 16, 1922. Natives from inland report general scarcity of caribou.
May 21, 1923. Caribou tolerably common at McGee lake.
August 21, 1923. Caribou scarce in the region.
September 24, 1923. Caribou very scarce inland.
November 16, 1923. Good sign of caribou inland.
February 22, 1924. Caribou plentiful at Amadjuak lake.
March 20, 1924. Caribou sign at McGee lake.
March 21, 1924. Six caribou observed near McGee lake.
February 20, 1925. Band of fourteen caribou observed inland.
August (late) 1925. Numerous caribou on the south coast of Amadjuak lake east of Mingo river."

In late February, 1925, caribou were reported to be plentiful two days travel inland from Lake harbour.

Caribou formerly occurred in fair numbers in Cape Dorset district, but are now found only at a considerable distance north and northeast.

Kumlien (1879, p. 54) writes:

"The reindeer are found in considerable numbers on both sides of Cumberland sound, but by far the greater number on the western shore. . . . Within the last few years they are reported as less common on the Penny peninsula; but I hear of no apparent diminution of their numbers to the west and southwest, especially toward lake Kennedy (Nettilling lake), where they are reported as very abundant."

J. T. Lavoie (1912, pp. 101-103) reports nine caribou taken by his party, April 27, 1911, on the north shore of Fury and Hecla strait. On April 30, near Whyte inlet, they passed several herds. Hantzsch (1913, pp. 144-149) reported caribou to have been unusually plentiful during the winter of 1909-10 in the vicinity of Blacklead island, Cumberland sound. Very many caribou were observed and killed by Hantzsch on his trip to Nettilling lake in the spring of 1910, and he saw many in June in Isoa region. He reports them to have been common at Tikerakdjuak in July. During August and September, while on the west coast of Nettilling lake, he observed many, but usually singly or in very small bands. In October small bands were seen near Foxe basin. During November and December, at the winter camp near Koukdjitariak river, trails were rare and not a single animal was taken. Hantzsch remarks that his Eskimo party in making a trip from the winter camp to Koukjuak river and return, in the first half of December, failed to see a single trail. In January and February, 1911, caribou were entirely absent. On March 5, the first fresh trails of the spring were encountered some distance north of Koukdjitariak river. During March numerous trails and small bands were observed, becoming more numerous in early April. (*See* Hantzsch, 1913, pp. 144-149; also Rosenmüller, 1913, pp. 692, 702, 712.) From the foregoing it will be observed that Hantzsch's experience in regard to the caribou of the interior, corresponds with that of the writer in 1925 and 1926.

Tremblay (1921, pp. 141, 248) found caribou in fair numbers on March 11, 1913, at the southern end of Admiralty inlet. On June 30, he saw a band of seven caribou on the western shore of Eclipse sound.

Corporal F. McInnes, R.C.M.P., formerly of Ponds inlet, Baffin island, has kindly furnished the following notes:

"In the rolling country between Maxwell Murray bay and Milne inlet, small herds of caribou can be found after the month of January and up to the end of April, after which they become more numerous. Small herds occur near the end of Arctic sound during October and November, and occasionally, also, in the month of December. They have also been reported as occurring sparingly here during the summer months. In late spring and summer small bands resort to the country around Scott inlet. A limited number cross the ice of Navy Board inlet in the spring from Baffin island to Bylot island, and, remaining there for the summer, cross back again to Baffin island shortly after the ice forms in the fall. On October 2, 1924, caribou crossed Eclipse sound from the south-west corner of Bylot to the Salmon river, west of Ponds inlet, travelled up it a distance, then crossed overland into the region of the Patricia river near Toolukana. Similarly, on November 3, 1924, a solitary caribou crossed from Bylot to Jones creek (Ponds inlet), travelled a distance up the stream, then swung westerly towards Salmon lake and the Patricia river. There are, however, very few caribou found on Bylot island during the summer. Large herds migrate north in the spring from the Melville peninsula, across Fury and Hecla strait, and on the north shore divide, some going east and some west for the summer. Large herds are found at the end of Admiralty inlet and to the west of the inlet on the Brodeur peninsula. The Eskimo report caribou in large numbers between Fury and Hecla strait and Jungersens fiord."

It has been said that caribou occur sparingly in the low mountains west of Clyde river.

The foregoing notes on the distribution of this species supply information regarding the greater part of Baffin island except for Cockburn land, towards the northern part of the island, a large region which is still unexplored.

On Baffin island, as elsewhere, the barren-ground caribou is subject to attack from wolves which frequently loiter in the vicinity of herds and are a real menace to the weaker animals, the calves, the solitary, and the unwary. The present writer has seen several comparatively fresh caribou remains as evidence of the depredations of this animal. The caribou, in the aggregate, must suffer a considerable annual mortality from this cause. On the other hand, the writer believes that the Eskimo, in the natural course of events, do not appreciably reduce the number of caribou. These people live principally on seal, apparently by preference as much as expediency, although they are fond of caribou meat. What caribou they do kill is, in the main, for the securing of skins for winter clothing. In regions, such as parts of Ungava, where for one reason or another the natives are unable to get caribou, there is a great deal of suffering from the cold, with a consequent falling off in the birth rate. It is understood, also, that such people are more susceptible to disease.

The police at Pangnirtung, in April, 1924, found two dead caribou on the ice near Newbayen harbour, which had been tracked down and killed by six wolves. One was found under similar circumstances near American harbour. Kumlien (1879, p. 54) referring to the caribou of Cumberland sound, remarks:

"These droves are continually beset by packs of wolves, which keep a viligant watch for any that unluckily stray out of the herd, for such a one is immediately attacked and run down. It is seldom, however, that the wolves can do much damage to the herd when they keep together, as they form a circle, the weaker ones in the centre, and can thus keep the wolves at bay."

This latter feature was not observed by the present writer. Hantzsch (1913, p. 145) mentions wolves but once. In an entry of June 24, 1910, he writes:

"On this day a single individual seen by my people at Isoa, Nettilling, standing up to the body in water, while on the bank a wolf lay in wait for the deer . . . . The outcome of the wait is scarcely to be doubted: as soon as the shivering animal goes to the land, it will be torn to pieces by the wolf."

At times the caribou is very shy, as was observed at Nettilling lake by both Hantzsch and the writer. This is not a universal trait developed at certain seasons. It in many cases appears to reflect individual temperaments, though on the whole the animals seem less shy when herded in winter than when wandering singly or in small bands during summer. While gathered in large herds during late autumn and winter, they are, sometimes, amazingly indifferent to an approaching man. In the case of a large herd in Kingnait pass in March, 1925, the animals milled around us at a distance of only a few yards like a bunch of cattle, before taking fright and leisurely departing. A large herd west of Pangnirtung fiord in October, 1924, behaved in the same general way. Curiosity is a marked characteristic of the caribou.

In summer, the animals are inclined to be shyer; the solitary bulls frequently are nervous and flighty, and cows with calves are markedly so and must, as a rule, be approached with considerable caution to get within dependable rifle-range. But in many cases even a solitary caribou will permit the close approach of a man advancing upright, in plain view, if he advances upwind. On May 9, 1925, the writer, making no effort at concealment but walking upwind, approached two bulls on Nettilling lake. The animals paid little attention as they were somewhat noisily approached on snowshoes until, after coming within close range and walking around them into the wind, the human scent reached them, when both leaped suddenly and then trotted rapidly away with long, swinging, dignified strides. When thus disturbed they often may be suddenly halted by a sharp whistle, or a loud hissing sound, when they will swing about and gaze motionless for several moments before again fleeing.

If one sits motionless and if the wind is right, caribou occasionally will walk up to within very close range without suspecting one's presence. A pair of bulls at Nettilling lake, on June 3, came in this manner within 30 yards of the writer, and when he suddenly stood up and waved his arms they dashed wildly away for only a hundred yards then suddenly stopped, gazed intently, and came back a few steps to satisfy their curiosity before finally trotting away. About the same date the writer, while walking on Nettilling lake, approached upwind but boldly to within 200 or 300 yards of five feeding caribou and then lay down to study their behaviour through glasses. Presently a stag detached himself from the party and started out over the ice in a direction that would take him very near to the prone observer. When a hundred yards away he appeared to notice the human, halted and seemed mystified. Plainly somewhat intimidated, he walked off at a slight tangent, stopping every few yards to gaze in the writer's direction. Presently, on attempting to crawl toward him, he stopped motionless, watched narrowly for some moments with the deepest curiosity, and then suddenly leaped high into the air and fled with long, swinging strides back to the others. This agitated the remaining members of the band, and all began to trot backwards and

forwards along the shore studying the writer at a distance of 300 or 400 yards. Several times they came much closer and then bolted away again. The writer then halloed, cat-called, laughed, and whistled, as a result they exhibited a strong tendency to flee but because of their curiosity still were loath to go. Finally, they struck out over the lake in a wide detour, stopping every few minutes to gaze back, until they were lost among the islands.

On the great tundra bordering Koukjuak river, bulls were approached within short distances, by merely standing still in an upright position while they looked about, and walking forward when they grazed. Even with all their fears aroused, they will sometimes circle closer than when first frightened.

While sailing among the islands in the eastern part of Nettilling lake, in September, 1925, numerous solitary males were observed and some of them were greatly frightened at the sight of the sail boat, but others were more curious than frightened. Several trotted parallel with the shore for a few hundred yards to keep the craft in sight, and one fine stag ran for nearly a mile abreast of the boat.

During the summer the males are solitary or wander in twos and threes or, less commonly, in little bands. At this time they were never observed to fight among themselves. Real combats occur only at the time of rutting season, which begins in early October and is at its height during the last half of the month. At this period the bulls have many pitched battles for the possession of the females, which are accompanied then by calves and in some cases by yearlings. Hantzsch (1913, p. 146) noted some tendency in mid-September for caribou of both sexes and different ages to mix together. During late autumn and throughout the winter animals of both sexes and all ages congregate in large herds. In April the herds begin to break up, the males and females becoming almost if not entirely separated. The calves are born in late June. The earliest observed by Hantzsch was seen on June 30 near Tikerakdjuak point, Nettilling, and was described by him as being "quite young". The first fawns taken by the writer were secured August 26, 1925, at the mouth of Amadjuak river, and August 31, 1925, at Koukjuak river. The earliest fœtus was noted on February 15, and was 7 inches long and well formed.

The antlers of the male are shed in December and January and new antlers begin to appear in late April. On May 8, at Nettilling lake, the stubs of the new antlers of the males were from 4 to 6 inches long. The rate of growth of the antlers is very rapid. On June 17, two males, with velvet-covered beams 17 and 23 inches long, respectively, were killed. A male shot on August 6 had well-formed, though not fully grown, antlers carrying the full compliment of points. The height of these was 42 inches, and the spread 26 inches. The antlers are nearly full grown by late August, but the points are still in many cases somewhat soft and pulpy. By the first days of September the velvet begins shedding from the beams, and matured lower points. Hantzsch first noticed loss of velvet on August 28. With many, the antlers are not wholly cleared of velvet until after the middle of September. Adult females do not shed their antlers until long after the bucks, that is, until the spring of the year, probably not before May. Many likely do not lose them until after the calves are born in June. Shortly after the new antler, growth begins and appears to reach maturity at about the same time as that of the males, or somewhat later;

the velvet is evidently carried, as a rule, to a later date than in the case of the males and between individuals there is apparently much variation in this date. Hantzsch (1913, p. 143) mentions observing a female with antlers partly in the velvet on April 7, and the calf with her had the spikes still in the velvet.

The winter coat begins shedding about the middle of May, though this may not be apparent unless the skins are handled. Even as early as May 8, a bull was killed at Nettilling lake, on which the hair shed in handfuls with very slight manipulation. Shedding is not usually evident on live animals until well on in June, when patches of winter hair will be missing. A male killed on June 24, though apparently in complete winter pelage when observed at a distance, was found to be shedding lavishly, with the summer coat a half inch in length underneath. On July 14, a buck was seen with the belly, sides, part of neck, and face free of the winter hair. A male collected on August 1, still retained much winter hair on the back, upper sides, and along the ridge of the neck; the remainder of the body was in summer pelage three-quarters of an inch long. A bull killed on August 14 still had a sprinkling of long winter hair on the back. A male and female taken on August 19 were in full summer pelage and after this date none was observed carrying any of the winter coat.

An average October specimen (No. 5715 ♀) taken at Pangnirtung on October 22, 1924, is whitish tinged very pale buff, over the neck from the shoulders to the base of the antlers and to the cheeks; the same coloured light hairs on the under side extend forward almost to the end of the lower lip and backward over the breast, between the forelegs and over the entire neutral surface. The back of the forelegs, the inside and back of the hind legs to a limited extent, the buttocks, and the under side of the tail are also white. The back from the upper point of the shoulders to the base of the tail, and the top of the tail, is a warm sepia (Ridgway); in some examples the colour is overcast with grey. The sepia colour, but of a lighter tinge, extends well down the sides. The dark area is most pronounced, in the majority of comparable specimens, in a field about a foot wide and extending from a point between the shoulders, or just back of them, to the rump, and in most individuals descending the fronts of the fore and hindlegs to, or near, the toes. In most cases, in autumn, the sides of the caribou below the dark dorsal area is a pale buff, or tawny olive, with in some animals a line of darker hair between this and the white hair of the belly, forming a distinct, though not pronounced, line of demarcation between the two areas. The face and backs of the ears are markedly dark brown to sepia, though on some individuals are lighter and greyer. The general impression of the caribou of this season is that of a greyish to brownish white animal with a dark back.

The length of the hair on October specimens averages as follows: back, 50-60 mm.; buttocks, 60-70 mm.; belly, 50-60 mm.; throat 90-150 mm.

An individual killed in Kingnait pass on March 8, 1925 (No. 5740♂) is not markedly different in coloration from late autumn and early winter specimens, though the hair over the sides is longer on an average. Nearly all the hair is rubbed off the neck of this specimen, probably from scratching there with the hind feet, as a result, possibly, of irritation set up by warbles developing under the hide toward spring. This feature is not observed in autumn individuals.

A typical summer specimen (No. 6028♂), taken at Nettilling lake on August 8, 1925, is a rich clove-brown over the entire back from a point immediately forward of the shoulders to the rump and over the sides and down fore and hindlegs. The belly and buttocks are white, the line between the two colour areas being very sharply defined. The upper part of the neck is greyish buff, with the middle line darker, the same colour extending to the back of the ears, crown of the head, and the face. The under neck and throat are much whiter. The upper side of the tail is of the same colour as the back. On this individual, as on others, there is an incipient lighter and greyer line within the dark area along the sides. The hair length is as follows: back, 30 mm.; buttocks, 40-60 mm.; belly, 20 mm.; throat, 60-70 mm.

On a specimen (No. 5536♂) killed in Bear sound, Cumberland sound, on August 28, 1924, the hair over the back is 40-45 mm. long, on the buttocks 40-60 mm., belly 35-40 mm., and throat 90-120 mm.

Two fawns (Nos. 6033♂ and 6035♂) collected at Nettilling lake in late August, 1925, are soft to bone brown over the back and sides, the colour extending to the legs, but becoming paler below hock and knee. On one animal (No. 6033) a narrow, greyish line extends down the front of the leg between the knee and the toes. The face is much darker with greyish areas. The belly, buttocks, under side of tail, and a narrow line up the middle of the throat, are white. In fawns of this age the pelage is beautifully soft and silky, with none of the coarseness of hair that characterizes the adults. The average length of the hair over the back of these specimens is 25 mm.

Matschie (*See* Hantzsch, Introduction 1913, p. 143) remarks that the antlers of *Rangifer*, as drawn by Hantzsch, point significantly to the existence of two very different races of caribou. So far as the present writer could discover, there is nothing to indicate that more than one race occupies the island. What Matschie considered features distinguishing between two races, seem to be merely individual variations, which are much in evidence in the antlers of the barren ground caribou.

Measurements of Rangifer arcticus

No.	Date	Locality	Sex	Length	Tail	Foot
				Mm.	Mm.	Mm.
5707	Oct. 22, 1924..	Pangnirtung fiord.....	♂	1,680	153	535
5708	" 22, 1924..	"	♀ fawn	1,351	102	459
5709	" 22, 1924..	"	♀ faw	1,453	127	510
5710	" 22, 1924..	"	♀	1,530	102	484
5711	" 22, 1924..	"	♂	1,708	153	561
5712	" 22, 1924..	"	♀	1,683	127	485
5713	" 22, 1924..	"	♂	1,683	127	535
5714	" 22, 1924..	"	♀	1,632	127	561
5715	" 22, 1924..	"	♀	1,581	113	510
5740	Mar. 8, 1925..	Kingnait pass.....	♂	1,989	204	561
6028	Aug. 8, 1925..	Nettilling lake.....	♂	1,810	—	—
6030	" 14, 1925..	"	♂	1,989	153	535
6031	" 19, 1925..	"	♂	2 014	139	535
6032	" 19, 1925..	"	♀	1,861	114	510
6033	" 26, 1925..	"	♂ fawn	1,250	114	431
6035	" 31, 1925..	"	♂ "	1,122	108	382

18. **Balaena mysticetus** Linnaeus. BOWHEAD WHALE.
Eskimo: *Aukbik.*

This large whale was formerly found in comparative abundance in Davis strait, Baffin bay, and the northern parts of Hudson bay. At the present time it is nearly extinct. Low (1906, pp. 256-258) makes the following remarks:

"The favourite resort for whales both in Baffin and Hudson bays is along the edge of the ice still fast to the shore, with an abundance of loose ice outside. When the shore ice is all melted or loosened they prefer to remain about the edge of the large masses of floating ice. This habit of remaining close to the ice-masses appears to be due to two causes—food and protection. The whale is a very timid animal, and is easily frightened by anything out of the ordinary; it then either takes to the protection of the lightly packed ice, or leaves for distant parts.

The whales are known to enter Hudson strait early in the spring; they have been captured around Big island in April and May, and at the western end of the strait in the latter part of May. They then cross to the west side of the bay along the edge of the open water, being found in June and early July along the land-floe on both sides of the southern part of Roes Welcome. As the Welcome clears of ice they proceed north to Repulse bay, and, still later, pass through Frozen strait into Foxe channel. Late in the autumn they again pass through Hudson strait going eastward. By far the greater number of whales taken in Hudson bay have been killed in the vicinity of Whale point near the southern entrance to the Welcome.

Some whales are supposed to remain during the winter in the waters of Hudson bay, as they have been reported by the Eskimo as being seen in the depth of winter off Mansfield and some of the more southern islands of the east side of the bay.

The migration of the whales in Davis strait and Baffin bay is fairly well known. In March they are found along the edge of the land floe of Cumberland gulf and Frobisher bay, where they remain until the beginning of May, when they cross to the Greenland coast, and in June are found on the "middle-ground" to the south of Disko. From there they follow the shore ice north to Melville bay, and then cross along the southern edge of the "north-water" to the western shores of Baffin bay. Should there be a good land-floe in Jones and Lancaster sounds, they are found there late in July and in the beginning of August, but the greater number go south to the mouth of Ponds inlet, where the principal summer catch is made. During September and October they are found along the western edge of the "middle pack," and the whalers pass southward from Ponds inlet, making use of a number of good harbours known only to themselves on the eastern side of Baffin island, and going out only in fine weather. According to the season they remain on that coast, to the northward of Cumberland gulf, until the middle or end of October, when they leave for Scotland. In October the whales again enter Cumberland gulf, and remain along the edge of the newly-formed land ice until December, when their position is unknown until their return in the following March. They are supposed to go in the meantime, to the southward, off the mouth of Hudson strait and along the northern Atlantic coast of Labrador, but the weather there is too severe to permit of the use of open whaleboats."

19. **Balaenoptera physalus** (Linnaeus). COMMON FINBACK WHALE.

Low (1906, p. 273) says of this species that it is found in Davis strait, chiefly on the cod-banks where it devours immense numbers of fish. As it gives a remarkably small quantity of oil for its size it was seldom killed either by the whalers or the Eskimo. Kumlien (1879, p. 66) in referring to this whale remarks that he cannot positively assert that it frequents the Cumberland waters to any great extent. He observed it north of Hudson strait and about cape Mercy as well as on the Greenland coast in Disko bay.

20. **Sibbaldus musculus** (Linnaeus). SULPHUR-BOTTOM WHALE, BLUE WHALE.

Low (1906, p. 273) lists this species as among the whales that were most common and important in the eastern Arctic at the time of his voyage in the *Neptune*. He says, "This whale is usually confounded with the one last mentioned; has the same range and habits, and is rarely killed by the natives."

21. **Megaptera nodosa** (Bonaterre). HUMPBACK WHALE.

Kumlien (1879, p. 66) says of this whale, "I could not ascertain that this whale is common in Cumberland gulf at any season. It frequents the southern waters, but it is little troubled by the whalers. The Eskimo do not seem to have a very clear idea of it." Low includes it among the whales found in Baffin bay.

22. **Orcinus orca** (Linnaeus). ATLANTIC KILLER WHALE.

Kumlien (1879, p. 66) says that the killer is a very common whale in the Cumberland waters, where it arrives with the white whales and follows them up the fiords. Regarding this species Low (1906, pp. 273-274) makes the following remarks:

"The killer is very voracious, and lives largely upon fish, seals, porpoises, and white whales. It also attacks large right whales, and on this account is disliked by the whalers, as the presence of a single killer means the immediate flight of all creatures in that vicinity. Luckily it will not penetrate among the heavy floes, where the right whales retreat for safety. Some idea of the destruction to life caused by the killer may be formed from the fact that in the stomach of one were found fourteen porpoises and fourteen large seals; it choked to death swallowing the fifteenth. They chase seals and white whales on shore, and the seals are often seen jumping clear out of water in their endeavour to escape."

23. **Phocaena phocaena** (Linnaeus). HARBOUR PORPOISE.

Kumlien (1879, p. 66) says that this species was by no means rare, at the time of his visit, in the southern waters of Cumberland sound during spring and autumn. He had no record of them at the upper end of the gulf. Low (1906, p. 274) remarks, "The porpoise arrives on the Greenland coast early in the spring, but does not go north of latitudes 69 degrees north, nor does it frequent the ice-laden seas of Baffin bay; it is unknown in Hudson strait and bay."

