IV.

AN ACCOUNT OF THE BIRDS

BY

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AND

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In the first three sections of this paper, the observations imparted are put together from Nansen's journals, supplemented by his verbal comments and explanations during the preparation of the work. The last section gives the observations made during the time that the ship was drifting with the ice in the summers of 1895 and 1896, and is compiled from written and verbal information received from Scott-Hansen, Blessing and Mogstad, and also from the journals kept by Sverdrup.

The first section (I) treats of the journey along the north coast of Siberia, from Yugor Strait, July 29th, 1893, until the closing in of the ship to the north-west of the New Siberian Islands on September 25th, 1893 (78° 50′ N. Lat., 132° 20′ E. Long.).

The birds observed during this time were principally on their way southwards. After the closing in of the ship, no birds were seen until the following year.

The second section (II) gives the observations made at the time that the 'Fram' was drifting with the ice towards the NW., during the first summer, 1894, up to the time when Nansen and Johansen started on their sledge-journey, March 14th, 1895. This last point lies in about 84° N. Lat., 101° 55′ E. Long.

The first bird seen in the spring of 1894 (a gull, probably *Pagophila eburnea*), appeared on May 13th; birds were seen now and again until after the middle of August. After August 23rd, or the day when all the channels and lanes about the ship began to freeze up, no birds were seen.

During this part of the journey, 8 specimens of *Rhodostethia rosea* were shot and prepared, all of them young birds of that year. They were presented to the University Museum in Christiania.

All this way, no land was seen, not even an island; and of open water, only larger or smaller channels round the ship, especially numerous in the warmest time of the year (from the end of May until beyond the middle of August).

The third section (III) gives observations made during Nansen and Johansen's sledge-journey, first in the North Polar Sea itself in the spring of 1895, then along Franz Josef Land until the homeward journey (from Cape Flora) in August, 1896.

During the journey in the Polar Sea, the first bird seen (a *Fulmarus glacialis*) was observed on May 29th, when the travellers had begun to approach the north side of Franz Josef Land. That part of the journey in which the highest latitude, 86° 13·6′, was reached, was undertaken so early in the year, that no birds were yet visible.

In the summer of 1895, the newly-discovered group of islands, Hvidtenland (to the north-east of Franz Josef Land), was passed.

Several bird-islands were seen, from the Coburg Islands southwards. The last birds (young specimens of *Larus glaucus*) observed that year were seen after settling in the winter hut on Frederick Jackson Island at the end of September. After the winter, little auks *(Alle alle)* began to appear as early as February 25th (1896).

The last observations were made during the stay with Mr. Jackson at Cape Flora, and on the homeward journey along the edge of the ice in the Barents Sea, August 9th, 1896.

The fourth section (IV) gives the observations made on the 'Fram' after Nansen and Johansen had left in March, 1895, until the return of the ship in August, 1896.

During this part of the expedition, birds were observed in the highest northerly latitudes in which birds on the whole have been known to exist.

During the first year, 1895, birds were seen in the period betwen May 14th and September 14th. All this time, the ship was north of 84° (between

84° 27′ and 85° 5′ N. Lat., and between 73° and 88° E. Long.), or in a region of the Arctic Ocean, over which Nansen and Johansen had passed early in the same year, on their journey south towards Franz Josef Land.

During this period, while the ship was moving the whole time over a comparatively limited area, situated at a distance of about three hundred kilometres NE of Franz Josef Land, the total number of species observed was 10, namely, *Plectrophenax nivalis, Sterna macrura, Pagophila eburnea, Rissa tridactyla, Rhodostethia rosea,* a specimen of a *Larus* which is stated to have been black-backed, a *Stercorarius* (species undetermined), *Fulmarus glacialis, Cepphus mandti,* and *Alle alle.* None of the species, however, seemed to occur in any great quantity.

Farthest north was found *Fulmarus glacialis,* of which a specimen was observed in 85° 5′ N. Lat.