24. **Delphinapterus leucas** (Pallas). WHITE WHALE.

Eskimo: *Killeluak; Kellellugak,* according to Hantzsch.

This species, according to the writer's observations, is by far the commonest of the Cetacea about Baffin island, especially in Cumberland sound and Frobisher bay. They occur in Lancaster sound, Prince Regent inlet, in varying abundance all along the east Baffin Island coast, and the north shore of Hudson strait.

On the Canadian Arctic Expedition of 1923 they were observed only at Erebus bay, Beechey island, on August 17. During the few hours spent there, hundreds of white whales passed up and down the coast. They moved in comparatively close formation and never more than 50 to 100 yards from shore. They progressed slowly, continually coming to the surface, and showing in turn almost their entire length from blow-hole to a point just forward of the tail. Occasionally one also threw the tail out of the water. The wash of the water due to their passing and the continual

blowing and low grunting of the animals could be heard at a distance of several hundred yards. The adults were pure yellowish white and the young, brown. They were extremely sensitive. A single shot fired into this school caused the whole company, with one accord, to disappear, nothing more being seen of them until they had travelled several hundred yards away. The gambolling and blowing were then resumed with customary vigour.

The Hudson's Bay Company at Pangnirtung fiord devote special attention to this species in early July, when it enters the fiords of upper Cumberland sound. In 1923 about six hundred animals were killed. In early July, 1924, about eight hundred were secured in Midlualik bay, Issortukdjuak fiord, by the following described method. Large numbers of white whales having been observed swimming up the bay, they were held in the bay by racing motor-boats across the narrow entrance and by firing rifles and beating pans. When the tide dropped, the whales were left stranded, were then shot and skinned, and the carcasses permitted to drift out to sea on succeeding tides.

On July 29, 1924, large numbers of white whale were observed at high and low tide in Midlualik and Sirmilling bays, Issortukdjuak fiord. They are distinctly inclined to frequent the mouths of rivers discharging into bays and fiords.

A number of white whales were seen in Pangnirtung fiord on August 12, 1924, and on September 24 they were reported to be abundant in Nettilling fiord. They are said to frequent the upper waters of Cumberland sound throughout the year, providing that during the winter open leads exist.

In the summer of 1925, large numbers of white whales were taken, as usual, in Midlualik bay, by the Hudson's Bay Company. As the year previous, numerous white whales were observed during September along the upper coasts of Cumberland sound.

David Wark states that white whales are scarce at Amadjuak bay, and are observed only at long intervals. On the cruise among the Fox islands in Gordon bay during June, 1926, many were seen frequenting the edge of the land-floe. The floe here, in places, was fully 5 miles wide, extending out beyond many of the islands of the group. A small whale, 11 feet long, was shot on June 24.

Kumlien (1879, pp. 66–67) says that this species becomes very abundant in upper Cumberland sound, where they arrive just as soon as the ice begins to loosen. In the winter of 1876-77, he says, a couple were belated and became confined in the Kingwah tide-rifts, where they were harpooned by the Eskimo in January. Low (1906, p. 274) remarks that this species is common to all the Arctic coasts and remains throughout the year. Hantzsch (1913, p. 160) records seeing a number in open water near Blacklead island on April 22, 1910.

25. **Monodon monoceros** Linnaeus. NARWHAL.

Eskimo: *Killeluaksuak*; also *Killnudlil*, according to Kumlien.

On the Canadian Arctic Expedition of 1923 the narwhal was seen only at Ponds inlet, where it appears to replace the white whale. Large numbers were moving along the coast on August 27, and the following day. Many were killed by the Eskimo from boats and kayaks. A considerable number had been killed previous to August 21. William Duval

stated that in a single year, as many as 2,800 narwhal have been taken by whalers in and about Eclipse sound.

This species is so scarce in Cumberland sound that the writer did not see a single example, but an Eskimo companion observed two on December 24, 1925, in an open tide-hole at the entrance to Pangnirtung fiord.

The Eskimo at Kevetuk and Merchants bay stated that the narwhal is entirely absent from these places at all seasons. At Amadjuak bay it was said that in late November, 1925, one had been killed near Markham bay.

Kumlien (1879, p. 67) says that in spring and autumn this species regularly appears in Cumberland sound, but is by no means abundant. Low (1906, p. 275) makes the following remarks:

> "The narwhal appears to replace the white whale in the waters of Ponds inlet, only the former being killed there. Numbers are taken in the ice by the whalers of Baffin bay; they are not uncommon about Cumberland gulf when the ice still covers its waters. The natives of Hudson strait kill numbers of these animals in the early summer, and after the shore-ice has formed in the early winter, but none is seen on the south shore during the open waters of summer. The narwhal is only found in the northern waters of Hudson bay, where it is abundant in the ice-laden waters of Foxe channel and Frozen strait."

Birds

As in the case of the mammals, knowledge of the bird life on Baffin island is limited. The eighty-five species composing the following list include all those known to occur on the island either as breeders or stragglers. The Check-List of the American Ornithologists' Union, 1910, and its supplements, have been followed.

The present writer is indebted to A. C. Bent for a list of the birds and eggs collected by the MacMillan expedition, in 1921-22, to southwest Baffin island. The identification and study of specimens, and the decision with respect to matters of nomenclature, were in a very considerable measure performed with the aid of P. A. Taverner.

1. **Gavia immer** (Brünnich). LOON.

Eskimo: *Tudlik; Tullik, -lîk, -lît,* according to Hantzsch.

Not observed during the Canadian Arctic Expedition of 1923. On July 26, 1924, a large diver, referred to this species, was seen in Pangnirtung fiord. A specimen was taken near the end of the above fiord on October 6. In February, 1925, the head skin of one of these birds was obtained from Eskimo at Merchants bay, who said the species occurred sparingly in that region during summer.

The first loon was heard at Nettilling lake on June 6, 1925. Specimens were collected on June 11, 15, and 19, respectively, after which they were observed to be common on Nettilling and small adjacent lakes. Loons were especially common in August along the southeast and west shores of Nettilling lake to the mouth of Amadjuak river. A few were seen on the chain of small lakes between Nettilling lake and fiord, September 10 to 13, and others in the fiord itself during the next few days.

The species is recorded by Kumlien (1879, p. 103)[1] as being common in Cumberland sound and as breeding there. Hantzsch (1914, p. 165) found the loon to be common in eastern and southern parts of Nettilling

[1]The date following an author's name will enable the reader to find the complete bibliographic reference in the list of papers quoted at the end of the chapter, page 122.

lake. "Frequent at Tikerakdjuak even if falling far below *U. lumme* [*stellata*] in number." He found a nest with two fresh eggs at Tikerakdjuak July 23, 1910. He writes: "In the southwestern part of Kennedy (Nettilling) lake at the Koukjuak, rarer than in the east; falling below *U. arcticus* in numbers." Major L. T. Burwash collected two specimens at cape Dorset in the summer of 1924. Two were taken by the MacMillan expedition in the region of Bowdoin harbour, together with eggs.

2. **Gavia pacifica** (Lawrence). PACIFIC LOON.
Eskimo: *Kudlulik.*

On the 1923 Canadian Arctic Expedition loons were observed, with the binoculars, August 26, 27, and 28, on Salmon river, Ponds inlet. They were exceedingly shy and could not be approached. They were tentatively referred to this species, but possibly belong to *G. stellata.*

A pair of loons, supposed to be this species, were observed on Nettilling lake, June 8, 1925. On June 27, a pair, male and female, were collected on a small lake southwest of the mouth of Takuirbing river. The female had a nearly completed egg in the oviduct. During July the species was many times observed on Nettilling lake, frequenting a narrow margin of water along the shore. A female was collected on July 14, together with a set of two eggs. The nest was of partly decomposed, sodden vegetation raised to form a shallow, slightly concave platform near the shore of a small lake. During the latter part of August many of the birds were observed along the southern coast of Nettilling lake and in still larger numbers along the west coast, which by reason of its low nature is, doubtless, particularly attractive and well adapted for nesting purposes. Two juveniles were collected at Anderson headland on September 5, and two adults were seen at Takuirbing river on September 10, these were the last observed during the 1925 season.

On July 19, 1926, this species was found to be fairly common on Aitken lakes a few miles northwest of cape Dorset. On the same day an adult was observed accompanied by downy young only a few hours old.

Kumlien (1879, p. 103) recorded this species from Cumberland sound, but stated that it was not common, though it breeds in Issortukdjuak fiord (Kingwah). Low (1906, p. 314) remarks that it is seen in the bays of Baffin island, and that it breeds abundantly on Southampton island. Two were collected by Burwash at cape Dorset, in the summer of 1924.

This species is much more abundant than *G. immer* in Nettilling Lake region, though the latter is well represented. After some practice, the two loons can be differentiated by their voices. The calls of the Blackthroat are much more varied and weird than those of the common loon and various notes are peculiar to it. The Eskimo distinguish them in this way, and easily separate them from *G. stellata.*

Hantzsch (1914, pp. 139-140) found the species common and breeding on Nettilling lake, but in August more common at the west end of the lake where he considered it perhaps to be the commonest loon. It was also frequent on Koukjuak river at the beginning of September. He states: "Middle of September travelling in bunches toward the west along the Koukjuak, usually two to four birds. The pairs seem to stay together."

All the specimens collected by the present writer are typical of *G. pacifica.*

3. **Gavia stellata** (Pontoppidan). RED-THROATED LOON.
Eskimo: *Kokson; Kaksau, -saut, -saut,* according to Hantzsch.

This species is generally regarded as being the common diver on the east side of the Canadian Arctic archipelago and on west Greenland.

On the 1923 Canadian Arctic Expedition, only one example was positively identified, and it was seen close to shore at Godhaven, Greenland, July 30.

In 1924 the first specimen was secured October 12 from an Eskimo at Nunatuk at the entrance to Issortukdjuak fiord. At Nettilling lake in 1925, specimens were collected on July 3 and 13. After these dates, the bird was not again seen in the interior where, therefore, it appears to be comparatively rare.

A mated pair were seen at cape Dorset on June 15, 1925. In late June the species was frequently seen among Fox islands in Gordon bay. A set of eggs was obtained from Eskimo at cape Dorset on July 15. The eggs were considerably incubated, but the embryos had not yet taken any definite form.

Kumlien (1879, p. 103) recorded the species as being very common in Cumberland sound, where it begins nesting, he says, in the latter part of June. Low (1906, p. 314) mentions it as common along the shores and islands of Hudson bay and strait and as occurring in all the northern waters.

Hantzsch (1914, pp. 164-165) observed the species frequently in June, at the eastern end of Nettilling lake, and saw the first specimen at Amittok lake. In July, at Tikerakdjuak, on the south side of Nettilling lake, he considered it the most common of the large birds and found it breeding on the large ponds. At the end of August this loon was rather frequently seen by him on Koukjuak river.

Two examples of this species were taken by Burwash at cape Dorset in the summer of 1924. The MacMillan expedition collected three specimens and eggs, in the region of Bowdoin harbour.

4. **Fratercula arctica** (Linnaeus). PUFFIN.

This species is abundant in the gulf of St. Lawrence, and northward to Hudson strait, but according to Kumlien (1879, p. 103) is not known to the Cumberland Eskimo.

5. **Cepphus mandti** (Mandt). MANDT GUILLEMOT.
Eskimo: *Pitshulak; Pitsiulak, -lak, -lat,* according to Hantzsch.

On the 1923 Canadian Arctic Expedition guillemots were observed along the Labrador coast on July 19 and 20. They were not again observed until August 6, when two were seen in Smith land. Several were collected at Etah, North Greenland, two days later. The bird was not again observed until August 17, when six were seen in Erebus bay, Beechey island. These were the last met with during the voyage.

In 1924 they were first seen off the Labrador coast, in about latitude 57 degrees north. They were very sparingly observed off Frobisher bay and the entrance to Cumberland sound, between July 20 and 24. Throughout the summer considerable numbers were observed in Cumberland sound. Adults were seen carrying food to young in a cliff in Issortukdjuak fiord on July 30. They were observed more or less regularly until early October about Cumberland sound. A small number frequent the open tide-rips in the sound throughout the winter.

In 1926, large numbers were observed, May 18, off the floe-edge in Hudson strait, between Amadjuak bay and cape Dorset. During the latter half of June they were encountered in great abundance among Fox islands, where, according to the Eskimo, they breed. The first fresh eggs of the season were taken on June 27 near cape Dorset. Several guillemot breeding islands east of cape Dorset were visited on July 9, but not a single egg was found. The natives said that the birds had not yet begun to nest in this locality. Revisiting the islands on July 21, a number of fresh sets of eggs were secured. Other islands south of the cape were visited on July 25, and the birds found to be breeding in some numbers. Several sets of eggs were collected and some found to be nearly fresh, whereas those of other sets contained embryos within a few days of hatching.

J. C. Ross (1826, p. 107) recorded this bird as abundant at port Bowen and stated it to be the only water bird that remained in the Arctic throughout the winter. Kumlien (1879, p. 104) found the species common in Cumberland sound and observed some that remained in the tide-rifts all winter. Low (1906, p. 314) states the species to be common everywhere in Hudson bay and in smaller numbers northward.

Hantzsch (1914, pp. 163-164), writing of Blacklead island, stated: "During the whole winter (1909-10) single individuals observed, or two or three individuals together. Not very shy." During the winter of 1910-11, while on the eastern coast of Foxe basin north of the mouth of Koukjuak river, he saw specimens on open water on November 6, and one individual flying on December 8. Referring to January, 1911, he wrote:

"Birds observed during the whole month by my people on the open water, now and then only singly; occasionally, however, also in large groups which then like to swim in little companies near one another, or at least in the neighbourhood. Eat crustaceans, besides little sea creatures and small cusks. Only in January in full winter plumage."

The same conditions were noted to obtain in February and March.

6. Uria lomvia (Linnaeus). BRÜNNICH MURRE.
Eskimo: *Aukpa.*

No murres were seen while with the 1923 Canadian Arctic Expedition until July 22 in latitude 57 degrees off the Labrador coast. Fair numbers were seen on August 18 in Admiralty inlet and Strathcona sound. On August 20, along the north coast of Bylot island, thousands of murres were seen in small flocks of from 50 to 100. They were nearly absent from Navy Board inlet. Only one was observed at Ponds inlet between August 23 and September 4. A few were noted during September along the east Baffin Island coast.

In 1924 a number were seen from latitude 50 degrees to Cumberland sound, July 9 to 21. The species is very rare in Cumberland Sound waters. Eskimo state that it is an abundant breeder at Merchants bay and along the coast to the north. On May 14, 1926, numbers were noted in the open sea between Tikkoat islands and cape Dorset. Many were observed during the summer about cape Dorset and Fox islands.

J. C. Ross (1826, p. 106) recorded the occurrence of this bird at port Bowen, Prince Rupert inlet, where it arrived early in June. Kumlien (1879, p. 105) found them common from Grinnell bay north to the entrance of Cumberland sound, but rare in the sound. The Eskimo informed him that the birds formerly bred in great numbers on Kekerten islands. The species is said by Low (1906, p. 314) to be common everywhere in the north

where the coasts are sufficiently high to afford nesting places, and was observed by him in numbers at the entrance to Foxe channel and in Hudson strait. This species was not noted by Hantzsch on Baffin island. Corporal F. McInnes, R.C.M.P., states that thousands of murres nest on the cliffs at Button point, Bylot island. Fresh eggs were obtained on June 27, 1924. The Corporal remarks that sometimes a very strong wind will sweep both eggs and young from the face of a cliff.

7. **Alca torda** Linnaeus. RAZOR-BILLED AUK.

Kumlien (1879, p. 103), treating of this species, writes: "Was seen on many occasions and often in close proximity to the ship from the outer islands of the middle Labrador coast to Frobisher strait. They are not found in Cumberland gulf." This species was not noted by Hantzsch.

8. **Alle alle** Linnaeus. DOVEKIE.
Eskimo: *Aukpilleauktuk.*

In August, 1923, vast numbers of this bird were noted in Smith sound north of Etah, Greenland. A few were seen in Jones sound, but the species was not again observed until September 6 and 7, when a very few were seen off Home bay on the east coast of Baffin island. A few more were noted on September 23, near Hudson strait.

The species was not observed by the writer while on Baffin island from 1924 to 1926.

Kumlien (1879, p. 104) found the bird common off Labrador, Resolution island, Grinnell bay, and Frobisher bay, but did not see any in Cumberland sound. Low (1906, p. 315) states that the species is uncommon in Hudson bay and strait, where it occurs in winter, but is rarely seen in summer. The bird was observed by him in Lancaster sound. This species was not noted by Hantzsch.

9. **Catharacta skua** (Brünnich). SKUA.

This bird was not observed while on the 1923 Canadian Arctic Expedition. In 1924 it was not seen north of Belle Isle strait. Kumlien (1879, p. 94) observed the species in September near Lady Franklin island, north of Frobisher bay; they then had young ones on the rocks. Recorded by Low (1906, p. 315) as common in Davis strait and Baffin bay, and as being seen in the eastern part of Hudson strait. This species was not noted by Hantzsch.

10. **Stercorarius pomarinus** (Temminck). POMARINE JAEGER.
Eskimo: *Ishungak.*

A number of birds, referred to this species, were observed in 1923 off the Labrador coast and in Baffin bay. In 1924, two jaegers thought to be of this species were seen off Hudson strait on July 19. A single individual referred to this species, but not positively identified, was seen among Fox islands on June 25, 1926.

Kumlien (1879, p. 94) remarks that this species is common on the western shore of Davis strait, and nests at the mouth of Exeter sound, at Saumia, and about Nugumeute and Grinnell bay, but that it does not breed in Cumberland sound. This species was not noted by Hantzsch.

11. Stercorarius parasiticus Linnaeus. PARASITIC JAEGER.
Eskimo: *Ishungak; Issungak,* according to Hantzsch.

One specimen of this bird was collected. It was secured September 4, 1925, at Koukjuak river, west Baffin island. A few others which were thought to be this species were seen along the west coast of Nettilling lake in late August. Kumlien (1879, p. 95) says that he rarely saw this bird in Cumberland sound and that it does not breed there. Low (1906, p. 315) records the species as breeding on Southampton island, as being common in Roes Welcome, and less common farther north. Hantzsch (1914, p. 157) noted the species in many places on Nettilling lake. "Perhaps as frequent at Tikerakdjuak as *S. longicaudus* or somewhat more frequent." He noted many on Koukjuak river at the beginning of September. A half-fledged juvenile was taken by him on August 14, 1910.

12. Stercorarius longicaudus Vieillot. LONG-TAILED JAEGER.
Eskimo: *Ishungak; Ischungak,* according to Hantzsch.

A pair was collected at Nettilling lake on June 25, 1925. A few more were observed at the same time and a number of others a little later in the season, about Nettilling lake. Kumlien (1879, p. 95) saw a few of these birds in upper Cumberland waters in June, 1878, after which they soon disappeared. Low (1906, p. 315) states they are less common than *S. parasiticus* in Roes Welcome; he saw them occasionally in the waters to the northward. Two specimens were collected by Burwash at cape Dorset in the summer of 1924. The species is recorded by Hantzsch (1914, pp. 158-159) as breeding and rare in July in the neighbourhood of Tikerakdjuak, south side of Nettilling lake. At this place on August 1, 1910, he notes:

"A large part of the birds observed seem to be rather young creatures, not of an age for breeding, as shown by plumage, sex organs, and in the case of females, lack of a bare brooding spot on the abdomen—eat insects mostly; hairs of a small lemming also found in the stomach. At Tikerakdjuak more common than the larger species end of August; some few individuals observed in the southwest of Kennedy [Nettilling] lake. The last observed about the tenth of September (on Koukjuak river)."

13. Pagophila alba (Gunnerus). IVORY GULL.
Eskimo: *Nowyaharsuk.*

One juvenile was collected at Pangnirtung fiord on October 24, 1925. J. C. Ross (1835, p. XXXV) records it as breeding commonly at port Bowen in northwestern Baffin island, but as rare west of Prince Regent inlet. Kumlien (1879, p. 99) remarks that it was very common in Issortukdjuak fiord (Kingwah) and vicinity for a few days in 1877, just before the fiord froze over. None was seen in the spring. He states that it does not breed in Cumberland sound. Low (1906, p. 315) records it as occurring in early summer in Hudson strait. This species was not noted by Hantzsch.

14. Rissa tridactyla (Linnaeus.) KITTIWAKE.
Eskimo: *Nowyavah.*

In 1923, many of these birds were observed during July along the Labrador coast and in Davis strait, and in mid-August, in Lancaster and Strathcona sounds. A few were seen on September 22 near the entrance to Cumberland sound. A few days later others were seen off Frobisher bay and Hudson strait.

In 1924 a few were noted in mid-July off the Labrador coast. They were not again observed until August 18, when a flock of twenty were seen in Cumberland sound between Kekerten islands and Blacklead island. In about the same region of the gulf fully a hundred were met with on September 8. On December 24, 1925, one was seen flying over an open tide-rift near the entrance to Pangnirtung fiord.

J. C. Ross (1835, p. XXXV) states that they breed in Prince Regent inlet. Kumlien (1879, p. 100) says of this species:

> "In Cumberland they are by far the most common gull, and in fact the most abundant species in fall, but so far as I could learn do not breed there . . . I did not see a single Kittiwake in the upper Cumberland waters during spring and summer, where there were thousands the previous autumn."

Low (1906, p. 315) says that the species is not very common in the northern part of Hudson bay or elsewhere in the north. This species was not noted by Hantzsch.

15. **Larus hyperboreus** Gunnerus. GLAUCOUS GULL.
Eskimo: *Nowyah*; *Nauja*, according to Hantzsch.

In 1923 an example of this gull was collected on September 2 at Salmon river, Ponds inlet. Birds supposed to be of this species were observed along the east Baffin coast and in Cumberland sound.

On August 1, 1924, eight specimens were collected at a nesting cliff at the entrance to Midlualik bay, Issortukdjuak fiord. All the gulls frequenting the cliff at this time appeared to be females. The species was observed to be common everywhere in Cumberland Sound region during the summer and autumn. The last observed in 1924 was seen about November 9 in Pangnirtung fiord.