The last summer, 1896, when the 'Fram' was north of Spitsbergen, the first bird (a snow-bunting) was observed on April 25th. It now appeared that for a distance of at least four hundred kilometres north of Spitsbergen, or between 81° and 83° N. Lat., the Arctic Ocean is inhabited by an abundant bird-life, doubtless consisting principally of young, not yet mature birds, which spend the summer months here, in and near the open channels in the ice.

Among the specimens occurring here, sometimes in great numbers, may be named *Cepphus mandti, Alle alle* and *Pagophila eburnea.* A few specimens of waders *(Aegialitis hiaticula* and *Crymophilus fulicarius)* were also found in these northern latitudes, and a specimen of *Xema sabini* was observed.

I.

THE SIBERIAN COAST (AUTUMN 1893).

Plectrophenax nivalis, (Lin.) 1766.

Observed everywhere along the North Siberian coast where a landing was made, up to Taimur Island, and on the west side of Cape Chelyuskin. The birds were seen, as a rule, only singly or a few together.

Falco aesalon, Tunst. 1771.

At the eastern end of Yugor Strait, on July 30th, on the little island Sakolii (or Falcon Island), a couple of these birds were seen, which evidently had young ones, for they darted down with wild screams, almost at Nansen's head. The island was a rocky one, with a precipitous cliff on the north side, near which these birds had their home.

On Renö (74° 46′ N. Lat., 85° 42′ E. Long.), on August 21st, another falcon was seen from the ship, but on account of the distance, it could not be determined.

? Archibuteo lagopus, (Gmel.) 1788.

On Sakolii Island (at the eastern end of Yugor Strait), on July 30th, almost simultaneously with the preceding, a large bird of prey was observed circling at a considerable height. As the wings were rounded, it probably belonged to the above species.

Nyctea scandiaca, (Lin.) 1766.

Both at Khabarova and all through Yugor Strait, this species was numerous in the autumn of 1893; and near the eastern end of the strait

(July 30th), as many as half a score of these birds might be counted at one time from one spot, scattered here and there over the tundra, perched on stones or grass-tussocks. At Khabarova, they were sometimes observed sitting upon the grave-crosses, on the watch for small rodents.

It is probable that the lemming *(L. obensis)* or one of the *Microtus* species had a breeding-year at the time. No living specimen of them was found, however; but all along the Siberian coast, wherever a landing was made, their holes and burrows were observed in the hillocks.

Lagopus lagopus, (Lin.) 1766.

This species was observed twice on the Yalmal Peninsula (69° 37′ N. Lat.).

On August 8th, a covey was found there, consisting of a cock and four hens, all of them full-grown specimens. (They were all shot.) Subsequently a hen-bird was found, keeping guard over a single young one, rather larger than a thrush, and just able to flutter; the rest of the brood may have been taken by birds of prey (or by the arctic fox).

On August 20th, 'Ryper' were observed on Renö (74° 46′ N. Lat.), but at so great a distance, that the species could not be determined. On September 8th, a specimen was observed at rather closer quarters, in Toll Bay, Chelyuskin Peninsula (76° 32′ N. Lat.). The bird, which was a male, had scarcely begun to turn white, and still had a quantity of brown (not grey) feathers on its breast. The ground was not yet covered with snow.

Squatarola helvetica, (Lin.) 1766.

On August 8th, several specimens of this species were seen on the Yalmal Peninsula[1]; and on August 20th and 21st, several more were seen on Renö (74° 46′ N. Lat.). They all appeared to be full-grown, as the breast was still black. The ground here was a ling-covered tundra.

?Totanus nebularius, (Gunn.) 1767.

A good-sized wader, of a mottled grey colour, and rather smaller than a whimbrel, and which may possibly have been a greenshank, was seen on the

[1] In "Farthest North", vol. I., p. 140, this species, by an inaccurate translation, has been called the "golden plover".

Yalmal Peninsula on August 8th (69° 37′ N. Lat.). It had its haunt near a brook on the tundra, where it probably had young ones, for it circled round the travellers with loud cries, and often lighted on the ground close to them.