In the spring of 1925 the first glaucous gulls were seen on April 29 in Nettilling fiord. At Nettilling lake the first were observed on May 24, 1925, at Takuirbing river. They were seen sparingly in this locality throughout the summer and were commonly observed along the south coast of the lake during late August. The species was much scarcer on the west coast and on Koukjuak river, where it was replaced by the herring gull.

Many were observed in the middle of May, 1926, along the floe-edge between Tikkoat islands and cape Dorset. The species was commonly seen throughout the summer in Cape Dorset region. They were found nesting on a cliff of one of Fox islands in Gordon bay on June 19, 1926. At this date the eggs were fresh. This same cliff was also occupied by herring and Kumlien gulls. Specimens were collected at cape Dorset, Fox islands, Amadjuak bay, and Nettilling lake.

J. C. Ross (1826, p. 103) noted the bird as common at port Bowen in June, 1825. Kumlien (1879, pp. 95-96) records them as being very common and as nesting in Cumberland sound. He states that they are the most abundant gull in this region during the summer. Low (1906, p. 315) writes that this species is the common big gull of the north. Hantzsch (1914, pp. 159-160) recorded the species at Nettilling fiord in May, 1910, where the Eskimo reported the birds nested in large numbers on the cliffs at the sarbuk near Teljiaralik. On June 14, he noted a pair of birds at a nesting place on a high steep rock at Amittok lake, but no eggs had yet been laid. Eggs of this gull were taken by the MacMillan expedition in the region of Bowdoin harbour. Specimens were collected by Burwash at cape Dorset in the summer of 1924.

16. **Larus leucopterus** Faber. ICELAND GULL.
Eskimo: *Nowyah.*

This species is so scarce about Baffin island that the only evidence of its existence secured by the writer is an adult and a juvenile, collected August 18, 1924, near Blacklead island, Cumberland sound. Kumlien (1879, p. 98) merely remarks that it is far less common in Cumberland sound than the glaucous gull. This species was not noted by Hantzsch.

17. **Larus kumlieni** Brewster. KUMLIEN GULL.
Eskimo: *Nowyah.*

This bird, found by Kumlien in 1878, in Cumberland sound, was at first referred to *glaucescens*, but afterwards was recognized to be a new species. So far as known, it does not extend on Baffin island, north of Cumberland sound.

A specimen was taken on August 18, 1924, near Blacklead island, and is the only evidence secured by the writer of the existence of the species in Cumberland sound. It was found common in late June, 1926, on some of the islands of Fox group in Gordon bay on the south coast of Baffin island. Six specimens were collected on June 20, 21, and 27 in this locality. It was found nesting on one of the islands, sharing the same cliff with the herring and glaucous gulls. On an island a short distance west of cape Dorset a colony of about one hundred was seen on July 24, 1926. They occupied ledges on a sheer cliff overlooking the sea; the ledges were not shared with any other species of gull.

Regarding this species Kumlien (1879, p. 98) says:

"So far as I am aware this is the first instance on record of this bird being taken on the Atlantic coast. They are quite common in the upper Cumberland waters, where they breed. Arrived with the opening of the water and soon began nesting. The nest was placed on the shelving rocks on high cliffs."

A specimen referred to *kumlieni* was collected by Burwash in the summer of 1924 at cape Dorset. This species was not noted by Hantzsch.

18. **Larus marinus** Linnaeus. GREAT BLACK-BACKED GULL.

A rare gull on Baffin island. It was not observed by the writer. Kumlien (1879, p. 99) remarks that it is observed in Cumberland sound only in late autumn. Low (1906, p. 316) says that a large colony was seen on the high cliffs of Cuming creek, Devon, and in other inaccessible places on the northern islands. This species was not noted by Hantzsch.

The species is probably to be expected in at least the northern regions of Baffin island. It was not seen north of the St. Lawrence on the Canadian Arctic Expedition of 1923.

19. **Larus argentatus** Pontoppidan. HERRING GULL. **Larus thayeri** Brooks. THAYER GULL.
Eskimo: *Nowyah; Tessilmenta.*

Specimens collected by the writer indicate that *Larus thayeri* is confined to a northern area extending from Ponds inlet to southern Ellesmere island, and that *L. argentatus* occurs only in the southern part of Baffin island.

Larus thayeri was observed only while on the 1923 Canadian Arctic Expedition when specimens were collected at Craig harbour, Ellesmere island; Beechey island; Dundas harbour, Devon island; and Ponds inlet, Baffin island. The species seemed to be particularly numerous in

Lancaster sound where on several occasions the birds alighted on the rigging of the ship while the vessel was travelling at full speed.

It seems probable that the breeding ranges of *L. argentatus* and *L. thayeri* overlap somewhere between Cumberland sound and Ponds inlet.

In 1923, herring gulls were sparingly seen at Pangnirtung fiord during the two weeks spent there. On September 15 a large flock of between sixty and seventy was seen.

No herring gulls were observed during the summer and autumn of 1924 in Cumberland sound. They were first seen at Nettilling lake on June 12, 1925, and many examples were noted until the close of the month. During July, they were absent from the district about Takuirbing river at the east end of Nettilling lake, except for a single bird observed on July 9. They were next seen on August 20 near Tikerakdjuausirn point, Nettilling lake, and thereafter the species was commonly observed along the southern lake shore and up the west coast to Koukjuak river. This species almost entirely replaces the glaucous gull on the southern and western sides of Nettilling lake. A few herring gulls were seen between September 10 and 12, on Takuirbing and Amittok lakes; those were the last observed for the season. Two specimens were collected on Nettilling lake.

On May 18, 1926, a large number of this species was observed between Tikkoat islands and cape Dorset. They were mostly in small companies of three or four, but larger groups were seen. It was the common gull of the region. Considerable numbers were found, on June 19, 1926, nesting on Fox islands, Gordon bay. The eggs were fresh. Many nests held but one egg, showing that laying had not been finished. This species nests both on cliff ledges and on the level near the sea or about small upland ponds. Where the nests are built at ponds they usually are on rocks projecting from the water, little islands, or points. The nest is a platform consisting of fragments of moss and grass, is a foot high, and has a slightly concave top. The nests on the ledges are much lower. The usual number of eggs is three.

On July 17, herring gulls were found nesting at Aitken lakes, northwest of cape Dorset. Nearly all the nests were on rocks in shallow parts of the lake. This is evidently a protective measure against foxes. Nearly all the nests contained downy young from 6 to 8 inches long. Two nests were observed still containing eggs.

Kumlien (1879, p. 67) states that this species is not uncommon in Cumberland sound, and breeds to latitude 67 degrees north. Low (1906, p. 316) remarks that it is very common everywhere in Hudson bay, but less so in the northern waters, where its place appears to be taken by the fulmars and skuas.

Hantzsch (1914, pp. 160-161) records this species (under *Larus argentatus smithsonianus* Coues) as common around Nettilling lake where it was an omnivorous scavenger. He states it was frequently noted at the beginning of September, at Koukjuak river, where the first independent young specimens were observed in the grey plumages. He also saw this gull near Foxe basin as late as September 27, 1910. Skins and eggs of this species were collected by the MacMillan expedition in the vicinity of Bowdoin harbour west of cape Dorset. Burwash took two specimens at cape Dorset in the summer of 1924. Four birds were collected by the present writer at Fox islands, Gordon bay.

20. **Xema sabini** (J. Sabine). SABINE GULL.

This is a very rare gull in Baffin Island region. From 1923 until 1926 the species was observed but once, when, on September 8, 1924, while travelling from Blacklead island to Pangnirtung fiord, twenty-five of these were observed following the boat. With them were numerous kittiwakes and fulmars. When about abreast of Kekerten islands all three species dropped behind. None of the real ocean-loving birds appears to go any great distance up Cumberland sound. Regarding this species Kumlien (1879, p. 101) says: "On the 6th of October, 1877, on the passage from Kekerten islands northward, a pair of these birds kept close to the stern of the schooner for many miles. Saw no others at any time." The species is recorded by Low (1906, p. 316) as common in Roes Welcome, about Whale point, and on the Southampton Island side. He states that it flies with the Arctic terns and builds its nests along with these birds on the small islands in the ponds of Southampton island. This species was not noted by Hantzsch.

21. **Sterna paradisaea** Brünnich. ARCTIC TERN.

Eskimo: *Emakatilak; Immerkotailak,* according to Hantzsch.

During the 1923 Canadian Arctic Expedition terns were not observed in the region of Baffin island.

They were first observed at Nettilling lake on August 18, 1925. On August 19, ten were observed near Tikerakdjuausirn point, frequenting a low, gravelly island. On August 20, at Kamusiving bay, a little colony was found on a rocky island, and an adult specimen and two well-developed juveniles almost ready for flight were secured. Thereafter, while cruising along the south and west shore of Nettilling lake, to Koukjuak river, the birds were observed almost daily. They were slightly more numerous between September 1 and 4 at Koukjuak river. Two were seen near Nikosiving island on September 5 and two on September 6 at Coral bay. None was seen after this date.

Kumlien (1879, p. 101) says that on June 19 and 20, 1878, there were thousands of these birds about Annanactook harbour (near Bon Accord) in Cumberland sound, and that this was the only time he saw any. Low (1906, p. 316) records the species as common in Roes Welcome, at Whale point and northward; and states that they breed in this region and on Southampton island. This species was noted by Hantzsch (1914, p. 163) as being common on Nettilling lake. The first arrivals in 1910 were a large flock seen on June 17 at Amittok lake while the lake was still frozen. He found them breeding only in detached pairs or in groups of very few pairs.

The Eskimo told the writer that this bird breeds in considerable numbers on an island near Bon Accord, Cumberland sound. A collection of forty-six eggs was presented by a native from this locality who asserted that they were those of *Emakatilak,* the Arctic tern.

22. **Fulmarus glacialis** (Linnaeus). FULMAR.

Eskimo: *Oohudluk; Kakkordluk, -luk, -luit,* according to Hantzsch.

In 1923, this species was noted from the strait of Belle Isle to Melville bay and Jones sound. Numbers were seen in Strathcona sound, Navy Board and Ponds inlets. At the latter place nine specimens were taken on August 22.

On the 1924 voyage the first fulmar was seen on July 11, in about latitude 52 degrees north. It was then observed more or less commonly north to Cumberland sound. The species does not appear to frequent the upper waters of the sound. None was observed in Cumberland waters between July 22 and August 18, when several were seen between Kekerten islands and Blacklead. One was collected at the latter place on August 21 and they were occasionally observed about Blacklead island until September 8. When the writer returned to Pangnirtung fiord the species was not seen on the south coast of Baffin island in the summer of 1926.

Kumlien (1879, pp. 101-102) records the species to have been common in Cumberland sound until the middle of October, 1877, and to have been especially abundant off Resolution island, Grinnell bay, and Frobisher bay during the latter part of August, throughout September, and the first part of October. He found them breeding on some rock islands near Quickstep harbour, Cumberland sound. He states that near cape Searle the species was extraordinarily abundant, breeding by thousands on Padle island. Low (1906, p. 316) states that they are common from cape Chidley north to Smith sound and very numerous off Hall island, near Frobisher bay. They were collected by Low at Ponds inlet, August 19, 1904. Hantzsch (1914, p. 163) makes a single note on this species: "October 2, 1910; A single individual over the ice-covered shore of Foxe channel."

23. **Puffinus gravis** (O'Reilly). GREATER SHEARWATER.

Concerning this species, Kumlien (1879, p. 103) writes: "Abundant from Belle Isle to Resolution island. Not observed in Cumberland". This species was not noted by Hantzsch nor by the present writer.

24. **Puffinus puffinus** (Brünnich). MANX SHEARWATER.

Kumlien (1879, p. 102) writes: "Common from Belle Isle to Grinnell bay. Not observed in Cumberland." This species was not noted by Hantzsch nor by the present writer.

25. **Oceanodroma leucorhoa** (Vieillot). LEACH'S PETREL.

Kumlien (1879, p. 102) states: "Noticed sparingly about cape Mercy and Exeter sound." This species was not noted by Hantzsch nor by the present writer.

26. **Oceanites oceanicus** (Kuhl.). WILSON'S PETREL.

Kumlien (1879, p. 102) writes: "Traced as far north as Resolution island on our outward passage; on the homeward, first seen about 100 miles south of cape Farewell". This species was not noted by Hantzsch nor by the present writer.

27. **Sula bassana** (Linnaeus). GANNET.

"Noticed at different times from Beaver island, Nova Scotia, to latitude 65 degrees north. Not observed in Cumberland" (Kumlien 1879, p. 94). This species was not noted by Hantzsch nor by the present writer.

28. **Phalacrocorax carbo** (Linnaeus). CORMORANT.

Eskimo: *Okaitsok*, according to Kumlien.

"A regular breeder in Cumberland; did not appear to be common, but the Eskimo say that some years they are quite plenty" (Kumlien, 1879, p. 94). The species was not noted by Hantzsch nor by the present writer and may now be extinct on Baffin island.

29. **Mergus serrator** Linnaeus. RED-BREASTED MERGANSER.
Eskimo: *Pyle; Pai, -paik, -pait,* according to Hantzsch.

Not observed in 1923 during the voyage among the eastern Arctic islands. In February, 1925, Eskimo of Merchants bay stated that the *pyle* bred sparingly in that region. This bird was first observed on June 9, 1925, when three (one of which was collected) were seen in an open riffle in Takuirbing river, Nettilling lake. On June 12 three mated pairs visited the same place, and a female was collected with ovaries greatly developed. Though never common, the species was observed almost daily during June in this locality, usually in pairs. A flock of six was seen on June 25, three of these were collected and proved to be females with undeveloped ovaries. The bird was much scarcer in late June and only an occasional bird was seen in July. Another flock of six was seen on August 1. A few were observed in late August on the east coast of Nettilling lake; none was seen in the southern part of the lake, or on the west coast. In early September a flock of seven was observed in Kamusiving bay. The last of the season was seen on September 11 on Amittok lake.

The species was observed sparingly about cape Dorset and Fox islands in June and July, 1926. Two were collected at Aitken lakes northwest of cape Dorset on July 18. One was taken at Amadjuak bay on August 3. A bird on June 15 was just going into eclipse plumage, while one secured August 3 seemed to be but little farther advanced in the same change.

Kumlien (1879, p. 94) records this species as a regular breeder in Cumberland sound, but not very common. He states that it begins nesting about July 1 on perpendicular faces of high cliffs. Hantzsch (1914, pp. 162-163) records that a number were killed at Blacklead island in October, 1909. He next noted the species on May 28, 1910, and observed it many times at Isoa and Tikerakdjuak, Nettilling lake, between June and July.

30. **Anas platyrhynchos** Linnaeus. MALLARD.

A female mallard was observed by Captain H. T. Munn at Ponds inlet (*See* Lloyd, 1922, p. 50). Kumlien (1879, p. 88) says that he did not observe this species in Cumberland sound and that it is unknown to the Eskimo. This species was not observed by Hantzsch nor by the present writer.

31. **Clangula hyemalis** (Linnaeus). OLD-SQUAW.
Eskimo: *Aggek, -gik, -git,* according to Hantzsch.

A female was collected at Ponds inlet on August 22, 1923. Constable T. Tredgold, R.C.M.P., secured an example near Pangnirtung fiord on September 8, 1924. The species was first observed in 1925, on June 20, at Nettilling lake, when a mated pair were seen and the male was collected. The species was observed sparingly throughout June in the vicinity of Takuirbing river, Nettilling lake. Two females were taken, one on June 27 and the other June 28; the ovaries of the latter were very much enlarged showing that she was on the point of laying.

On July 10 a full set of seven, very much incubated eggs was taken on the shore of the lake. A flock of four was observed on July 14. None was seen on the voyage around the southern part of Nettilling lake between August 18 and September 12, except a doubtfully identified pair at Meadow bay on August 21.

The first old-squaws of the 1926 season were seen on June 9 at cape Dorset, frequenting an upland pond. On June 19, about fifty were noted a few miles east of cape Dorset. Many of these were in pairs, but a flock of thirty or more was observed at close range. In the latter part of June, numerous pairs were seen among Fox islands, Gordon bay. They were no longer seen in flocks and the mated pairs were solitary in habit, frequenting ice-enclosed bays, the open sea among the shifting floes, or small upland ponds on the islands. The male possessed a very pleasant, distinctive call resembling with variations, *oo-oo-ung-ah-ung-ah.* Sometimes at a little distance the call was like the mellowed, somewhat petulant barking of a tiny dog. At all times it was soft, deep-toned, and with good carrying quality.

On July 17, several birds were seen at Aitken lakes, west of cape Dorset, and a female was observed with downy young only a few days old, one of which was secured. Two examples were collected at Amadjuak bay on August 3.

The species was noted by J. C. Ross (1826, p. 106) at port Bowen, where it arrived early in June, 1825. Kumlien (1879, p. 89) stated that the birds arrived at the head of Cumberland sound in the latter days of May and that they nest there, on rocky islands, in pairs and not in colonies. Hantzsch (1914, p. 162) saw a flock of several hundred on May 25, 1910, in Cumberland sound, flying westward. The species was several times observed by Hantzsch during June while he was travelling to Nettilling lake. At the latter place during June he repeatedly saw detached pairs and small flocks and in July he found the species breeding at Tikerakdjuak point, Nettilling lake. The first young were noted by him on August 5, and on September 17 he saw some travelling along Koukjuak river. Low (1906, p. 316) states that the species is very common in the northern part of Hudson bay and on the Arctic islands. Six specimens were taken in 1922 by the MacMillan expedition in the region of Bowdoin harbour, near cape Dorset. The species is recorded as not being common in the vicinity of Bylot island (Lloyd, 1922, p. 50). Corporal F. McInnes states that the species is common on the lakes in the region of Ponds inlet.

Seventeen specimens were collected and all are in more or less complete summer plumage. Two males (No. 20847, taken at Nettilling lake on June 29, 1925; and No. 21140, collected at Amadjuak bay, August 3, 1926) show a few flecks of winter plumage on the crown of the head; the plumage of none of the specimens even suggests a state of eclipse.

32. **Histrionicus histrionicus** (Linnaeus). HARLEQUIN DUCK.

The species was observed by the writer only once, when on August 26, 1924, in Bear sound, southeast of Blacklead island, an adult female and six juveniles were collected. The young were about two-thirds grown, and averaged 11½ inches long. The species is rare in that region.

Kumlien (1879, p. 89) records having seen three, and collected one, of this species near Bon Accord, Cumberland sound. Hantzsch's journal makes no mention of this species, but his collection contained the skin of an adult male dated, Blacklead island, June 15, 1910, and evidently taken by Eskimo while Hantzsch was in the interior (Hesse, 1915, p. 155).

33. Polysticta stelleri (Pallas). STELLER EIDER.

Kumlien (1879, p. 89) writes:

"During the time we were blockaded by the ice-jam at Annanactook harbour, in Cumberland, I saw three or four of these eiders. At one time a superb specimen sat for hours on a cake of ice but a short distance from the ship; but I could not reach it on account of the breaking ice. I watched him for a long time through a good glass, and there is no question of the identity. In late autumn I saw some that I think were of this species."

This species was not noted by Hantzsch nor by the present writer.

34. Somateria mollissima borealis (Brehm). GREENLAND EIDER.

Eskimo: *Metik; Mittek, -tik, -tit;* male, *Amaulik, -lik, -lit;* female, *Arnaviak, -ak, -at,* according to Hantzsch.

On the 1923 Canadian Arctic Expedition several eiders, presumed to be this species, were seen at Ponds inlet on August 27. At Pangnirtung fiord eight were seen on September 14, and twenty on September 21.

This is one of the commonest birds of Cumberland Sound region and breeds in large numbers on the islands of the upper waters. Throughout the summer and autumn of 1924 it was observed to be common in this region; the latest specimens were obtained on October 13, at Pangnirtung fiord. An example of this species was shot in the big tide-rift, Sarbukjuak, in Nettilling fiord, on January 31, 1925. It is unusual to see the birds here in the winter.

Large numbers were observed along the floe edge in the middle of May, 1926, between Tikkoot islands and cape Dorset, on the south coast. In late June thousands were encountered among Fox islands, Gordon bay, a great breeding ground. On June 20, the birds had only commenced laying, for none of the scores of nests visited on the islands contained more than three eggs. The nests were on mossy and grassy patches of ground on hill-sides and rugged uplands. In nearly every case the site is so chosen that the nest is flanked on one side by a boulder, or low edge of rock. Areas of moss and grass are so rare, comparatively, that the birds have difficulty in finding suitable sites. In one place several duck nests were placed in a line close together in a shallow crack in the rock to take advantage of the lowly vegetation growing along this restricted area. The nests are basin-like structures of moss, dead grasses, etc., about 10 inches in diameter and 8 inches high. Most of them seemed rather small for the size of the bird and the number of eggs they presently would be required to hold. Some nests were depressions in soft ground, or amid moss and grass, but the great majority were built up to form a hollow platform. Some of the nesting sites had been used year after year, for their foundations were matted with vegetation and were hard and firm.

At this time the birds, although gregarious, had ceased to flock and associated in pairs. The male almost invariably was on watch while the female incubated. On the whole the birds were somewhat shy, and a careful approach was necessary to get within gun range. This was particularly true of the male. The female deserted the nest rather reluctantly and nearly always delayed doing so for some time after the male had given warning by flying away. On June 27, clutches of eggs of five to seven were seen, which in many cases, apparently, constituted the full set. Early in the laying period, the nests contain little down, but as laying and incubation progresses down is rapidly added.

The male birds at this season have a very characteristic call, resembling the syllables, *how-who*; the second note is strongly accentuated and long-drawn with a soft, almost dove-like quality.

The first downy young of the season was seen at cape Dorset on July 13. On July 20 a small breeding colony was found on an island in one of the Aitken lakes northwest of the cape. Most of the nests still contained eggs, but a few held newly hatched young. No males were seen here. As early as July 17 the males were seen in large flocks in the sea, with among them a sprinkling of females who were probably first year, non-breeders.

J. C. Ross (1826, p. 106) recorded *"Anas mollissima"* from port Bowen, where it arrived abundantly early in June, 1825. Kumlien (1879, pp. 89-92) records the species as one of the commonest in Cumberland sound as an abundant breeder. Several specimens were taken by Hantzsch (1914, p. 161) up to the beginning of September, 1909, at Blacklead island. Great numbers were seen by him in Cumberland sound during May, 1910. Evidently the species was not seen by him at Nettilling lake. Eider ducks, unidentified, were noted during October and up to November 6, 1910, in the open waters of Foxe basin. Skins and eggs were collected by the MacMillan expedition in the region of Bowdoin harbour in 1922. Munn (*See* Lloyd, 1922, p. 50) records them as common and breeding in Eclipse sound. Corporal McInnes records eider ducks, presumably this species, as early as May 5 at Ponds inlet.

35. Somateria spectabilis (Linnaeus). KING EIDER.

Eskimo: *Kingalalik; Kingalik, -lik, -lit,* according to Hantzsch.

This species is comparatively scarce in Cumberland Sound region. Until early October, 1924, only *S. mollissima borealis* was seen or collected. The first positively identified specimen of *S. spectabilis* was obtained on October 25, 1924, at Pangnirtung fiord. Several were handled after this date, but no examples of *S. mollissima borealis* were secured. On November 17, 1924, a flock of fifty or sixty eiders was seen in Pangnirtung fiord and presumed to be *S. spectabilis*. A specimen was shot on November 22 at a tide-rift. A flock of eight eiders was observed on January 25, 1925, at the big tide-rift near the entrance to Issortukdjuak fiord and they were supposed to be of this species.

The first eiders observed in the spring of 1925 formed a flock of three or four hundred birds of this species and were seen on May 1, manœuvring about a tide-hole in Nettilling fiord. A large flock, thought to be of this species, was seen on May 18 flying northwest over Nettilling lake. Four king eiders, one male and three females, were shot from a flock of about seventy that visited Nettilling lake on June 21. No eiders were observed after this date in Nettilling Lake region until August 14, when one, which appeared to be of this species, was seen at Nettilling fiord. On the voyage about Nettilling lake to Koukjuak river in late August and early September, eider ducks, supposed to be this species, were seen a few at a time at frequent intervals.

In the autumn of 1925, King eiders were collected as late as October 27, at Pangnirtung fiord. A considerable number of these birds were observed along the floe-edge in mid-May, 1926, between Tikkoot islands and cape Dorset. Numbers occurred off the cape in early June. None

was seen during the summer about cape Dorset, Fox islands, or west to Bowdoin harbour. The natives asserted that this species bred on islands far to the westward along Foxe Channel coast.

J. C. Ross (1826, p. 106) recorded this species from port Bowen, where it arrived in large numbers in early June, 1825. It was found only sparingly by Kumlien (1879, p. 931) in Cumberland sound in 1877-78. He did not observe the birds breeding, but was told by Eskimo that they once were found nesting in great numbers some distance up Greater Kingwah fiord (Kaggilartung?). The species was first observed by Hantzsch (1914, pp. 151-154) in Cumberland sound on April 18, 1910, and was frequently seen by him during May and June on his way to Nettilling lake. He found the birds breeding sparingly in July on small islands at Tikerakdjuak point, Nettilling lake. Young were first seen on July 31. A few were noted on the west side of Nettilling lake in August, and a number were noted flying along Koukjuak river on September 16. Low (1906, p. 317) records the species as common in the northern part of Hudson bay, and very numerous on the east side of Roes Welcome. Skins and eggs from Southampton, said by Munn to be common and breeding in Eclipse sound, but not in Ponds Inlet vicinity (Lloyd, H., 1922, p. 50). Skins and eggs of the King eider were collected by the MacMillan expedition to southwest Baffin island, 1921-22.

36. **Chen hyperboreus hyperboreus** (Pallas). SNOW GOOSE.
Eskimo: *Kungo; Kangu, -uk, -ut,* according to Hantzsch.

The first geese were observed on June 8, 1925, at Takuirbing river, Nettilling lake, where a flock of thirty-six flew over our camp; of these thirty-two were blue geese and four were thought to be snow geese. No geese were seen after this date until August 27, when at the mouth of Amadjuak river, a flock of five snow geese was observed on the tundra. snow geese were next observed on August 30 at Koukjuak river, when a flock of ten was seen. During the next four days, while camped beside the river, numerous flocks were seen flying over, or feeding on, the tundra; in all, several hundred geese were seen. Specimens could not be secured, for the geese were shy and the tundra afforded no cover. It is the writer's opinion that this region is one of the best breeding grounds of snow geese in the eastern Arctic. The Eskimo stated that their predecessors many years ago annually killed large numbers of the geese when they were moulting in July. The Eskimo in their kayaks rounded up the birds on the water, drove them ashore, and forced them into stone-walled pens where they were easily dispatched. One of these pens was seen on an island in Koukjuak river; it was very old and bones of geese were plentiful in the debris on the peaty floor.

At cape Dorset between June 5 and 8, 1926, large numbers of geese assumed to be snow geese were seen flying northward, mostly at altitudes of from 2,000 to 3,000 feet. A few flocks were seen flying only 200 to 400 feet above the hills. No birds were collected.

Five moulting lesser snow geese were collected on July 20, 1926, at Aitken lakes, northwest of cape Dorset. They were unaccompanied by young and probably were first-year, non-breeding birds. With them were two blue geese, which were also collected. Particulars of the five snow geese are as follows:

Number	Length	Culmen	Weight	Sex
	Ins.	Ins.	Lbs.	
21103	28·5	2·30	5½	♀
21104	28·5	2·20	5½	♂
21105	27·7	2·30	5	♂
21106	29·5	2·30	6	♂
21107	28·3	2·25	5	♀

Kumlien (1879, p. 46) remarks: "Appears to be rare and migratory in the Cumberland waters. Saw a few specimens in early spring and late autumn." Hantzsch (1914, pp. 149-151) in his diary refers to the species as *Chen hyperborea* and on labels of specimens as *Chen hyperborea nivalis*. He first observed the species on June 6, 1910, near the end of Nettilling fiord. On June 18, he saw one flying over Amittok lake; others were noted on June 24, at Isoa, Nettilling; and a large flock was seen on June 26, feeding on grass land in eastern Nettilling. He recorded during July large numbers of snow geese in the moult in Tikerakdjuak point, Nettilling lake. Flocks of upwards of one hundred birds were seen. On July 20, Hantzsch's Eskimo killed fifty-four birds in the moult. Hantzsch writes: "As the result of examination of the prepared birds, it was determined the birds were not of breeding age." In early June Hantzsch sent his Eskimo south of Nettilling lake in search of the breeding ground of the snow geese, having heard from an old woman at Kekerten that they nested in that region. The men travelled south to Amadjuak lake and returned along Amadjuak river, but saw no geese. Hantzsch noted that by August 10 most of the geese at Nettilling lake were flying. He observed flocks of hundreds of snow geese at Koukjuak river from early in September to the middle of the month, when they disappeared from the tundra. Hesse (1915, pp. 156-166), as a result of a close study of the specimens collected by Hantzsch and after describing them at length, states that the measurements of the bills and legs indicate that the birds are intermediate between *hyperboreus* and *nivalis*. Owing to the fact that the specimens were of birds in the moulting stage, Hesse was unable to make comparisons based on wing length, but supposed if this method had been possible it would also have indicated an intermediate character for the Baffin Island birds.

37. **Chen hyperboreus nivalis** (J. R. Forster). GREATER SNOW GOOSE.
Eskimo: *Kungo*.

It is assumed that the snow goose which nests in northern Baffin island belongs to this subspecies, but so far as known no specimens have been brought from this region.

Munn (*See* Lloyd, 1922, p. 50) records snow geese, believed to be this subspecies because of the locality, as abundant and breeding on Bylot island and in the vicinity of Ponds inlet. Corporal F. McInnes states that snow geese, which are supposed to be this race, breed in large numbers on the southwest corner of Bylot island, and on the south coast of Eclipse sound from the mouth of Salmon river south to Salmon lakes. The Eskimo reported them also from Arctic bay, and Button point on Bylot island. The geese arrive about the first of June. Eggs have been found on Bylot island as early as June 14.[1]

[1] A nest with five eggs was taken near the R.C.M.P. detachment at Dundas, Devon island, June 22, 1928, and one of the eggs, with parent birds, presented to the National Museum of Canada, are undoubtedly referable to *nivalis*.—R.M.A.

Kennard (1927, pp. 85-93) states that his investigations go to show that the greater snow goose breeds only in northwestern Greenland and adjacent lands, migrating south along the easterly side of Baffin island to Maryland, Virginia, and North Carolina. Considering that *Anser nivalis* of Forster is a synonym of *Anser hyperboreus* of Pallas, Kennard has renamed this snow goose of the Atlantic coast, *Chen atlantica.*

38. **Chen caerulescens** (Linnaeus). BLUE GOOSE.

The blue goose occurs on Baffin island, but apparently is rather rare. Constable F. Fielder informed the writer that he saw a brownish grey goose with white head and neck, flying alone to the southwest over Pangnirtung fiord on June 22, 1924. This bird apparently is referable to this race. At Nettilling lake, on June 8, 1925, a flock of thirty-six geese passed northward over camp, thirty-two of which were blue geese and the remainder snow geese. During the five months spent in the interior no other blue geese were observed.

On June 6, 1926, many flocks of geese were seen migrating over cape Dorset, in which numerous blue geese were observed. One flock of some two hundred individuals was composed, about half and half, of blue geese and snow geese. At Aitken lakes, northwest of cape Dorset, on July 19, 1925, two blue geese in the moult were collected. They were associating with lesser snow geese. Their measurements are as follows:

Number	Length	Culmen	Weight
	Ins.	Ins.	Lbs.
21101	29·8	2·40	6
21102	28·5	2·40	5

On specimen No. 21101 the whole abdomen from vent to lower breast is pure white. Anteriorly and against the flanks the contrast is strong, but spotted and blotchy. It is probably the occurrence of such birds as this that has given rise to the postulated identity of the blue and snow geese. Specimen No. 21102 is soft, light greyish below, blending with the breast and flanks as in normal plumage.

Hantzsch (1914) does not mention this species in his journal, although in his collections there was one dark specimen with twelve white birds. This specimen was described in detail by Hesse (1915, pp. 162-166) under "*caerulescens*- form." It was taken in the vicinity of Kangidli, southern Nettilling lake, July 27, 1910.

Three blue geese were collected in 1922 by the MacMillan expedition in the region of Bowdoin harbour.

A consensus of Eskimo reports is that the blue geese breed in Foxe land in southwestern Baffin island, northeast of cape Dorset, and west of Amadjuak lake.

39. **Anser albifrons gambeli** Hartlaub. WHITE-FRONTED GOOSE.

Kumlien (1879, p. 99) records the species as in Cumberland sound in 1877-1878. He writes: "Not observed in any numbers about our winter harbour, but undoubtedly occurs in abundance on the fresh water lakes. This is probably the goose that the Eskimo take in such great numbers

at lake Kennedy [Nettilling lake], where they drive them towards the sea-coast while they are in the moult." In this supposition Kumlien has erred, as the snow goose is the common goose at Nettilling lake.

The white-fronted goose was not noted by Hantzsch or the writer. A goose skin taken by Eskimo at Nunatuk, Issortukdjuak fiord, and seen at Pangnirtung fiord, autumn of 1925, probably is of this species.

40. Branta canadensis (Linnaeus). CANADA GOOSE.
Eskimo: *Nerdlek, -ak, -at,* according to Hantzsch.

At Nettilling lake on May 29, 1925, a large flock of geese flying northward were seen by an Eskimo companion who said the birds were not snow geese but another darker goose. They are tentatively referred to the present species.

On June 5 and 6, 1926, numerous flocks of dark geese passed over cape Dorset. Most of them were too far away for identification, but they are thought to have been Canada geese. Some flocks were partly snow geese and in such cases the accompanying dark geese may have been blue geese. On June 5, a pair of geese, evidently mates, flew past at close range, and were positively identified as the Canada geese. Nearly all the geese in this stream of migration were flying at altitudes of from 2,000 to 3,000 feet. One flock passed north, barely clearing the lower hills 100 to 200 feet high. As it was evening these birds were probably looking for a place to feed.

No specimens were secured until June 13, when an Eskimo brought a pair of small Canada geese shot on an island a few miles east of cape Dorset. Because of their small size, they were referred to *hutchinsi*. The Canada geese observed earlier in June were probably this race.

On July 7 a pair of these small Canada geese were found nesting on an island a few miles northeast of cape Dorset, but only the male was secured. The nest was on a little point in an upland pond, and was constructed of bits of moss and grass and lined with down and short feathers. The six eggs were about two-thirds incubated. On the following day, in the same locality, another nest was found, and the female, which was small and apparently referable to *hutchinsi*, was collected. This nest was built on the top of a moss and grass-covered rock in an upland pond about 15 yards from the shore. The three eggs were almost on the point of hatching, judging from the appearance of the embryos.

While at the Aitken lakes west of cape Dorset, on July 19, 1926, a pair of these small geese, accompanied by five downy young only two or three days old, were seen. The young were a bright, lemon colour with clouds of smoky grey over the back and head. The adult male (specimen No. 21108) was collected and proved to be even smaller than the others catalogued as *hutchinsi*.

Kumlien (1879, p. 88) procured a specimen in Kingwah fiord on June 10, 1878, which he lists as *hutchinsi*. The Eskimo who killed the bird said he had seen many southward of Nugumeute, Cumberland sound. *Branta canadensis hutchinsi* (Rich.) appears in Hantzsch's (1914, p. 149) list, but no specimens were taken. Low (1906, p. 317) states that *hutchinsi* is common about Fullerton in the spring, and has been found breeding on Southampton island, in company with the lesser snow goose, at the end of June.

Regarding the six specimens of this species taken in southern Baffin island (cape Dorset, Markham bay, and Aitken lake, June 8 to July 20), P. A. Taverner states:

"Five are unmistakably of the generally accepted *B. c. hutchinsi* type. Slightly but distinctly smaller than true *B. canadensis* (length 32-33·5 inches), but of same coloration and with tarsus and middle toe and claw of about equal length. At least two were breeding and with eggs. The sixth, a male (Aitken lake, July 20) was with young, but is very diminutive, scarcely larger than a large Mallard duck. Length 26·7; wing 14·8; culmen 1·4; tarsus 2·6; middle toe and claw 2·3. It is, therefore, almost typical *Branta canadensis minima* in size, but it is *B. c. canadensis*, or *B. c. hutchinsi* in colour. Were this but an isolated or sporadic individual breeding in *hutchinsi* community it might be looked upon as a runt, or depauperized bird of that race, but the type seems of regular though rather scarce occurrence over a certain vague distribution and cannot be so dismissed. There are good reasons for hesitating to include it with west coast *B. c. minima*, which is typically a dark under-bodied bird, and I do not care to commit myself regarding it until further evidence is forthcoming regarding it."

41. **Branta bernicla glaucogastra** (Brehm). WHITE-BELLIED BRANT.

Eskimo: *Nerdlernak, -ak -at*, according to Hantzsch.

Eight brant were observed on one of Fox islands, Gordon bay, on June 21, 1926. The evening of the same day a flock of fifty birds, supposed to be brant, were seen flying north over the islands. On June 22, a flock of eight brant were noted flying southward over the islands. The following day a flock of twenty-six passed over camp travelling north. Two specimens, in flightless moult, were procured at Amadjuak bay on August 3, and are referred to this species.

Corporal F. McInnes states that a few brant are found on Bylot island. They are undoubtedly this species, as it is found more or less commonly on Devon and Ellesmere islands.

Hantzsch (1914, p. 149) entered only the name of this species in his journal without any observations. He did not collect any specimens.

42. **Branta leucopsis** (Bechstein). BARNACLE GOOSE.

A single specimen was taken by a native in August, 1924, at Boas lake, near Amadjuak bay, south coast of Baffin island, and brought out by Major Burwash (*See* Taverner, 1927, p. 221.) No mention is made of this species by either Kumlien or Hantzsch.

43. **Cygnus columbianus** (Ord). WHISTLING SWAN.

A short distance inland from Ponds inlet, on September 2, 1923, a flock of large, white birds resembling swans was observed high overhead bearing southwards. Their notes were different from those of geese, being soft, flute-like. At cape Dorset on June 13 and 14, 1926, two flocks of what were taken to be swans, passed northward flying very low. A heavy mist made identification uncertain.

With a query as to the species, Kumlien (1879, p. 88) says that swans occasionally occur in southern Cumberland waters and were reported to be of regular occurrence in Nettilling Lake region. Low (1906, p. 317) says this species is common on Southampton island where it breeds. This species was not noted by Hantzsch.

44. **Grus americana** (Linnaeus). WHOOPING CRANE.

Munn (*See* Lloyd, 1922, p. 50) reports having seen two whooping cranes near Ponds inlet in the summer of 1912. The species has not hitherto been recorded in this part of North America.

45. **Grus canadensis** (Linnaeus). LITTLE BROWN CRANE.

Recorded by Kumlien (1879, p. 88) as quite common in some localities in Baffin island and as breeding in Kingwah and Kingnait fiords in Cumberland sound, in Exeter sound, and in Home bay on the west coast of Davis strait. Several pairs were seen by Low (1906, p. 317) on Southampton island. It was not recorded by Hantzsch and not seen by the present writer.

46. **Phalaropus fulicarius** (Linnaeus). RED PHALAROPE.
Eskimo: *Shutgak.*

On the 1923 Canadian Arctic Expedition this species was observed July 18 and 21, 20 miles off the Labrador coast between latitudes 53 degrees and 56 degrees north. The species was not again observed in 1923.

In 1924 the species was first seen on July 11 off the Labrador coast in latitude 52 degrees north. One was observed the following day. Ten were noted on July 17 in latitude 58 degrees north. A number of small flocks were seen off the entrance to Hudson strait on July 19. The species was not again noted until September 12, when an Eskimo brought a specimen which he shot in Pangnirtung fiord. A solitary female was collected at an open riffle on Takuirbing river, Nettilling lake, on June 17, 1925. The ovaries were only very slightly enlarged. On June 19, 1926, several flocks of this species, amounting to about fifty individuals, were observed a few miles east of cape Dorset. Four specimens were collected. The sexual organs of the male were very large, while those of the female were only slightly developed.

The species was observed by Kumlien (1879, p. 85) in very large flocks in early August, 1877, 200 miles to sea off the Labrador coast. Their numbers increased northward to Grinnell bay, but very few were seen north of Frobisher bay. He intimates that they breed in Cumberland sound, but during the breeding season are seldom seen on the shore, as they then cruise in the sound far from land. Low (1906, p. 317) records the species as very common at Fullerton and Southampton where it breeds in swampy ground, and eggs and skins were collected. Hantzsch (1914, p. 156) observed the species, near the end of June, 1910, in little companies at Takuirbing river, Nettilling lake. He found them nesting sparingly at Tikerakdjuak point in July. On September 15, he noted a flock on the bank of Koukjuak river. Two specimens were taken by the MacMillan expedition to southwestern Baffin island, 1921-22.

A Pangnirtung Fiord bird taken September 10 is in complete winter plumage below, but the back is in summer condition except for a few grey feathers just appearing. Two Gordon Bay females taken June 19 are in practically complete summer plumage, but two others of the same date have markedly progressed towards a winter plumage below, and less so above.

47. **Lobipes lobatus** (Linnaeus). NORTHERN PHALAROPE.
Eskimo: *Shutgak.*

Recorded by Kumlien (1879, p. 84) as breeding in Kingwah fiord, Cumberland sound, where large flocks were observed. He states that the birds arrive there in June, and build their nests on grassy banks about freshwater ponds. This bird was not noted by Hantzsch.

48. **Recurvirostra americana** Gmelin. AMERICAN AVOCET.

Kumlien (1879, p. 84) includes this bird in his Cumberland Sound list with the following remarks:

"I enter this bird on my list on Eskimo authority—poor authority, it is true, but I have in my possession a drawing, made by a wild Eskimo, that is so unmistakably this bird that I do not hesitate to accept it, especially when he gave me a perfect description and that without any attempt on my part to draw him out. He says he saw them for the first time in the summer of 1877, while reindeer hunting, south of lake Kennedy [Nettilling]."

This species has not been noted by any other observers.

49. **Calidris canutus** (Linnaeus). KNOT.

Kumlien (1879, p. 87) states that a small flock lit on the schooner's deck in November after the harbour had frozen over at Annanactook, Cumberland sound. None was observed during the spring or summer. Hantzsch makes no reference to this species.

50. **Arquatella maritima maritima** (Brünnich). PURPLE SANDPIPER.

Eskimo: *Segalea: Tudlik, -lik, -lit,* according to Hantzsch.

On the 1923 Canadian Arctic Expedition a single bird of this species was collected at Ponds inlet, on August 26. A solitary example was observed the following day. Solitary examples of what appeared to be this species were seen at Pangnirtung fiord, Cumberland sound, on September 18 and 21, 1923. In 1924 none was seen until August 28, at Blacklead island, Cumberland sound, when several were collected. On the following day eight were taken. The southward migration was then at its height. The birds continued to pass in numbers until September 2 and could be found feeding at the water's edge along rocky coasts. Single specimens were obtained at Pangnirtung fiord on September 12, and 30 and October 21, respectively. The last secured was especially remarkable as winter had set in long before.

The first sandpiper observed in the spring of 1925 was of this species and was a solitary male collected June 2, 1925, at Nettilling lake. The lakes were still ice bound and the land mostly covered with snow, but here and there were small, open pools. Along the border of one of these the bird was feeding in the thin layer of thawed mud among the grassy hummocks. On June 11, in the same locality near Takuirbing river, several were observed and one collected. When flushed they emit a grating *ick-ick-ick* and when not too hard pressed will in many cases light again a few yards away. They flush sluggishly, and when not come upon too abruptly will in many cases leisurely elevate the wings above the back, as though stretching them before taking flight. On the whole, at this time, they were comparatively fearless and permitted close approach. Only one was observed giving a vocal performance on the wing. It rose slowly from the ground to a height of 15 to 20 feet and leisurely flying over the tundra gave a series of low, musically staccato notes resembling *to-wit, to-wit, to-wit, to-wit,* etc. The performance continued unbrokenly over a distance of 25 or 30 yards while the bird remained in the air.