On Renö (one of the Kjellman Islands), on August 20th, another large wader of a mottled grey colour was seen among the numerous waders occurring there. It probably belonged to this species.

Arquatella maritima, (Gmel.) 1788.

Seen here and there along the coast of Siberia as far as Cape Chelyuskin, generally in little flocks of eight or ten birds, often singly, but never in large flocks. On Renö (one of the Kjellman Islands), however, they were numerous on August 20th and 21st, and one specimen was shot[1].

The last specimens seen on the mainland were in Toll Bay, Taimur Gulf (at the beginning of the Chelyuskin Peninsula), on Sept. 8th[2].

Lastly, to the south of the edge of the ice, on September 20th, (77° 50′ N. Lat., about 137° E. Long.), a flock of small waders, flying southwards, was seen from the ship. They were supposed to belong to this species. This was directly to the north of Kotelnoi, and their appearance here in a flock, may possibly indicate the existence of land farther north.

Phalaropus hyperboreus, (Lin.) 1766.

Seen in great numbers on Renö (one of the Kjellman Islands) on August 20th and 21st. They were in the sea near the shore (74° 46′ N. Lat.).

Crymophilus fulicarius, (Lin.) 1766.

On August 20th and 21st, numerous specimens of the grey phalarope were also seen on Renö. These, too, were near the shore, but without mingling with the preceding species.

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[1] A wing of this bird was brought to the Christiania Museum.

[2] In his journal, Nansen writes in the entry for September 2nd, (on Taimur Island), that the birds of passage had almost all gone south. During the last days of August, they met flocks of waders out on the sea, where they were probably collecting for their flight southwards.

On September 20th, when the 'Fram' had just reached the edge of the ice (77° 46′ N. Lat.), a flock of waders was seen flying from the ice towards the ship, together with flocks of *Rissa tridactyla*. They followed the ship for some time, and then set off southwards. These were supposed to have been grey phalaropes.

?Anser segetum, (Gmel.) 1788.

At Khabarova, on July 30th, during an expedition to the eastern end of Yugor Strait, several flocks of grey geese were seen, consisting of old birds with their young ones, the latter just able to fly.

Branta bernicla, (Lin.) 1766.

Even at Khabarova, from July 30th to August 2nd, numerous specimens of this species were seen, and several were shot. They were subsequently observed frequently as far as Taimur Island; on certain days in the middle of August, they were to be seen in flocks of various sizes, passing the ship on their way south. On August 20th and 21st, they were again seen in large flocks, making a halt on Renö (one of the Kjellman Islands). During this time, they showed comparatively little timidity.

On August 31st, a solitary specimen was observed sitting on a piece of ice near Taimur Island (76° 30′ N. Lat.). It was then snowing fast, and the ground soon became white.

Harelda glacialis, (Lin.) 1766.

On July 30th, in Yugor Strait, numerous, in some instances large, flocks were seen, seeming, near the eastern end of the strait, to number some thousands. They also occurred in the lakes on the Yalmal tundra, as far as excursions were made (August 6th and 8th). A number of them were shot for food.

Subsequently, too, they were observed occasionally up through the Kara Sea. At the Kjellman Islands (Renö), a flock was seen on August 21st.

Somateria mollissima, (Lin.) 1766.

A few solitary specimens were observed at Khabarova in Yugor Strait, on July 30th and 31st. They all appeared to be dark in colour (summer plumage).

No eider-ducks were afterwards seen until September 16th, to the east of Chelyuskin, when several flocks were seen from the ship, almost off the mouth of the Olenek. As the typical *S. mollissima* has not with certainty been observed east of the Kara Sea, it is probable that it was *S. v-nigra.*

Sterna macrura, Naum. 1819.

Seen here and there along the Siberian coast from Yugor Strait almost up to Cape Chelyuskin. Two or three were seen on August 18th on Renö (74° 46′ N. Lat.). The last seen was observed in Taimur Bay (off the King Oscar Peninsula) as late as September 7th (76° 32′ N. Lat.).