None was observed after June 11 at Nettilling lake until September 5 when a flock of three, evidently migrating, were seen at Nikoswing island near Koukjuak river. The bird apparently does not breed in Nettilling Lake region, but goes farther north to nest. The lake does not appear to

be even on the main route of the spring and autumn migrations which, evidently, pass over the mountainous, eastern part of Baffin island. Access to the sea for food apparently determines the location of the route.

At cape Dorset in the spring of 1925 the first wader observed was of this species and was a single bird seen on May 30. Except for a few bare patches the country was still deeply covered with snow, and the sea and lakes were covered with ice. On June 8 a solitary female was collected on a marshy flat near an open pond. The ovaries were considerably enlarged. A male was collected on one of Fox islands, in Gordon bay, on June 29. These three birds were all that were seen during the spring and summer of 1926, along the south coast of Baffin island.

J. C. Ross (1826, p. 101) records a few at port Bowen in early June, 1825. Kumlien (1879, p. 87) says that hundreds were breeding near Annanactook, Cumberland sound, in the spring of 1878. Hantzsch (1914, p. 149) recorded the species as a migrant at Blacklead island, Cumberland sound, October, 1909. On June 17, 1910, he noted the first pair at Amittok lake. A single individual was observed at Koukjuak river on September 11, 1910. Specimens and eggs were taken by the MacMillan expedition to southwest Baffin island, 1921-1922.

51. Pisobia fuscicollis (Vieillot). WHITE-RUMPED SANDPIPER.
Eskimo: *Levelivela; Livillividla, -ak-at,* according to Hantzsch.

The first white-rumped sandpipers observed in 1924 were seen on August 28 at Blacklead island, Cumberland. They were migrating south; two specimens were secured. A single specimen was taken on September 2, at the same place. An Eskimo brought a specimen which he had shot on September 12 in Pangnirtung fiord. Two days later a solitary bird was observed feeding along the seashore in the same locality.

The species was next seen on June 10, 1925, at Nettilling lake, where a mated pair was flushed from a marshy upland near Takuirbing river. The sexual organs in both were fully developed, the female being almost on the point of laying. By June 14 the species had become quite common. The males practised their vocal performances on the wing immediately upon arrival. They rose to a height of about 60 feet, hovered with rapidly beating wings, and uttered their nuptial song in a very low tone at a slow tempo, the notes weak and inclined to be squeaky. The species appears to flush silently.

A nest containing four eggs was found on June 16 on a grassy hummock near the lake. Many were subsequently found. The nests are merely shallow depressions on the crowns of tussocks of grass and mosses a few inches above the surrounding mud and water of the tundra. They are sparingly lined with blades of old grass and dead leaves of the dwarf Arctic willow, or as in some cases, exclusively with the dried leaves of *Salix herbacea.* According to collecting data, both sexes arrive together, with the female almost, if not quite, ready for immediate reproduction as evidenced by the condition of the ovaries. The nest of four eggs found on June 16 was seen only four days after the first observed arrivals of the species.

The female upon one's approach plays the familiar artifice, limping and dragging herself along the ground in an effort to divert one's attention from the nest. In this they are fearless. If a person sits besides the nest they frequently will run up to within a foot or less of him. While

photographing nests from a distance of only a few feet, the female in many cases returned to her eggs while the photographer's head was under the dark cloth during the adjustment of the focus. One was so devoted to her eggs that she would run up and peck the writer's fingers and run over his hand when extended toward the nest. The female usually leaves the nest when an approaching person is still 20 to 25 yards distant, and runs towards him either directly or a little to one side. Because of the remarkable resemblance of the bird's plumage at this period to the covering of the tundra, the first movements in many cases escape notice and, consequently, when the bird is first observed fluttering along the ground, the natural assumption is that the nest is very close at hand, whereas, in reality, it may be 20 or more yards away. The nests are easily found if the observer retreats and watches the female through glasses. The birds usually return to the nest with little artifice or delay, in fact, often within two or three minutes. The described procedure is not invariably practised as one female was known to flush directly from the nest and to begin her tactics only when there was danger of the nest being actually trodden upon.

The first juveniles, about a day old, were seen and collected on July 11. They were exceedingly active. They were ashy coloured below, buffy with black markings, and the down over the lower back and rump was tipped with small white spots. This species is much more demonstrative and less artful in the concealment of young than Baird's sandpiper. The adults come within a few feet of the intruder and by their actions advertise much more clearly the position of the young. The parent birds keep up a continual, twittering cry of alarm, the female louder and more pronounced. The male comes on the scene only at intervals with a mouse-like squeaking note. The young "freeze" flat to the ground when the warning notes are uttered by the adults. They will lie as though dead until actually picked up. When they realize the game is up they wildly struggle to escape and if allowed to do so, run rapidly away and either hide again, or attempt to reach the mother bird whose frantic cries come from but a few yards away.

A young white-rump about two-thirds grown and almost on the point of flight, was captured on August 1. Others seen a few days later were capable of short flights. Several times the attempt was made to keep a single young bird alive in camp, but each died within about twenty-four hours regardless of the best care.

During the trip, in the latter half of August, 1925, along the southern and western coasts of Nettilling lake as far as Koukjuak river, the species was only sparingly observed. In early September small companies were seen feeding along the low, muddy shores of Koukjuak river, or flying south. A flock of twenty were seen flying on September 5, and three were seen the following day. These were the last observed in the interior. The next and last of the year was a flock of six, seen, on September 25, off Aulatsivik point, Pangnirtung fiord.

In 1926 the species was first seen on July 17 at Aitken lakes, 7 miles northwest of cape Dorset. This locality with its numerous lakes and ponds and extensive marshy tundra is a much favoured breeding ground. Numerous adults and juveniles were seen, the latter almost on the point of flight. These were the last noted on the south coast. Notwithstanding the proximity of this feeding ground, not one white-rump was observed at cape Dorset during the spring migration.

A large series of skins and eggs were collected.

Following are the measurements of three sets of eggs collected at Nettilling lake:

No. 1873	No. 1874	No. 1869
Mm.	Mm.	Mm.
32 — 24	34 — 24	33·5 — 23·5
33 — 24	34 — 24	33 — 23·5
31·5 — 23·5	34 — 24	32 — 24·5
33·5 — 24	33 — 24	33 — 23·5

This species recorded by Kumlien (1879, p. 86) as breeding in Kingwah and Kingnait fiords, Cumberland sound. Considerable numbers were observed by him in July near Newboyen harbour, on the west coast. A single specimen was taken by the MacMillan expedition in southwest Baffin island. Hantzsch (1914, pp. 148-149) records seeing the species at Kangianga and at Nettilling lake where he found it breeding.

52. Pisobia bairdi (Coues). BAIRD'S SANDPIPER.

Eskimo: *Tweetwee;* Hantzsch states that when distinguished from *P. fuscicollis,* the bird is known as *Sikjariak.*

This species is much rarer on Baffin island than the white-rumped sandpiper with which it associated about Nettilling lake. It was not noted until June 21, 1925, when an Eskimo brought a specimen he had killed at Takuirbing lake, near Nettilling lake. With it he secured a set (specimen No. 1870) of four much incubated eggs which measured as follows: 34 by 24·5; 34 by 24; 33 by 24·5; 35 by 25. On July 6 near the same locality a pair was shot. They were very much shyer than the white-rump. When approached, the male rose to a height of about 200 feet and circled for several minutes, then alighted on the very top of a hill about 300 feet high. The female hovered about as though a nest were near, but a most diligent search failed to discover it. The birds have a soft, plaintive call resembling *whe-e-e-e-e-it, whe-e-e-e-e-it,* somewhat reminiscent of the call of the wood pewee. They also emit, at times, a reedy, guttural note. The call-note on the wing resembles the single syllable *reese, reese.* When taking wing, this species does so with many calls and much ado, unlike the white-rump, which is silent. A pair was observed, and one of the birds collected, on July 10, south of Takuirbing river. Later in July several adults were seen in the same region. On August 1, four juveniles, nearly fully grown and flying fairly well, were observed near Kuksunittuk bay. These were the last observed.

A male bird was collected by Hantzsch at Amittok lake on June 14, 1910 (1914, p. 155). One other was observed at the same time. Skins and eggs of this species were collected by the MacMillan expedition to southwest Baffin island, 1921-22.

53. Pisobia minutilla (Vieillot). LEAST SANDPIPER.

This species was noted by Kumlien (1879, p. 86) at Niantilic in September, 1877. It was not recorded by Hantzsch.

54. **Ereunetes pusillus** (Linnaeus). SEMIPALMATED SANDPIPER.
Eskimo: *Livilivilakulluk*, according to Hantzsch.

This species appears to be very scarce on Baffin island. None was observed on the 1923 Canadian Arctic Expedition and none was seen in 1924. The first seen in 1925 was a single bird taken on June 14, on the shore of Nettilling lake just south of Takuirbing river. It was associating with semipalmated plover. The next met with was at cape Dorset on June 8, 1926. Again it was a solitary bird associating with semipalmated plovers. In both cases the bird was silent.

Hantzsch (1914, pp. 157-158) records a male specimen killed at Isoa (Nettilling lake) June 25, 1910. He observed two pairs on July 2. Under date of July 26, he states that the bird was rather numerous south of Tikerakdjuak. He saw a few at the end of August in the southwest part of Nettilling lake, and frequently observed them on the shores of Koukjuak river during mid-September. Three of his specimens were listed—an adult male from Isoa, June 25, 1910; an adult male from some point east of Nettilling lake, June 30, 1910, and one from Blacklead island, August 24, 1910.

55. **Crocethia alba** (Pallas). SANDERLING.

A small flock was observed by Kumlien (1879, p. 87) in September, 1877, at Niantilic, Cumberland sound. This species was not recorded by Hantzsch nor the present writer.

56. **Limosa haemastica** (Linnaeus). HUDSONIAN GODWIT.

Kumlien (1879, p. 40) states that he saw two godwits near cape Edwards, on the west coast of Cumberland sound, in September, 1877. He provisionally refers them to the present species. No godwits were noted by Hantzsch nor the present writer.

57. **Totanus melanoleucus** (Gmelin). GREATER YELLOW-LEGS.

A single specimen was taken by Kumlien (1879, p. 88) on Arctic island, Cumberland sound, September 14, 1877. No reference is made to this species by Hantzsch.

58. **Numenius borealis** (J. R. Forster). ESKIMO CURLEW.

A few flocks were observed by Kumlien (1879, p. 88) passing northward up Kingwah fiord in June, 1878. One specimen was collected. Hantzsch does not record this species.

59. **Squatarola squatarola** (Linnaeus). BLACK-BELLIED PLOVER.

Hantzsch (1914, pp. 137-138) records a single specimen killed by his Eskimo on August 14, 1910, on the tundra along the west side of Nettilling lake. One specimen was taken by the MacMillan expedition to southwest Baffin island, 1921-22.

60. **Pluvialis dominica dominica** (Müller). GOLDEN PLOVER.
Eskimo: *Ungalitte, Ungillitti*, according to Hantszch.

This species is rare on Baffin island. Only two individuals, one of which was collected, were seen. The first was observed on an upland bordering Koukdsunittuk bay, Nettilling lake, on June 10, 1925; the other was shot beside a tundra pool near Koukjuak river on September 4, 1925.

J. C. Ross (1826, p. 102) states that this species arrived at port Bowen, northwestern Baffin island, about the middle of May, 1825. It was first observed by Hantzsch (1914, pp. 154-155) at Kangianga (western end of Nettilling fiord) on June 7, 1910. Another solitary bird was seen at Tikerakdjuak point, Nettilling lake, on July 4. A breeding pair was met with south of Tikerakdjuak point on July 26. On July 31, 1910, Hantzsch made the following entry in the diary: "Determined as a not rare breeding bird several hours distant in the interior of the country". Presumably was referring to the district east or southeast of Tikerakdjuak point where the country is low and rolling, and there are many patches of tundra and numerous ponds. Four highly incubated eggs were found on August 1. Hantzsch states that on a hunting trip from Tikerakdjuak point to Amadjuak lake, this species was met with in great numbers, singly or in pairs. This statement apparently was based on the report of his Eskimo, as another part of the diary indicates that the Eskimo alone made this trip. Hantzsch writes that at the end of August this species is the characteristic bird on the tundra southwest of Nettilling lake. None was observed at Koukjuak river in early September.

61. **Charadrius semipalmatus** (Bonaparte). SEMIPALMATED PLOVER.
Eskimo: *Kudlekaleak.*

This is the common plover of Baffin island. During the summer of 1924 a few were seen on grassy flats about the fiords of Cumberland sound, but the species is not there.

In 1925 the first to appear at Nettilling lake was a company of three on June 9. They frequented the drier, snow-free ridges near the lake shore. By June 20 the species had become tolerably common. Their call consists of a loud, sharp note like *creese, creese, creese* or *creep, creep, creep* repeated rapidly during flight. On June 15 the nuptial flight song of the male was first heard. The notes resemble the word *krit*—a loud, far-reaching and complaining utterance with a soft, rolling burr of notes at the finish, i.e., *Krit-krit-krit-krit-krit-krit-krit-kr-kr-r-r-r-r-rrrr.* This is repeated at frequent intervals, the bird descending to the ground after each performance.

A set of eggs, practically fresh, was collected on June 21. The nest was merely a shallow depression in sandy ground near the lake, with only a few shreds of dried moss in the bottom. Two days later a colony of three nesting pairs was discovered on a sand spit in Koukdsunittuk bay. Two nests contained one egg each, and the other three. The nests were cup-like depressions in the sand, without lining, except a few fragments of old caribou-moss scattered over the bottom. The female's cry now was a sharp, high-pitched *Kur-r-r-r reep* or *sir- reese,* fretful, and repeated with monotonous regularity. The first juvenile was observed on July 30, still in the downy stage and unable to fly. At the same time a flock of five, noisy adults was observed flying aimlessly about; possibly thus exhibiting the earliest tendency to autumn flocking. The species was only sparingly observed during early August. The last seen for the season was observed August 17 on Takuirbing lake.

At cape Dorset the first arrivals, four in all, were observed on June 3, 1926. By June 7 the species had become quite common and as many as a dozen or more would be met with in the course of a few hours' tramp. Nearly all were frequenting sandy bars along the seashore, now free of

snow; a few were on mossy, tundra upland in the vicinity of streams and pools. The species was much more numerous here than in any part of Baffin island previously visited by the writer. On June 28 a set of four eggs, somewhat incubated, was taken on one of Fox islands, Gordon bay. The first young of the season, possibly two days old, were seen on July 13 at cape Dorset. Two adults and a brood of young were observed at Amadjuak bay on August 7. The species was not noted during the 1923 Canadian Arctic Expedition.

A large series of skins was collected. Measurements of the eggs collected are as follows:

No. 1871	No. 1872	No. 1875	No. 1876
Mm.	Mm.	Mm.	Mm.
33·5— 23	34 — 23·5	32 — 24·5	36 — 24·5
33 — 24	32·5— 24	32 — 24	34·5— 25
32·5— 24	32·5— 24	33 — 24	34 — 24·5
34 — 24		33 — 24·5	34 — 24

Kumlien (1879, p. 83) records the species as being not rare, and as breeding about Cumberland sound. First recorded by Hantzsch (1914, pp. 156-157) under the name *Aegialitis hiaticula semipalmata* (Bp.), on June 20, 1910, near Amittok lake. He frequently observed the species at Isoa, eastern part of Nettilling lake, in late June. Specimens and eggs were collected by the MacMillan expedition to southwest Baffin island, 1921-22.

62. Charadrius hiaticulus (Linnaeus). RINGED PLOVER.

On the 1923 Canadian Arctic Expedition the ringed plover was seen only at Ponds inlet, Baffin island, where on August 29 two individuals were collected near Salmon river. Though very many specimens of the semipalmated plover were collected 1924-1926, not one example of the present species was taken. This is radically different from Kumlien's experience in Cumberland sound in 1877-1878.

Regarding this species Kumlien (1879, p. 83) says:

"I am not aware that this species has hitherto been introduced into the North American fauna, though long known as a common bird on the Greenland coast, where *Æ. semipalmata* is rare. It is apparently more common than the preceding in Cumberland. Arrives about the same time, and breeds in similar localities."

Hesse (1915, p. 169), giving an account of work by Hantzsch, lists a male, adult specimen from Blacklead island, Cumberland sound, summer, 1906, and states that Hantzsch did not collect this specimen himself, but "obtained it somewhere."

As several writers have failed to note the difference between the feet of this and the preceding species, it may be well to point out that *hiaticulus* has a web between the outer and middle toes, whereas *semipalmatus* has a large web between the outer and middle toes, and a smaller web between the middle and inner toes.

63. Arenaria interpres morinella (Linnaeus). RUDDY TURNSTONE.
Eskimo: *Tellevak.*

This species was comparatively common at Craig harbour, Ellesmere island, on August 6, 1923. At the time of a return visit to Craig harbour on August 12, the turnstones were even commoner. This was the only place the species was observed during 1923.[1] It was not observed in Baffin island from 1924 to 1926.

Hesse (1915, p. 166) reports two of Hantzsch's specimens from Blacklead island under *A. interpres.* As the specimens are dated August 24 and 26, 1910, respectively, they were obviously collected by natives during Hantzsch's absence in the interior. The species is not noted in Hantzsch's diary, so it is highly probable he never observed this bird in Baffin island. Kumlien, also, while in Cumberland sound, did not observe the species which, therefore, is probably extremely rare on the island.

64. Lagopus lagopus lagopus (Linnaeus). WILLOW PTARMIGAN.
Eskimo: *Arkagik.*

Under *Lagopus albus,* Kumlien (1879, pp. 82-83) includes this species in his list of Cumberland Sound birds. Writing of *L. rupestris* he states that he secured two specimens of the willow ptarmigan while in Cumberland sound. Though the present writer collected a large series of ptarmigan from many, widely separated localities on Baffin island, not a single one of this species was taken.

J. C. Ross (1826, p. 101) states that they were seen at port Bowen every month except January during the winter of 1824-25. During the winter of 1909-10 Hantzsch (1914, pp. 146-148) reports that they were not rare in Cumberland sound. He does not mention the species again until under date of September, 1910, he states it was once seen by his Eskimo on Koukjuak river and that a little band was later observed at Foxe basin. They were seen at intervals all winter at Foxe basin. On January 30, an "extraordinarily large band" of ptarmigan was observed by one of Hantzsch's Eskimo north of Koukjuak river. The identification of these birds as *L. lagopus albus* is based by Hesse on four birds collected by Hantzsch in Cumberland sound. Hesse (1915, pp. 177-182) agrees with Clark (1910, p. 53) and Riley (1911, p. 233) in applying the name *Lagopus lagopus albus* (Gmelin, 1788) to the typical Nearctic form of the willow ptarmigan, restricting *Lagopus lagopus lagopus* (Linnaeus), Gmelin 1788, to the typical Palaearctic form. He discusses the possibility of Baffin Island birds possibly belonging to the form *Lagopus lagopus ungavus* Riley (*See* Riley, 1911, p. 233), with range "Ungava and probably the eastern shore of Hudson bay south," but from the measurements of bills of the Baffin Island specimens decides that they can not be referred to *ungavus.*

65. Lagopus rupestris rupestris (Gmelin). ROCK PTARMIGAN.
Eskimo: *Arkagik*; *Niksartok-tuk-tut,* according to Hantzsch.

Ptarmigan were very scarce throughout the eastern Arctic islands in 1923. Numerous old signs were seen at Strathcona sound in August, but no birds were seen. The same condition held true at Ponds inlet where eleven days were spent in late August and early September. Two juvenile specimens of rock ptarmigan were obtained, however, from a native who had killed the birds locally during our stay. R.C.M. Police and Hudson's Bay Company's officers unanimously stated that this species,

[1]A flock of twelve or fifteen observed at Craig harbour and two specimens in grey plumage taken by R. M. Anderson August 9, 1928. Not observed elsewhere on Arctic Expedition of 1928.—R.M.A.

although extremely scarce in north Baffin island during summer and autumn, is quite common during winter. The birds evidently breed in the mountains of Bylot island. Their first movement across Eclipse sound from Bylot island to the Baffin Island coast occurs early in October. It is stated that the birds are in many cases so tired by the flight that they alight on the beach almost exhausted.

At Pangnirtung fiord, from September 11 to 21, 1923, no ptarmigan was seen. Here, as elsewhere, they were reported to be scarce during the summer, but comparatively common in late autumn and during the winter. After a heavy snowfall on September 18, fresh ptarmigan trails were once seen.

No ptarmigan was seen during summer and early autumn of 1924 at Cumberland sound. A few were secured by Eskimo at long intervals during September and early October. The birds became more numerous in late October and throughout November. Many were brought to the post by the natives in December and January. On the journey to the east coast in February and March, 1925, ptarmigan were twice seen—in Padle fiord and in the north part of Kingnait pass.

The species was next observed at Nettilling lake (Isoa) on May 12, 1925. They were then scarce. By May 22 they had become quite common around camp at Takuirbing river. Many individuals were collected, all males. The first females were taken on May 27; these were just entering the pre-nuptial moult and had buffy black feathers over rump and head. The crowing of the males was first heard on May 22, and thereafter it was a familiar sound until well into June. A female taken on June 10 was in almost full summer plumage, and carried a finished egg in the oviduct. Another taken on June 16 was in the same condition. The male birds remained white until well into July. The first observed with a sprinkling of brown feathers of the summer plumage was collected on July 2. After July 10, ptarmigan became very scarce and days passed without observing a single bird, notwithstanding that they had been numerous in late May and during June and had nested in the region.

The first juveniles, on the point of flight, were taken on July 26 near Takuirbing lake. These were brown and black mottled with sulphur-coloured down around the neck and down the middle of the breast and belly. No ptarmigan was encountered after July 26 until August 10, when an adult and a brood of seven young were seen on the shore of Amittok lake. The young were just learning to fly.

During the voyage on Nettilling lake in late August and early September, 1925, ptarmigan were frequently observed on the rocky islands, and the coast south to Amadjuak river. These were usually solitary birds, or families. None was seen on the low, west coast, nor about Koukjuak river; the birds obviously shun the tundra.

Very few ptarmigan were noted during the winter of 1925-26. A small flock was seen frequenting a ledgy cliff with southern exposure, in Nettilling fiord, about the middle of January, and numerous fresh signs, where the birds had been scratching for food, were noted in the snow along Amittok river in February. No sign of them was observed in west Baffin island during the journey across the western tundra to Foxe basin. On the traverse from Cumberland gulf to Amadjuak bay in April, 1926, no ptarmigan was seen.

During the summer of 1926, the species was seen only at rare intervals along the south coast from Amadjuak bay to cape Dorset and Bowdoin harbour. On August 7 a family of two adults and seven juveniles was observed at Amadjuak bay. Ptarmigan were said to be fairly common at Amadjuak bay in 1925.

J. C. Ross (1826, p. 99) records the species from port Bowen in October, 1824, where it was also seen from March to May, 1825. Kumlien (1879, p. 83) collected a single specimen in Cumberland sound, 1877-78. Hantzsch (1914, pp. 143-146) remarks that this species was apparently much rarer during the winter of 1909-1910 in Cumberland sound than the willow ptarmigan. The rock ptarmigan was repeatedly noted on his journey to Nettilling lake in May and June, 1910. At Nettilling lake in July it is recorded as one of the most common of the large birds. The first young were seen on July 31. Large flocks were noted on Koukjuak river in early September, but the birds were scarcer later in the month. Hantzsch notes the occurrence of the species in the vicinity of Foxe basin on October 20, and specimens were taken by the Eskimo accompanying him. Hesse (1915, pp. 182-191), reporting on the Hantzsch collection, discusses the possibility of the Baffin Island birds belonging to the subspecies *Lagopus rupestris reinhardti* (Brehm), but is inclined to follow the opinion of Hantzsch that the birds from west of Davis strait belong to the subspecies *L. r. rupestris* (Gmelin).

Specimens of both birds and eggs were collected by the Donald B. MacMillan expedition to southwest Baffin island, 1921-1922.

66. **Astur atricapillus** (Wilson). GOSHAWK.

A single specimen was taken by Kumlien (1879, p. 82) at Niantilic, Cumberland sound, September 19, 1877. This species was not noted by Hantzsch nor the present writer.

67. **Archibuteo lagopus sancti-johannis** (Gmelin). ROUGH-LEGGED HAWK.

At cape Dorset on June 3, 1926, a mated pair of this species was observed and the female collected. The birds were frequenting a cliff near the sea, and gave the impression that a nest was nearly completed, a supposition that was confirmed by finding a fully developed egg in the oviduct of the specimen taken. On June 9 a solitary bird was observed. An Eskimo furnished a specimen which he had shot near cape Dorset on July 26. Two hawks, referred to this species, were seen at Amadjuak bay on July 30 and August 5, respectively.

Low (1906, p. 318) records the species in the spring at Fullerton, which is not far distant from Baffin island. One specimen and eggs were collected by the MacMillan expedition to southwest Baffin island, 1921-22. Hantzsch makes no reference to this species.[1]

68. **Haliæetus albicilla** (Linnaeus). GRAY SEA EAGLE.

On two different occasions a very large bird, which appears referable to this species, was observed by the police at Pangnirtung. Kumlien (1879, p. 82) noted the bird on two occasions at American harbour in October, 1877, and records a breeding pair at Kingwah fiord, 1878. It was not noted by Hantzsch nor the present writer.

[1]No hawks nor owls were observed during the 1928 Arctic Expedition. Their rareness was attributed to the scarcity of lemmings and hares.- R.M.A.

69. **Falco islandus** (Brünnich). WHITE GYRFALCON.
Eskimo: *Kinowayuk; Kigavik, -vik, -vit,* according to Hantzsch.

Birds referred to this species were seen in 1923 at Strathcona sound, August 19, and Ponds inlet, August 24. Specimens were taken at Blacklead island, in Cumberland sound, on August 23 and September 1, 1924. During five months spent about Nettilling lake in 1925, this species was observed eleven times, at localities from Nettilling fiord to the mouth of Amadjuak river. One was seen at Pangnirtung fiord on October 6, 1925, and another at Amadjuak lake on April 24, 1926. Several specimens were shot by Eskimo at Amadjuak bay during the summer of 1926.

A single individual was seen by Kumlien (1879, p. 81) in Cumberland sound in late November, 1877. Hantzsch (1914, pp. 141-142) noted a few at Blacklead island late in autumn, 1909, and others as apparently breeding near Kangianga in June, 1910. He observed the species once at the mouth of Koukjuak river on September 10, 1910. Hesse (1915, pp. 191-192), reporting on specimens collected by Hantzsch, recorded them under *Hierofalco gyrfalco candicans* (Gm.), and lists one skull labelled by Hantzsch as *Hierofalco gyrfalco,* adult, Blacklead island, Cumberland gulf, Baffin island, spring, 1909.

70. **Falco rusticolus gyrfalco** Linnaeus. GYRFALCON.

A very dark-coloured falcon was observed at close range at Blacklead island, on August 28, 1924, and is believed to be of this species. A dark falcon was also seen at Ponds inlet, August 26, 1923.

This bird is not listed by either Kumlien or Hantzsch. Hesse (1915, p. 122) lists a skull labelled "*Hierofalco gyrfalco*" by Hantzsch, but refers it to *Hierofalco gyrfalco candicans.*

71. **Falco peregrinus anatum** Bonaparte. DUCK HAWK.
Eskimo: *Kikkeveokjuk; Kigaviarsuk, -suk, -sut,* according to Hantzsch.

This species was not definitely identified while on the 1923 Canadian Arctic Expedition nor during the summer and autumn of 1924 while at Cumberland sound. A specimen was collected on June 9, 1925, at Nettilling lake near Takuirbing river. On August 10, a pair was seen frequenting a cliff at Amittok lake, and on a ledge a nest was found containing three half-grown young in the downy stage. The species was twice observed at the head of Nettilling fiord in the middle of September, 1925. On September 27, one was seen in Pangnirtung fiord. Three were noted at cape Dorset on June 6, 1926, one at Amadjuak bay on July 29, and another in the same locality on August 7.

Kumlien (1879, p. 82) records the species as a regular breeder in Cumberland sound and he took nearly full-fledged young in August in the greater Kingwah fiord. Hantzsch (1914, pp. 142-143) first noted the Duck hawk on June 6, 1910, at the end of Nettilling fiord where they were said by natives to breed every year. A specimen was collected on June 10. A female which had eggs on a steep cliff was killed at Amittok lake on June 17. The species was many times observed by Hantzsch at Isoa in late June. An individual was observed flying westward along Koukjuak river on September 15, 1910. Eggs and skins of this species were collected by the MacMillan expedition to southwest Baffin island, 1921-22.

72. **Asio flammeus** (Pontoppidan). SHORT-EARED OWL.

Under *Brachyotus palustris*, Kumlien (1879, p. 81) records this species as breeding in Kingnait and the great Kingwah fiords, Cumberland sound, 1878. This bird was not noted by Hantzsch nor the present writer.

73. **Nyctea nyctea** (Linnaeus). SNOWY OWL.

Eskimo: *Opigjuak; Ukpikdjuak, -ak, -at,* according to Hantzsch.

The snowy owl was several times observed at Ponds inlet in late August and early September, 1923, flying over the barrens, or perched on rocks topping some elevation. None was seen in Cumberland sound during summer and autumn, 1924. One was shot in November near Bon Accord, and two others were seen late in the month by John Hayward, Hudson's Bay Company, Pangnirtung.

Three were seen about Aitken lakes northwest of cape Dorset, on July 17, 1926. A nest was found on a low granite ridge, rising out of a tundra valley; it contained four rather large young, but still in the downy stage and flightless. The parent birds were very shy and did not come near the nest while the party were in the vicinity. One of the adults, when sitting on the ground at some distance, called, occasionally, in low mellow tones like *who-who,* adding a cackling note, frequently, not unlike the subdued cackling of barnyard fowl. Low, guttural notes were uttered while on the wing.

David Wark, Hudson's Bay Company, states that a pair of Snowy owls nested on the shore of Boas lake, not far from Amadjuak bay, in the summer of 1926. He stated that, when last observed in early June, the nest contained six eggs; one egg collected on June 22 contained an embryo nearly fully developed.

J. C. Ross (1826, p. 97) recorded this species as rare at port Bowen. Kumlien (1879, p. 81) remarks that he was very much surprised not to find this species more common in Cumberland sound. He observed it only up Kingnait fiord and at Kekerten islands. Several were observed by Hantzsch (1914, pp. 140–141) at Blacklead island during late autumn, 1909. He saw examples several times between April 25, 1910, while at Blacklead island, and in early June while in Nettilling fiord. One was noted at Isoa, Nettilling lake, on June 23. Many were seen by him at Tikerakdjuak, Nettilling lake, in July, and he remarks that the birds were one of the characteristic sights of the region. Hantzsch doubted whether the species breeds in that region or not. He writes that at the end of August the bird was seldom observed on the level tundra along the west side of Nettilling lake, and that in early September none was observed along Koukjuak river. Individuals were observed by him on three occasions in early October near Foxe basin. Corporal McInnes, R.C.M.P., states that a nest with fresh eggs of this species was found at Ponds inlet on June 10. Three specimens were collected in Cape Dorset region by the MacMillan expedition in 1921-22.

74. **Otocoris alpestris hoyti** Bishop. HOYT HORNED LARK.

Eskimo: *Tingodluktuk; Mannorodligak, -gak, -kat,* according to Hantzsch.

During the 1923 Canadian Arctic Expedition, horned larks were observed only on August 19 at Strathcona sound, Admiralty inlet, where three specimens were collected, all evidently juveniles in nearly complete first winter plumage. They seem in coloration to answer well to *hoyti.*

Due to incompletely grown primaries, the wings are somewhat under size for average measurements for this northern race, but the sizes are otherwise large. This appears to be the northernmost record for horned larks in either Greenland or the Canadian Arctic. Birds thought to be horned larks were heard at Ponds inlet on August 24, 1923.

No horned larks were observed about Cumberland sound in 1924. The first larks encountered the following year were seen at Nettilling lake on May 28. By the last of May they had become fairly common in the vicinity of Takuirbing river and several specimens, all males, were taken. At this date it was usual to hear singing high in the air, the song in many cases being repeated upon the bird's return to the earth and while perched on the top of a boulder.

The first female was collected on June 4; the ovaries were very large. On June 16 a nest was discovered in a small upland valley near Nettilling lake. It was located in low, tundra-like ground, though fairly dry; was built into a small depression on the side of a grassy hummock; fashioned with a thin layer of dead grasses for the walls, and lined on the bottom with white down from the dwarf Arctic willow. The set consisted of five eggs. On June 23, a nest was found containing young four or five days old. This nest was on a dry, rocky ridge 150 feet above the lake. Two days later Constable Tredgold, R.C.M.P., collected a nest, with four eggs far advanced in incubation. The number of horned larks in this region was surprising, it being estimated that two or three pairs occurred to the square mile. Juveniles were observed on the wing for the first time on July 15. At this date they were well developed and flying strong. After this time the species was much less in evidence. On the voyage on Nettilling lake, larks were observed on only three occasions—near Padle narrows on August 25; along Amadjuak river on August 27; and a flock of six on the shore of Koukjuak river on September 2. The last of the season was noted at Amittok lake on September 12.

The species was sparingly observed at cape Dorset between June 3 and 10, 1926. It was not again seen along the south coast during the remainder of the summer. Evidently the horned lark retires to the interior of the island to nest. A good series of specimens were collected and represent, so far as the writer is aware, the first material of this kind from Baffin island. Hantzsch (1914, p. 131) records obtaining two eggs from natives at Kekerten in 1909, and notes that this is the first breeding record from Baffin island. He saw an adult male at Isoa, Nettilling lake, on June 25, 1910.

The present writer collected 36 specimens, the first, so far as known, to be brought from Baffin island. The great majority are typical *O. a. hoyti*, are as large as *alpestris*, but have white eyebrows and much white on face and sides of neck. Five specimens from Nettilling lake represent birds found associating with the typical *O. a. hoyti*. These five, if not typical breeding *alpestris*, are much nearer to that race than to *hoyti*. Amongst the specimens are several that are intermediate between these extremes. A male specimen taken at Nettilling lake, June 25, has a pure white, instead of well-marked yellow, throat and seems indistinguishable from typical *O. a. arcticola*. A few other birds have white feathers in mosaic pattern, over the yellow throat, suggesting a mixture of bloods rather than a fortuitous development of white feathers.

75. Corvus corax principalis Ridgway. NORTHERN RAVEN.
Eskimo: *Killugak; Tullugak-kak-kat*, according to Hantzsch.

The northern raven was seen at all points visited along the Baffin Island coast, from Strathcona sound and Ponds inlet on the north, to Amadjuak bay and cape Dorset on the south. It is especially numerous in Cumberland sound where it remains throughout the year. It was observed sparingly on the eastern side of Nettilling lake in the summer of 1925, but was wholly absent from the west side. On the traverse from Cumberland sound to Foxe basin in January and February, 1926, not one raven was seen in the interior west of the head of Nettilling fiord.

The northern raven possesses a musical, guttural note with a slightly bell-like quality. This note is employed at times throughout the year. The raven at any time may, also, utter a strange call like *thung-thung-thung*, which bears a remarkable resemblance to the mellow twang of a tuning-fork, being, like it, rich, full, vibrant, and musical. Another expression has a metallic, liquid-like quality after the style of the red-winged blackbird, though greatly magnified in volume. The ravens possess a great range of notes, from their customary melancholy croaks, through numerous performances in striking imitation of other birds such as geese and gulls, up to the melodious accomplishment first mentioned.

J. C. Ross (1826, p. 97) states that a pair remained at port Bowen throughout the winter of 1824-25. Kumlien (1879, p. 78) found the raven very common about Cumberland sound and on the eastern shore of the Penny highlands in 1877-78. Hantzsch (1914, pp. 138-139) found the species to be common in Cumberland sound throughout the winter of 1909-10. During the summer of 1910 he saw it nowhere about Nettilling lake except at Isoa. It was sparingly observed along Foxe basin from October, 1910, until April, 1911. Said by Low (1906, p. 319) to be found sparingly everywhere in the north.

76. Carpodacus purpureus (Gmelin). PURPLE FINCH.

Kumlien (1879, p. 75) records that one of these birds was caught on board the *Florence* off Resolution island on September 1, 1877.

77. Pyrrhula cassini Baird. CASSIN BULLFINCH.

While hunting in the mountains near Oosooadluin harbour in the northern part of Cumberland sound, Kumlien (1879, pp. 74-75) saw a bird which he could not secure, but which in his opinion was either this species or *Pyrrhula europoea*. He was inclined to believe it was *cassini*. The bird was in full song and haunting some low willows on the grassy ledges of a perpendicular cliff about 1,500 feet above sea-level.

78. Acanthis hornemanni (Holböll). GREENLAND REDPOLL.
Eskimo: *Saksariak, -ak, -at*, according to Hantzsch.

Redpolls were first observed on the 1923 Canadian Arctic Expedition at Pangnirtung fiord on September 14. They were not again seen, and no specimens secured, in 1923.

They were next noted on September 1, 1924, at Blacklead island, but as no birds were obtained the species is not known. Five specimens of the present species were taken from a large flock at Pangnirtung fiord on September 24, and two others from a small flock in the same locality on December 31, 1925. Redpoll tracks were seen in the snow at Pangnirtung on January 5, 1926.

79. **Acanthis linaria** (Linnaeus). REDPOLL.
Eskimo: *Anarak*, according to Kumlien.

Under *Aegiothus linaria*, Kumlien (1879, p. 75) lists this species as common from Nugumeute to Hudson strait and inland toward Nettilling lake. He found them about Niantilic and Kekerten islands in September and October, 1877.

80. **Acanthis linaria holboelli** (Brehm). HOLBOELL REDPOLL.

A specimen taken in Grinnell bay by Kumlien (1879, p. 76) on September 3, 1877, was pronounced by Ridgway to be this species. Kumlien remarks: "It was the only specimen I procured that differed in the least from a typical *linaria*."

81. **Acanthis linaria rostrata** (Coues). GREATER REDPOLL.
Eskimo: *Saksariak*.

Five specimens of *rostrata* were taken at Blacklead island on September 5 and 6, 1924. The species was next met on September 19 when a single bird was secured at the base of mount Duval, Pangnirtung. Single specimens were collected on September 21 and 27. On October 4, six were taken from a flock of about fifty that were feeding on willow and fireflower (*Epilobium*) seeds on the slopes of Ptarmigan mountain, Pangnirtung fiord. Redpolls thought to be this species were observed at intervals until November 20, 1924. No redpolls were seen in 1925 until September 13, when a small flock was seen on the shore portage between Amittok and Katetukdjuak lakes. These birds were so dark that in the field they were referred to *linaria*, but they probably are referable to *A. l. rostrata*, as no specimens of *linaria* were collected. Dark redpolls were rather commonly observed between September 14 and 19 at the head of Nettilling fiord, but none was secured. A single specimen of *rostrata* was taken at Pangnirtung on September 27, 1925. No redpolls were seen on the south coast of Baffin island during the summer of 1926.

Under *rostrata* Hantzsch (1914, pp. 199-201) mentions redpolls first on April 26, 1910, probably at Blacklead island. Others were observed in the region of Nettilling fiord, between the last of May and June 12. None was seen by him during the summer of 1910 at his camps at Isoa and Tikerakdjuak, on Nettilling lake. Three were observed on the tundra along Koukjuak river on September 27, and a few in early October. Single birds were met with on Foxe basin between October 12 and 15. Only one specimen was collected by Hantzsch; it was taken at "Kangianga" (head of Nettilling fiord) on June 12, 1910, and referred by him to *rostrata*. Hesse (1915, pp. 199-201) in his account of the Hantzsch collection from Baffin island is inclined to refer this specimen to *holboellii*, basing his reference on wing measurements cited by Hartert and Schalow.

82. **Plectrophenax nivalis nivalis** (Linnaeus). SNOW BUNTING.
Eskimo: *Kopenuak*, *Koppanoak*, *-ak*, *-at*; male, *Amauligak*; female, *Arnauviak*, according to Hantzsch.

This is the most abundant land bird on Baffin island. It is common nearly everywhere over the western tundra region. It is the first small land bird to arrive in the spring and the last to leave in the autumn. No bird is more typical of the Arctic regions.

The first snow bunting observed at Pangnirtung fiord in the spring of 1925 was seen on April 16. At this time the weather was very wintry with temperatures descending to 15 degrees below zero. Only occasional individuals were seen during April and early May. By May 22 they had become somewhat more common, but the main migration did not reach Nettilling lake until about May 24. Up to this time the birds were shy and solitary. Although specimens were collected daily, no female was secured until May 30.

The song of the male was first heard on May 22, and was a sweet, far-reaching melody. From a short distance it suggests the high-pitched, vibratory strain of the indigo bunting, with just a slight colouring of the plaintive warbling of the purple finch. There is, however, a very wide range of effects, both in calls and songs. One of the most characteristic melodies is suggested by the following: *Swee-e-a-we-a swee-e-sweert.* The range in the melody is very slight and the whole is delivered on a rather high register with little modulation in tone. The intervals, however, are sweet and pensive. The song of this species has been described as "voluble," but this seems to be an overstatement as the song lacks the volume and richness of some of our sparrows, and is, also, on the whole, of shorter duration. The bunting sings both from rocks and during flight, the most impassioned and beautiful productions seeming to be under the latter circumstances. The following are versions of some of the other most commonly heard songs and calls in addition to which there are numerous short expressions difficult to describe. One song when heard from a short distance resembles *souvenir, souvenir, souvenir,* and the stress and tempo recall the song of the northern yellow-throat, but are very sweet and lyrical. Two other songs suggest the following interpretation: *Now look here, now look here, sir, quit,* and *Please yourself, please yourself, I don't care-e -e-e.* A fine large male established near camp on Takuirbing river, Nettilling lake, and in the habit of using the tent ridge for a perch, sang the following, day after day, with more than ordinary force: *Bring it here, bring it here, bring it here.*

The calls are as varied as the songs. The characteristic one is the sweet musical *whee-er* heard in the south. There are also a *chick-chick* closely resembling the call of the redpolls, and a different buzzing and scolding note like, but much louder than, the sound of a fly buzzing under a newspaper. One note is a high-pitched *peep* very like the first note in the call of the spotted sandpiper; another note is a sweet-toned *dear-dear* like the opening notes to the "piccolo" song of the ruby-crowned kinglet.

Birds are mated by the first week in June and nest building is under way by June 10. Completed nests without eggs were found at Nettilling lake on June 15. These invariably are placed in crevices in the rocks and many are difficult if not impossible to reach. The nest is chiefly composed of fragments of dead moss, sparingly intermixed with grass, thinly lined with caribou hair. The first eggs were seen on June 16. Sets of from five to seven fresh eggs were common between June 20 and July 7. The earliest observed young were found on July 4, and by the middle of the month numerous young were observed on the wing. Hundreds were in flight and in heavy plumage by August.

The earliest pronounced tendency for autumn flocking was seen on August 26 at Amadjuak river. The birds were common everywhere

about Nettilling lake during August and many were seen along Koukjuak river in early September. The species became scarce toward the last of September, and few remained after early October, though some were seen at Pangnirtung as late as November 12. A solitary bird observed at a distance, but presumed to be a snow bunting, was seen at Pangnirtung on November 30. A native reported a little flock of this species near Pangnirtung on December 16, 1925.

In the spring of 1926 the first snow bunting were noted at Pangnirtung on April 9. They were seen on April 18, on the tundra near Amadjuak river, and again on April 27 at Amadjuak bay. A male was heard singing at the latter place on May 13, a much earlier date than usual. At cape Dorset they were very scarce throughout May and did not become common until early June. They breed in great numbers everywhere about cape Dorset and Amadjuak bay, and sparingly on Fox islands.

A large number of eggs and skins were collected at Nettilling lake and in Cape Dorset region.

Parry (1826, p. 82) recorded a few seen near port Bowen in the spring of 1825. Kumlien (1879, pp. 67-77) remarks that the species is generally distributed about Cumberland sound, but is nowhere abundant. In the same region the present writer found the birds to be very common throughout the summer of 1924. Low (1906, p. 319) says the species is very common everywhere in the north. It was observed by Hantzsch (1914, pp. 134-136) at Blacklead islands, on April 4, 1910. Throughout the summer of 1910 he found it to be common about Nettilling lake and noted it as late as October 12 at Foxe basin. Eggs were collected by the MacMillan expedition in the region of cape Dorset, 1922. Corporal McInnes, R.C.M.P., states that the species was first noted at Ponds inlet on May 3, 1922, and on May 1 in 1925. Eggs of a ground-bird, presumably this species, were found on the southwest corner of Bylot island on June 10, 1926.