Rissa tridactyla, (Lin.) 1766.

Both in the Kara Sea, and all along the coast of Siberia, there proved to be very few gulls; and except in Yugor Strait, (at about the end of July and the beginning of August), they were seldom seen in any great numbers.

The species that occurred most frequently was the kittiwake. This bird was seen flying about over the sea, and was observed almost daily, though seldom otherwise than singly or a few together. It appeared to be somewhat more numerous farther east; and several specimens were observed in the middle of August along the Taimur coast, and on the Kjellman Islands. This part of the Siberian coast did not seem to afford suitable breeding-places for this species.

The ship met flocks of kittiwakes when she came up to the edge of the ice on September 20th, in 77° 46′ N. Lat., to the north of the New Siberian Islands. During the few following days, they were still seen occasionally; but when the ice began to close in round the 'Fram' (Sept. 24th), they disappeared altogether. These were the last birds seen that autumn.

A dead specimen was found floating on the water on September 20th (77° 50′ N. Lat.).

Larus glaucus, Fabr. 1780.

A few specimens were observed at Khabarova from July 30th to August 2nd, and also one or two subsequently in the Kara Sea; but none can be said with certainty to have been seen farther east. On Renö (Kjellman Islands), on August 20th and 21st, some large gulls were seen in the distance that were supposed to belong to this species.

? Larus fuscus, Lin. 1766.

On July 30th, in Yugor Strait, off Khabarova, a few specimens of a gull were observed, that possibly belonged to the above species. The back was slate-coloured, but seemed to be a shade lighter than in *L. fuscus:* the species may have been *L. fuscus,* or possibly *L. affinis,* Reinh. 1853.

On the Kjellman Islands (off Renö), on August 21st, a few gulls were again seen, belonging to one of the smaller, black-backed species (74° 46′ N. Lat.).

? Larus argentatus, Gmel. 1788.

On August 21st, on the Kjellman Islands (Renö, 74° 46′ N. Lat., 85° 42′ E. Long.) a specimen of a large, light-backed species of gull was observed, with black spots on the tips of the wings. As *L. argentatus* is stated by other writers (Middendorff, Bunge) to have been observed eastwards as far as the mouths of the Lena and Yana, it is possible that this bird belonged to that species, and if so, probably to the variety *L. vegae,* Palmén 1886.

This last variety, described in "Vega-Expeditionens vetenskapliga Arbeten" (Vol. V, p. 370) in 1886, differs from the typical *L. argentatus* (from Northern and Western Europe) in being of a considerably darker colour on the back and the upper surface of the wings[1]. It was found during the Vega Expedition in the spring and summer of 1879, on the Tchuktchi Coast, in large numbers. According to Palmén's investigations (l. c. p. 376), it is probable that the *L. argentatus* found by Middendorff in the Taimur Land in 1843,

[1] The feet, however, are flesh-coloured, as in the typical species, not yellow, as in *L. affinis*

and which is still preserved in the St. Petersburg Museum, belongs to this variety.

Pagophila eburnea, (Phipps) 1774.

The first specimens seen were on Taimur Island, between August 29th and September 2nd (76° 30′ N. Lat.); they all appeared to be adults, with white plumage. Some few specimens were subsequently seen on the Chelyuskin Peninsula, on September 7th (King Oscar Peninsula), but none later in the autumn in the ice.

Stercorarius crepidatus, (Banks) 1773.

This species was observed at several places along the Siberian coast, from Yugor Strait up to Cape Chelyuskin.

On July 29th, a specimen was shot on a small lake close to Khabarova; its still downy young one was also shot as it swam out to hide among the rushes. The full-grown bird was white-bellied.

On Renö (Kjellman Islands), on August 20th and 21st, both this and the following species were observed, but the latter in the greater number.