83. Calcarius lapponicus lapponicus (Linnaeus). LAPLAND LONGSPUR.
Eskimo: *Kowlegak; Kaoligak, -gak, -gat,* according to Hantzsch.

The Lapland longspur is a characteristic bird of Baffin island, but there are large areas where it is seldom observed. It breeds in large numbers about Nettilling lake, and, presumably, about Amadjuak and Mingo lakes.

On the 1923 Canadian Arctic Expedition, the species was first observed on August 22, at Ponds inlet where, four days later, large flocks were seen on the plains about Salmon river, obviously migrating. None was seen after this date.

A single bird was seen at Pangnirtung, on July 25, 1924. It is very scarce about Cumberland sound during the summer. The species was in full migration between September 1 and 5, 1924, as observed at Blacklead island where numerous flocks were noted and several specimens collected. A few stragglers were seen as late as September 12, where one was collected at Pangnirtung fiord.

The first bird to arrive at Isoa, Nettilling lake, 1925, was seen on June 1. The following day several were seen, all males and in full song. The females arrived between June 4 and 9; several mated pairs were observed by the latter date. The species is distinctly a lover of the wet and spongy tundra lands near lakes and streams. Here the birds spend

their time exploring about the grassy hummocks, the males at short intervals soaring into the air with bursts of song. The Lapland longspur is the most brilliant singer of the Arctic. The performance is rendered principally from the air. The bird first ascends, almost vertically, to a height of 15 or 20 feet, and then on level-spread, motionless wing, soars slowly along while the song pours forth. To the writer, at a little distance, the song is reminiscent of that of the bobolink. With the singer close at hand the bobolink connotation is largely lost; the song is neither so loud nor so well sustained. The species has not the repertory of the snow bunting, though slight differences can occasionally be detected. The calls also are restricted in numbers, the chief being a nasal *yeep-yeep*, a grating, metallic *yee-yee*, and a *yeer-up yeer-up*, all so different in tonal quality from the beautiful songs.

Nest building is under way by June 10 or 12. Several completed nests were found on June 14; one contained a single egg. The nests are on mounds of grass and moss on the tundra, well above the pools of water and sheets of snow that mark the ground at this season. The nests are about 3 inches deep, in the damp moss of the hummocks. The walls are of dead grasses, and the lining usually is caribou hair and ptarmigan feathers. After laying commences, an egg is deposited each day until the set, usually of six eggs, is complete. Many fresh sets of five and six eggs were collected between June 19 and July 3. A set taken on June 23, however, was very considerably incubated, thus further demonstrating the range of laying time. Nestlings were first observed on July 12, but there must have been earlier ones as young were awing on July 15. A nest containing two eggs and three newly hatched nestlings was found on July 22 when hundreds of young longspurs were in flight. The males ceased singing about July 20 and were very retiring after August 1, when undergoing the post-nuptial moult.

The species was still common at Takuirbing river on August 18 when the writer commenced his voyage along the southern shore of Nettilling lake. The first signs of autumn flocking were noted between August 10 and 13. During the voyage on the lake, longspurs were seen at nearly every place landed at. They became much less common toward the last of the month, though they were seen in fair numbers on the shore of Koukjuak river in early September, and scattered individuals, or groups, were noted until Amittok lake was reached on September 11, after which no more were observed.

In the spring of 1926 the first longspurs were seen on June 3 at cape Dorset, and were very sparingly observed on the following few days. The species was abundant on July 17 at Aitken lakes where the country with its swampy bottom-lands and numerous ponds and lakes bears a strong resemblance to Nettilling Lake region, probably one of the greatest breeding grounds of the species in the Arctic. Two birds were seen near Bowdoin harbour on July 25. None was observed at Amadjuak bay during late July and early August. Only one was noted on Fox islands during two weeks in late June and early July.

J. C. Ross (1826, p. 97) recorded the Lapland longspur from port Bowen, where it arrived later and left earlier than the snow bunting. During the autumn of 1877, Kumlien (1879, p. 77) saw many of this species at Niantilic in Cumberland sound, but nowhere else. He secured only one specimen during the summer of 1878 at the head of the gulf. The species

was first observed by Hantzsch (1914, pp. 133-134) on June 13, 1910, while on his way to Nettilling lake. He noted that it was abundant at Isoa, Nettilling lake, in late June. The first fresh eggs were taken on June 27. Hantzsch writes that the species was the most common small bird at Tikerakdjuausirn in July. The first hatched young were seen on July 11 and the first in flight on July 26. Large flocks were observed during late August along the western shore of Nettilling lake as far north as Koukjuak river. The birds were noted by Hantzsch along Koukjuak river and Foxe basin until October 14. Said by Low (1906, p. 319) to be found everywhere along with the snow bunting. This, however, is an incorrect conclusion, as large areas of rocky land in the north which is congenial to the bunting is not inhabited by the longspur. Several specimens of this bird were collected by the MacMillan expedition to southwest Baffin island in 1921-1922.

84. **Anthus rubescens** (Tunstall). PIPIT.

Eskimo: *Kungnuktuk; Avioktok, -tuk, -tut; Nedtiaijok, -juk, -jut; Kernertak, -tak, tat,* according to Hantzsch.

On the 1923 Canadian Arctic Expedition this species was seen in the north only at Pangnirtung fiord, between September 11 and 20.

During the summer of 1924 they were found to be common everywhere about Cumberland sound. The species practically leaves the country by September 20, though one was observed on October 17, 1924, an unusually late date, as winter conditions had then prevailed for several weeks.

Pipits were first observed at Nettilling lake on June 9, 1925. In the region of Isoa they were very scarce during June and most of July, and appeared to be much more common toward the last of July. They were very sparingly observed during the voyage on Nettilling lake and were very scarce in the western tundra region. They were much commoner at Amittok lake and at the head of Nettilling fiord in the middle of September, but none was seen after September 16.

The earliest pipit noted at cape Dorset in 1926 was seen on June 1; thereafter the bird became quite common. This species is extremely secretive in the disposition of its nest and though every effort was made to locate a nest, none was found during the time spent on Baffin island. Young stub-tailed pipits just capable of flight were seen at Aitken lakes on July 17, 1926. Through June and until about July 10 the sweet, attractive song of this bird may be heard in most of the mountain valleys. The song invariably is given on the wing, lark fashion, and at a height of from 20 to 100 feet. It is palpitating and comparatively weak, failing to carry a great distance. It is given very rapidly, consists of a series of low, vibrating notes, almost bell-like, but muffled and with a delicate undertone. It seems best represented by the syllable *weet-weet-weet-weet,* in some cases, also, *chweet-chweet-chweet.* The rapid fire of notes in many cases lasts for nearly a minute.

The species was found by Kumlien (1879, p. 73) to be common about Cumberland sound, 1877-1878, where it began nesting about June 20. The species was first observed by Hantzsch (1914, pp. 131-132) on June 6, 1910, at the head of Nettilling fiord. During his trip to Nettilling lake in early June he referred to this species as being next in abundance to the snow bunting. He rarely noted the species in the lower country between Isoa and Tikerakdjuak. In the middle of September he saw considerable

numbers of the bird along Koukjuak river and found them along Foxe basin until October 6. Eggs and one specimen of the pipit were collected by the MacMillan expedition to southwest Baffin island, 1921-22.

85. Saxicola oenanthe leucorhoa (Gmelin). GREENLAND WHEATEAR.

Eskimo: *Ekuligak; Erkogolek, -lik, -lit; Erkoligatt, -gak, -gat,* according to Hantzsch.

The Greenland wheatear, according to the experience of the writer, is one of the rarest birds of Baffin island. It was met with only at Pangnirtung fiord where it was first noted on August 10, 1924. Three were observed frequenting the rocky coast near the post on August 16; one of them was collected. They were extremely wild and retiring. A solitary bird was noted on September 26, 1924, in a snowstorm. These constitute the only records made by the present writer.

Kumlien (1879, p. 73) states that it breeds on both shores of Cumberland sound. This species was not collected by Hantzsch (1914, pp. 130-131), but he saw at the extremity of Nettilling fiord single birds on June 6 and 7 and a pair on June 8, 1910. He again noted the species on June 13 at Amittok lake.

Fishes

Collections of fish were made at several localities. The following notes are by the writer and to them are appended notes by A. Halkett, to whom the specimens were submitted for identification.

The northern pollack (*Boreogadus saida*) was obtained only at cape Dorset, where it was found in the sea in shallow water near the coast.

It is not certain whether the habitats of the two species of stickleback collected, are identical or not. Some of the Arctic sticklebacks (*Pygosteus pungitius brachypoda*) were obtained August, 1924, in a small mountain tarn at Sirmilling bay, Issortukdjuak fiord, at an altitude of fully 800 feet above sea-level. The stream fell this entire height in the course of a few hundred yards. The common stickleback *(Gastrosteus aculeatus)* was collected in shallow, freshwater pools on the border of Nettilling lake in late June, 1925, and in small ponds a few feet above sea-level at Amadjuak bay in August, 1926.

The Greenland sculpin *(Myoxocephalus groenlandicus)* and the Long-horned sculpin *(Oncocottus hexacornis)* were taken in the sea at Amadjuak bay in early August, 1926.

In the case of the Arctic char *(Salvelinus alpinus)* the first specimens were collected between May 10 and June 1, 1925, in Takuirbing river at its discharge into Nettilling lake. These specimens were speared through holes in the ice, by Eskimo. Later in the season when the lakes were free of ice every strategy was used to induce the species to rise to a troll with bait, spinners, artificial minnows, etc., but without success. During July and August, 1925, a number of small char were captured among the rocks along the shores of Nettilling lake. The largest specimen secured at Nettilling lake was 22 inches long and weighed 3 pounds. In late July, 1926, large numbers of char were resorting to the mouth of Elik river near cape Dorset, several were caught, weighing between 3 and 4 pounds. At Amadjuak bay, the trout or char, were running in considerable numbers along the coast in early August, 1926, and were netted in quantity by the Hudson's Bay Company. The average weight of a large number examined was about $3\frac{1}{2}$ pounds, and the average length, 19 inches. The largest

taken was 28 inches long and weighed 9 pounds. It is probably this species that resorts in large numbers to certain streams about Cumberland sound, to Padle river in Merchants bay, and Salmon river at Ponds inlet.

NOTES ON A COLLECTION OF FISH FROM BAFFIN ISLAND

By Andrew Halkett

This collection, made by Mr. J. D. Soper and referred to me for identification, consists of a Northern pollack, two species of sticklebacks, two species of sculpins, and an Arctic char, and comprises numerous specimens. The identification, with proviso placed below the list, is as follows:

Northern pollack *(Boreogadus saida)*
Arctic stickleback *(Pygosteus pungitius brachypoda)*
Common stickleback *(Gastrosteus aculeatus)*
Greenland sculpin *(Myoxocephalus groenlandicus)*
Long-horned sculpin *(Oncocottus hexacornis)*
Arctic char *(Salvelinus alpinus)*

Of the northern pollack, of which there is one specimen, nothing further need be said.

Of the sticklebacks there are, as shown in the list, two species. The former, which in my Check-list I denominated the Arctic stickleback, I give under the trinomial: *Pygosteus pungitius brachypoda*, but it may be questionable whether or not the arctic form is entitled to subspecific rank. At most it is evidently only a variety of the nine-spined stickleback which has a very wide distribution in Canada. The average number of dorsal spines in the specimens of the collection may be placed at about ten, but there are individuals in the collection with the number of spines below or above ten. This, however, is not of great consequence, for the sticklebacks, many of which at least can live equally well in fresh, brackish, or salt water, are subject, even individually, to great variation. In regard to the latter *(Gastrosteus aculeatus)*, there is in my Check-list a note: "*G. aculeatus* and *G. bispinosus* are treated here as one and the same species, the European name being adopted for the two," and I know of no modification of structure to warrant the separation of the common stickleback, which has a wide distribution in northern Europe and northern America, into separate species or subspecies. In the collection there are two adult and about two dozen very young specimens of this stickleback.

The Greenland sculpin by some has been regarded as being identical with the European sculpin *(Myoxocephalus scorpius)*, but this has been disputed by others. I have, therefore, as the question is pending, placed the specimen in the collection provisionally in the list under the technical name *Myoxocephalus groenlandicus*.

The second mentioned sculpin is quite probably circumpolar in its distribution, and may not be essentially different from the European sculpin *Oncocottus quadricornis*. I placed the presumed northern species in my Check-list as *Oncocottus hexacornis* with a footnote: "*O. hexacornis*, *O. quadricornis*, and *O. labradoricus* provisionally treated here as one and the same species," but am not clear as to the identification of the specimen, having little to go by except descriptions which are not very decisive and records some of which are very old.

As regards the Arctic char, of which there are a number of specimens in the collection, probably when all the reputed varieties are better known, it may be found that all are referable to one and the same species, viz.: *Salvelinus alpinus*. Nevertheless, if such be the case, it has been recorded under a number of trinomial distinctions, such as:

Salvelinus alpinus alipes Richardson
" *stagnalis* Fabricius
" *arcturus* Gunther

I regard these to be, at most, only local variations, indigenous to the cold Arctic waters, of the typical European *Salvelinus alpinus*, and have, therefore, provisionally placed it binominally in the list. There is much confusion in the reports of these alleged varieties, some of the records of which are very old or very locally reported. Another alleged species or subspecies, recorded presumably only from Discovery bay and Cumberland gulf, is *Salvelinus oquassa naresi* Gunther, which may not be separable from the typical *S. oquassa*, which itself, in so far as I know, has only been recorded from Rangeley lake in the state of Maine, and it may even be questionable whether or not *S. alpinus* and *S. oquassa* are themselves separable as species.

It is quite feasible to suppose that fishes with a more or less circumpolar distribution might extend as varieties to the temperate zone either of Europe or America, so that there may be no real justification in separating them as distinct species, and *S. alpinus* and *S. oquassa* may be a case in point; but until, for comparison, there is access to a large and well-preserved number of specimens, the question as to specific or subspecific rank of certain little known fishes of the Arctics must be held in abeyance.

But, with the proviso, in substance, my real hesitancy as to identification lies with the sculpins, and the indecision is more in regard to species than to genera. There are all of fifty different kinds of sculpins considered to be indigenous to the waters of the Dominion, some of which are not well demarked from others. In the collection there are several specimens, belonging to at least two species, but it would require a series of specimens with the colours well preserved and other features pronounced in order to determine them with any degree of certainty.

Insects from Baffin Island

By J. H. McDunnough

The insects collected by Mr. J. D. Soper in Baffin island in the summers of 1925 and 1926, and submitted to me for incorporation in the Canadian National collection, proved most interesting and of high scientific value. The best collection was made around Nettilling lake in 1925; the specimens collected in 1926 were taken in the vicinity of cape Dorset and were fewer in number. Although the actual number of species represented is not very great, it must be remembered that the insect fauna of these far northern regions is very limited and it is safe to conclude that Mr. Soper's material contained a fairly complete representation of the insects of Baffin island. The following is a complete list of the species represented; in a few instances the identifications have not been completed and it is quite possible that several new species may be included.

LEPIDOPTERA

Diurnals

Eurymus hecla glacialis McLach.: 17 males, 3 females, Nettilling lake; 1 male, cape Dorset.
Eurymus nastes Bdv.: 1 male, Amadjuak bay; 1 female, Aitken lake.
Oeneis semidea assimilis Butl.: 3 males, 3 females, Nettilling lake.
Oeneis polyxenes subhyalina Curt.: 3 males, 1 female, Nettilling lake.
Erebia rossi Curt.: 7 males, Nettilling lake.
Brenthis chariclea arctica Zett.: 7 males, 1 female, Nettilling lake; 1 male, cape Dorset.
Brenthis freija tarquinius Curt.: 4 males, 3 females, cape Dorset; 1 male, Nettilling lake.
Brenthis improba Butl.: 16 males, 4 females, Nettilling lake; 1 female, Aitken lake.
Brenthis polaris Bdv.: 13 males, 5 females, Nettilling lake.

Arctiidae

Hyphoraia lapponica Thun.: 1 female, Nettilling lake.

Noctuidae

Agrotiphila quieta Hbn.: 1 male, Nettilling lake.
Sympistis zetterstedti Staud.: 2 males, Nettilling lake.

Geometridae

Dasyuris polata Dup.: 1 male, Amadjuak bay.
Aspilates orciferaria Wlk.: 1 male, Nettilling lake.
Geometrid sp.: 2 females, cape Dorset.

Pyralidae

Pyrausta torvalis Moesch.: 2 specimens, Nettilling lake.

Eucosmidae

Argyroploce mengelana Fern.: 3 specimens, Nettilling lake.
Gypsonoma parryana Curt.: 1 specimen, Nettilling lake.

Also several vials containing lepidopterous larvæ which cannot be definitely identified.

DIPTERA (All from Nettilling lake)

Tipulidae

Stygeropsis parrii Curtis: male, female.
Tipula hewitti Alex.: male.
Tipula arcticus Curtis: male, female.
Tipula sp.: male.
Tipula sp.: male, female.
Several vials of larvæ of *Tipula* sp.

Syrphidae

Platycheirus sp.: female.

Empididae

Rhamphomyia similata Mall.: male, female.

Calliphoridae

Boreellus atriceps Zett.
Cynomyia cadaverina Desv.

Muscidae

Hydrophoria alaskensis Mall.
Limnophora n. sp. (Sp. 2, Can. Arctic Exp.)
Limnophora n. sp.
Alliopsis obesa Mall.
Fucellia ariciiformis Holmg.

Scatophagidae

Scatophaga rubicunda Mall.

HYMENOPTERA

Bremus silvicola Kirby.
Bremus silvicola var. *johanseni* Sladen.

TRICHOPTERA

Limnophilid larvæ and cases.
Limnophilid larva.

ARACHNOIDEA

Immature *Pardelis glacialis*.

Report on Pteropoda Collected in 1923

By William Healey Dall

The following Pteropods were collected by J. D. Soper during the cruise of the C.G.S. *Arctic* in 1923. The *Clione* were fine adults, beautifully preserved, but the action of the formalin upon the *Spiratella* preserved in it, has almost entirely dissolved the shells.

Clione borealis Phipps

Off point Norman, Newfoundland, July, 1923. Water temperature 40 degrees F. (8).

Off the west coast of Greenland, latitude 68 degrees north. Water temperature 42·7 degrees F. (50).

In Melville bay and Baffin bay, ahout 35 miles south of cape York, southwest Greenland, latitude 75 degrees north, longitude 67 degrees west. Temperature of surface water 41 degrees F.

Spiratella limacina Phipps

In Melville bay and Baffin bay, about 35 miles south of cape York, southwest Greenland, latitude 75 degrees north, longitude 67 degrees west. Temperature of surface water 41 degrees F.

Report on Fleshy Fungi Collected in August, 1926

By John Dearness

The collection, made by Mr. Soper, consisted of twenty-eight plants which it was found could be segregated into twelve species-groups.

The liquid in which they were preserved discharged the colours, making them all nearly white or yellowish white. In the examination of ten examples the lack of the important colour-features was compensated by Mr. Soper's excellent water-colour sketches.

Other important diagnostic features, including taste, odour, moistness of fresh surfaces, and colour-changes attending stages of growth and wounding cannot be learned from the preserved specimens. Without notes on these characters the determination of some of the specimens could not be carried through to their species, but I believe they are correctly referred to their respective genera.

The localities and dates are not repeated, as the plants were all collected near Amadjuak bay in the first week of August, 1926.

Lycoperdon gemmatum Fr.

Two plants; not quite mature. Soldered stellate warts of peridium and minutely spinulate spores 4 μ in diameter indicate the species named.

Amanitopsis vaginata Fr.

Var. *livida* Peck. Cap hemispheric; 5 cm. across.

Amanitopsis vaginata Fr.

Across the cape 2·4 cm. More tawny then the preceding; longer stem with fibrous sheathing.

Hygrophorus sp.

Five plants. Largest 2 cm. across. Depressed-umbilicate; gills long decurrent. Near *Hygrophorus niveus* Fr. or *H. borealis* Peck.

Russula purpurina Quel and Schultz.

This species is the most largely represented in the collection. The blood-red viscid cap, crenulate, floccose-edged gills, and other features make this very probably the species named.

Russula sp.

One plant; smaller than the preceding species; cap concave.

Lactarius sp.

Acuminate cystidia 75 to 90 mm. long; basidia up to 60 by 8 μ with 4 sterigmata up to 8 μ long. Tomentose margined. Cap large, thick, convex; the largest plant in the collection. Near *Lactarius controversus* Fr. or *L. torminosus* Fr.

Entoloma sericeum Fr.

Dark, umber-brown. Cap 2·8 cm. Spores variable, mostly 6-sided.

Hebeloma crustuliniforme Fr.

Cap 3 cm.; stem 6 by 0·6 cm. Probably a variety of the species named.

Hebeloma sp.

In the *H. hiemale* section of the genus. Cap 3·8 cm.; flesh thin. Gills wide in front. Spores 9 to 12—6 to 7 μ.

Hypholoma sp.

Three plants. Cap and stem dark; both velutinous. Cap 2·7 cm., umbonate-expanded; gills sinuate-adnexed. In the *H. velutinum* section.

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CHAPTER III

FOSSILS FROM BAFFIN ISLAND, COLLECTED BY J. DEWEY SOPER

By Alice E. Wilson

The fossils in the present collection were all picked up from "drift". A few of them were obtained from Eskimo. It is probable that some of them were not far from their original position, as similar fossils were seen in the rocks underlying the water in Koukjuak river; others may have been carried farther. As will be seen from the following report, the result is a mingling of the fossils from different formations. The Utica (Collingwood) lot, however, appears to be an exception and was probably practically in place.

Because of the "drift" source of the collection, with the above exception the arrangement of species is biological, since the usual locality arrangement does not have any stratigraphic value.

Incertae Sedis

Receptaculites cf. *occidentalis* Salter

Locality. Coral bay, Fossil island.
Horizon. Ordovician, suggestive of the Black River.

Receptaculites sp. A.

This species is like *R. occidentalis* in having four canals, but more like *R. oweni* in size and rapid enlargement of the spicules.

Locality. Snowgoose bay, Koukjuak, Fossil island, Anderson headland, Coral bay; "drift on summit of Pingualuik, southwest of lake Nettilling". Collected by Eskimo from south beach of Amadjuak lake.
Horizon. Ordovician, but with nothing to indicate the division.

Stromatoporoidea

Stromatocerium sp.

Locality. Snowgoose bay.
Horizon. Ordovician.

A stromatoporoid fragment collected by Eskimo near Markham bay.

Anthozoa (Corals)

Zaphrentis n. sp.

Locality. Anderson headland, Fossil island, Snowgoose bay, Koukjuak bay, one without locality number; on beach of south coast of Amadjuak lake.
Horizon. Upper Ordovician (Richmond) or Silurian.

Streptelasma sp.

Locality. Snowgoose bay; also collected by natives, inland from cape Dorset, and from Markham bay from south beach of Amadjuak lake.
Horizon. Doubtful.

Calapoecia borealis Whitfield

Locality. Fossil island.
Horizon. Silurian (Niagaran).

Calapoecia cf. *borealis* Whitfield

Locality. Collected by Eskimo on south beach of Amadjuak lake.
Horizon. Probably Silurian.

Calapoecia anticostiensis Billings

Locality. Collected by Eskimo on south beach of Amadjuak lake.
Horizon. Ordovician, probably Richmond.

Halysites catenularia microporus Whitfield

Locality. Fossil island, Koukjuak river (Camp 11).
Horizon. Silurian (Niagaran).

Halysites catenulatus (Linnaeus)

Locality. Coral bay, Fossil island.
Horizon. Silurian (Niagaran).

Halysites n. sp.

Locality. Fossil island.
Horizon. Probably Silurian.

Halysites sp.

Locality. Anderson headland.
Horizon. Probably Silurian.

Heliolites megastoma (McCoy)

Locality. Koukjuak (Camp 11).
Horizon. Silurian (Niagaran).

Heliolites interstinctus (Linnaeus)

Locality. Fossil island, Koukjuak (Camp 11).
Horizon. Silurian (Niagaran).

Syringopora n. sp.

Locality. Fossil island.
Horizon. Probably Silurian.

Bryozoa

The Bryozoa are represented only by a few very poorly preserved specimens.

Brachiopoda

This group is represented by only one *Atrypa*-like fragment.
Locality. Anderson headland.
Horizon. Doubtful.

Gastropoda

Maclurites sp. A.

Locality. Magnetic point, Coral bay, Anderson headland, Fossil island, Koukjuak (Camp 11), Snowgoose bay, and collected by Eskimo from south beach of Amadjuak lake.
Horizon. Ordovician, probably from the Richmond.

Maclurites n. sp. B.

Locality. Snowgoose bay.
Horizon. Ordovician. The division of the Ordovician, however, is doubtful. It is entirely different from the other Maclurites, more closely resembling forms from a much lower horizon, but there is no other evidence in the collection bearing out such a possibility.

Hormotoma sp.

Locality. Anderson headland.
Horizon. Upper Ordovician or Silurian.

Loxonema sp.

Locality. Collected by Eskimo from south beach of Amadjuak lake.
Horizon. Upper Ordovician or Silurian.

Lophospira sp. A.

Locality. "Boulder drift" on summit of Pingualuik, southwest of Nettilling lake.
Horizon. Probably Upper Ordovician or Silurian.

Lophospira sp. B.

Locality. Found by an Eskimo inland.
Horizon. Doubtful, suggests an Ordovician form.

Liospira? n. sp.

Locality. Coral bay.
Horizon. Doubtful. The species is more like a Silurian than an Ordovician form. The matrix differs from that of the other specimens, being a rather impure coarse sandstone composed of well-rounded grains.

Trochonema sp.

Locality. Anderson headland, and collected by an Eskimo from south beach of Amadjuak lake.
Horizon. Upper Ordovician or Silurian.

Eotomaria sp.

Locality. Collected by Eskimo from south beach of Amadjuak lake.
Horizon. Probably Ordovician.

Cephalopoda

Armenoceras richardsoni Stokes

Locality. Koukjuak (Camp 11).
Horizon. Upper Ordovician (Richmond).

Cycloceras cf. *clorus* (Hall)

Locality. Anderson headland.
Horizon. Ordovician.

cf. *Endoceras* n. sp.

This species is put in the genus *Endoceras* with a query, not because the generic characters are indistinct but because the genus *Endoceras* and *Vaginoceras* appear to be indistinctly differentiated.
Locality. Koukjuak (Camp 11).
Horizon. Upper Ordovician or Silurian.

Endoceras endosiphon

Locality. Collected by Eskimo from south beach of Amadjuak lake.
Horizon. Probably Ordovician.

cf. *Cyclendoceras* sp.

A poorly preserved fragment with an endosiphon.
Locality. Collected by Eskimo from region of Markham bay.
Horizon. Probably Ordovician.

Orthoceras sp.

Locality. Not given.
Horizon. Doubtful.

Nov. gen. n.sp.

A straight Orthoceratite with septal funnels and siphuncle differing from species already described.
Locality. Koukjuak (Camp 11).
Horizon. Probably Upper Ordovician or Silurian.

Actinoceras sp.

Locality. Koukjuak (Camp 11).
Horizon. Upper Ordovician—probably Richmond.

Cyrtoceras sp.

Locality. Anderson headland.
Horizon. Upper Ordovician or Silurian.

Tripteroceras sp.

A fragment but very similar to a Lake Winnipeg form.
Locality. Koukjuak (Camp 11).
Horizon. Upper Ordovician, probably Richmond.

Huronia n. sp.

Locality. Fossil island.
Horizon. Silurian.

Ormoceras sp.

Locality. Fossil island, Koukjuak (Camp 11).
Horizon. Probably Silurian.

cf. *Elrodoceras* n. sp.

These specimens are allied to *Elrodoceras*, but with characteristics that are somewhat different. Further collections may prove that they are a new genus.

Locality. Coral bay, Anderson headland, Fossil island, Koukjuak (Camp 11), Snowgoose bay, and collected by Eskimo from the south beach of Amadjuak lake.

Horizon. Upper Ordovician or Silurian.

The specimens from the northwest side of Amadjuak lake south of North bay are mainly composed of concretionary-like nodules with a few very poorly preserved bryozoa as a nucleus and one specimen of *Illaenus* sp. from the Upper Ordovician or Silurian.

The collection from the dark shale in the "drift" on the low beach beside the lake at Coral bay, Nettilling lake, exhibits fossils strikingly identical with those in similar shales of the Utica (Collingwood) in Ottawa valley and west of Collingwood, Ontario. The light grey weathering of the dark shales is also characteristic of the Ontario beds. The thin shales of the collection are so little broken that they are evidently almost in situ. Such a distribution of beds with an assemblage of fossils practically identical is an interesting witness as to the wide extent of similar conditions in the Utica (Collingwood) sea. The following fossils are present in the dark shale collection:

Bryozoa

cf. *Chasmatopora* sp.

An identical parasitical bryozoa on the same cephalopod has been referred to the above genus from the neighbourhood of Ottawa. It is not certain that the generic reference is correct in either case, but the specimens to hand, though numerous, are too poorly preserved to alter the previous determination.

Brachiopoda

Leptobolus insignis Hall

This species is very numerous. The specimens seem to average a little finer and smaller than the Ottawa representative, but otherwise appear to be identical.

Lingula sp.—fragmentary

Plectambonites sericeus Sowerby

Rafinesquina—like fragment

Cephalopoda

cf. *Trocholites ammonius* Conrad

The specimen is doubtfully referred to this species because poorly preserved. Its form, however, is practically identical with similar crushed specimens in Ottawa valley.

Endoceras proteiforme Hall

Numerous endosiphons covered with the encrusting bryozoa mentioned above.

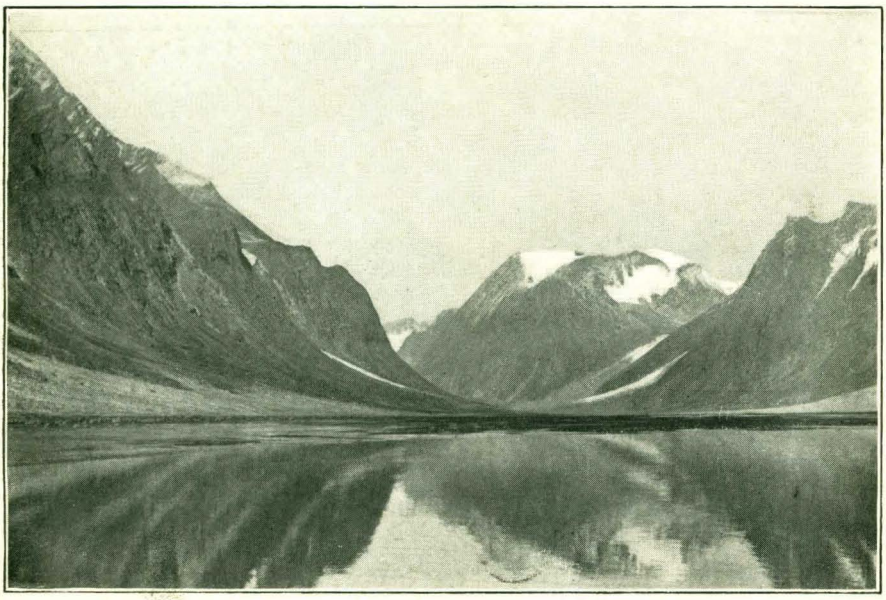
Trilobita

Ogygites canadensis (Chapman)

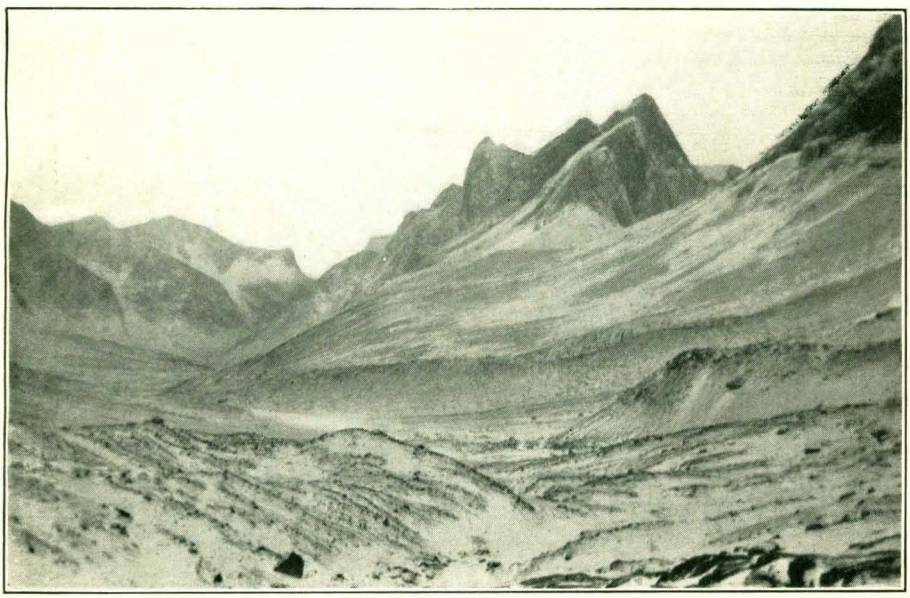
In summing up the evidence of the fauna, it is quite clear that the Ordovician fauna of Baffin island here represented includes, besides the Trenton of Schuchert's reports[1] and the Utica (Collingwood) fauna given above, some representation of the Richmond. One fossil, *Maclurites* sp. A, as stated above seems to be much more closely allied to the forms from the Beekmantown of Newfoundland than to any other *Maclurites*, but no evidence points to beds so low in the Ordovician and it is left a species of doubtful horizon.

The presence of the Silurian is clearly demonstrated both by corals and cephalopods.

[1]Proc. U.S. Nat. Mus. XXII, p. 143.



A. Head of Pangnirtung fiord, Cumberland sound, September 15, 1924. (Page 7.)



B. Pangnirtung pass, looking south from the summit, approximately 1,200 feet above sea-level, February 8, 1925. (Page 10.)

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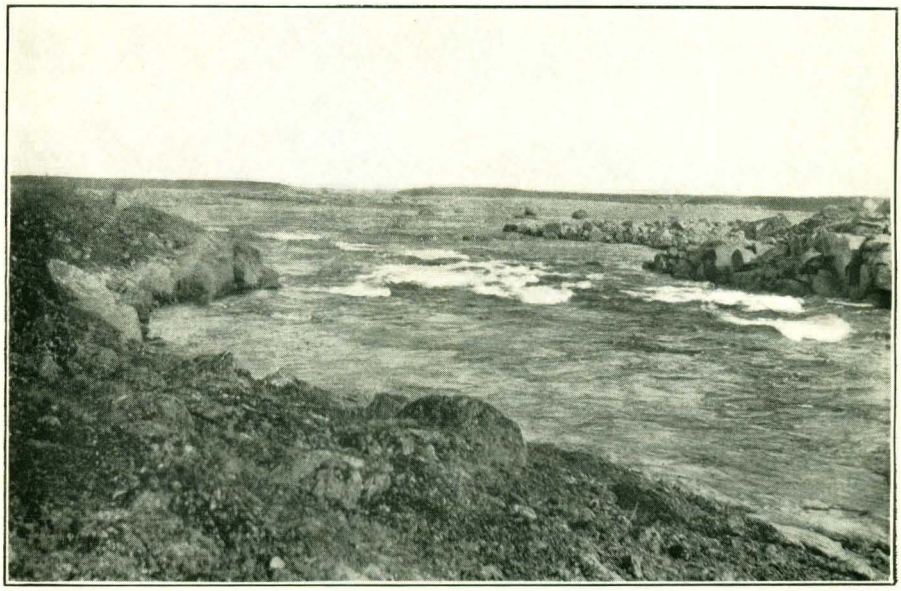
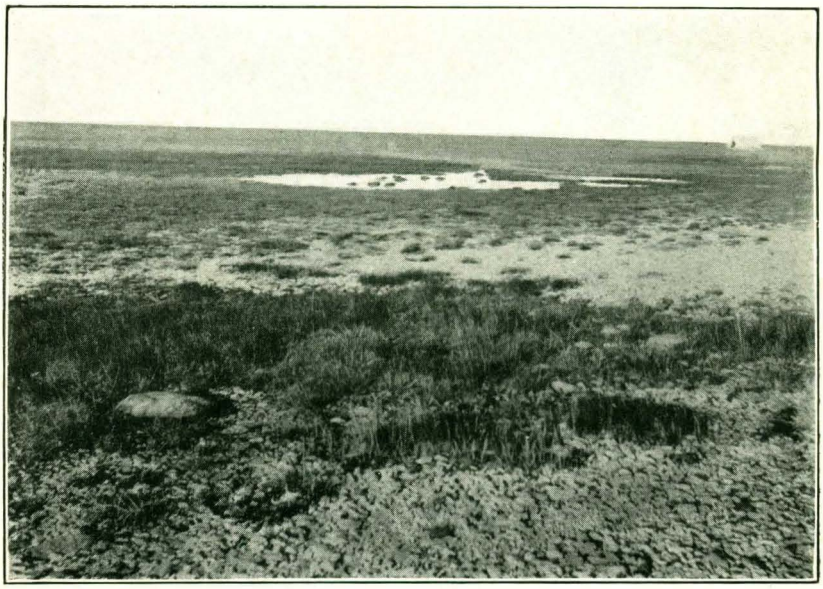
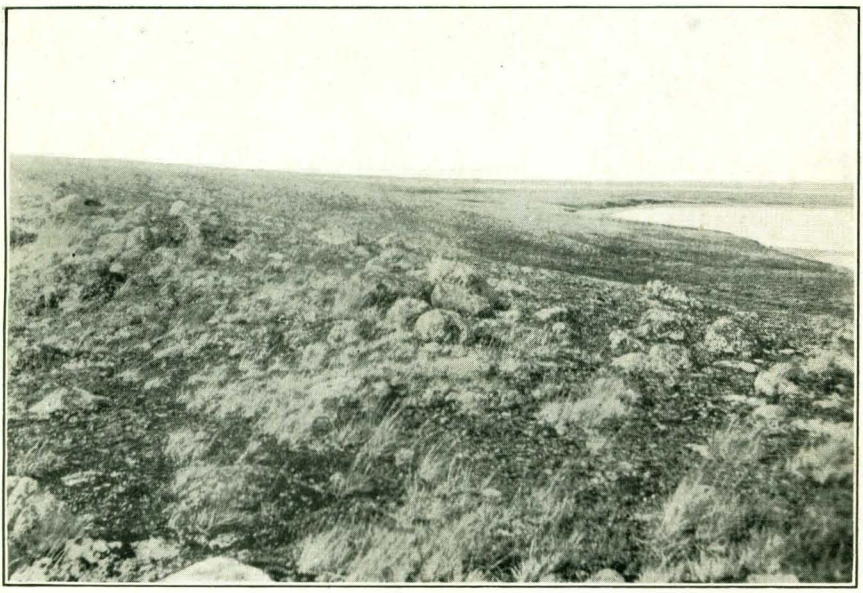


A. Amadjuak river at rapids one mile from Nettilling lake, August 27, 1925. (Page 18.)



B. The plains, Koukjuak river, west Baffin island, August 31, 1925. (Page 19.)



A. Looking north over the tundra at Padle, Nettilling lake, August 23, 1925. (Page 17.)

B. Marshy resort for the early shore birds at cape Dorset, June 10, 1926. (Page 26.)

A. White-rumped sandpiper *(Pisobia fuscicollis)* on nest near Takuirbing river, Nettilling lake, June 23, 1925. (Page 98.)

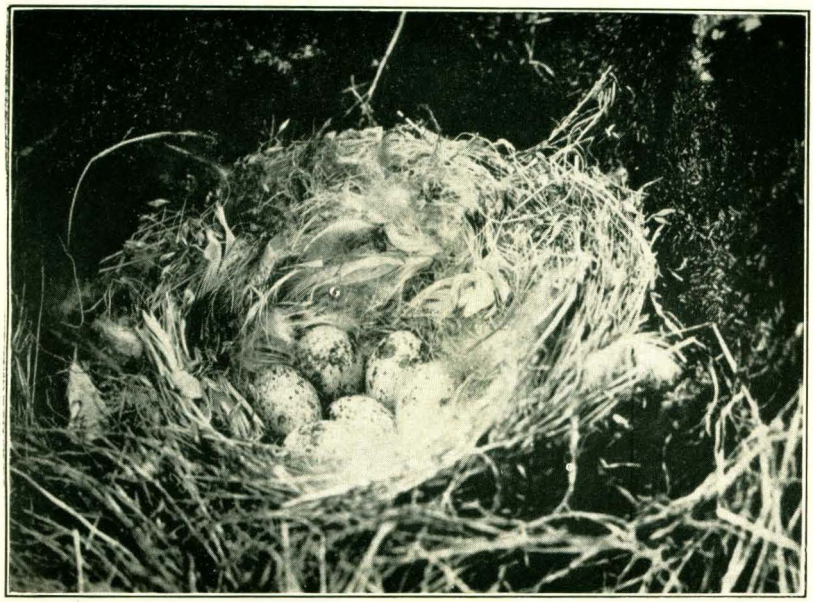
B. Nest of the white-rumped sandpiper *(Pisobia fuscicollis)*, Nettilling lake, June 23, 1925. (Page 98.)

A. Juvenile white-rumped sandpiper *(Pisobia fuscicollis)*, Isoa, Nettilling lake, July 13, 1925. (Page 98.)

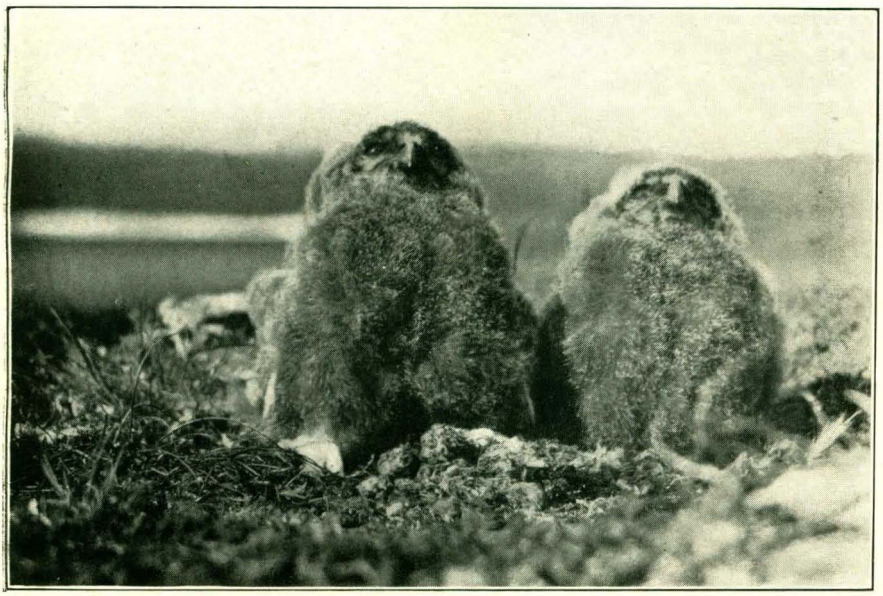
B. Juvenile semipalmated plover *(Charadrius semipalmatus)*, Isoa, Nettilling lake, July 29, 1925. (Page 102.)

A. Nest of the Greenland eider *(Somateria mollissima borealis)*, Fox islands, Gordon bay, June 24, 1926. (Page 89.)

B. Juvenile Greenland eider *(Somateria mollissima borealis)*, Cape Dorset, July 13, 1926. (Page 90.)



A. Nest of the snow bunting *(Plectrophenax nivalis)*, Fox islands, June 25, 1926. (Page 112.)



B. Young snowy owls *(Nyctea nyctea)*, Aitken lakes, near cape Dorset, July 18, 1926. (Page 108.)

INDEX