On September 2nd, a good many skuas were still to be seen at Cape Laptev on Taimur Island; and on the 4th, Nansen saw several, in the sound called by Nordenskiöld the Taimur Sound, persistently chasing a *Canis lagopus.* When they became aware of Nansen's presence, they flew straight at his head, and thenceforth divided their attack between him and the fox. A considerable quantity of snow had already fallen, and most of the birds of passage had disappeared; there were also very few of either gulls or kittiwakes. Most of the specimens of Richardson's Skua, observed during the expedition, were light-bellied.

Stercorarius longicaudus, (Vieill.) 1819.

Observed frequently (in some cases minglng with the preceding species) as far as Cape Chelyuskin.

A few were even seen in the Kara Sea during the early days of August; but they did not occur with any frequency until August 11th on the Yalmal Peninsula, and subsequently along the Taimur coast (numerous specimens were observed on August 19th). In several places, *e. g.* Renö

(Kjellman Islands), they were more numerous than the larger species, a fact which had already been observed by Middendorff, and subsequently, in 1878, during the Vega Expedition.

The last specimens noted were seen on September 7th, in Taimur Bay, off the King Oscar Peninsula (76° 32′ N. Lat., 98° 30′ E. Long.).

? Colymbus arcticus, Lin. 1776.

On August 6th, in several lakes on the Yalmal Peninsula, was seen (and heard) a large species of *Colymbus* that was probably *C. arcticus.* None was shot.

A large *Colymbus,* probably the same species, was also seen in Yugor Strait.

Cepphus mandti, (Licht.) 1822.

A single specimen of a black guillemot was seen at the edge of the ice on September 20th, to the NW of the New Siberian Islands (77° 50′ N. Lat.), shortly before the ship was enclosed in the ice. The bird was in its winter plumage (or was a young one).

Uria lomvia, (Pall.) 1811.

All the way through the Kara Sea, and along the Siberian coast to Cape Chelyuskin, no little auks or guillemots were seen.

On September 12th, when the ship was outside Khatanga Bay (on the Eastern Taimur Peninsula), a few specimens of Brünnich's guillemot were seen swimming about among the pieces of ice. They probably originated from Preobraschenie Island, where Nordenskiöld, in August, 1878, during the Vega Expedition[1], found a large colony established (together with *Rissa tridactyla* and *Larus glaucus*). This colony is probably the first east of Novaja Zemlja.

Off the New Siberian Islands, no birds were seen. A solitary bird, seen at some distance off in the sea, on September 19th, when the ship was almost in 77° N. Lat., was supposed to be a guillemot.

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[1] 'Vegas Färd kring Asien och Europa', vol. I, p. 337. (Stockholm, 1880). English edition: 'Voyage of the Vega', vol. I, p. 352. (London, 1881).

II.

THE FIRST SUMMER (1894) IN THE ICE.

Plectrophenax nivalis, (Lin.) 1766.

On June 21st, 1894, when the 'Fram' was in 81° 49′ N. Lat., 121° 40′ E. Long., a single specimen came to the ship, the only one that was seen. It came out of the mist to the south, and settled on the refuse-heaps near the ship, where it was shot. It was a male.

Rissa tridactyla, (Lin.) 1766.

The first kittiwake observed during the spring of 1894, was probably seen on June 22nd; but, as on several previous occasions, the bird was just far enough away to prevent the certain determination of the species[1].

As soon as channels began to open up round the ship in the summer (July, 1894), kittiwakes appeared more regularly, and were soon seen very often, hovering over them, evidently looking for crustaceans. On some days several specimens appeared; on July 12th, for instance, eight were seen at one time.

Being rather shy, only one specimen was shot (by Sverdrup), on July 14th.

They continued to make their appearance (though not, on the whole, in great numbers) until beyond the middle of August, when the lanes and channels

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[1] As early as May 13th, a bird was seen in the distance that might possibly have belonged to this species, but which was more probably *Phagophila eburnea* or *Fulmarus*.

began to freeze up (August 23rd). The ship was then in 81° N. Lat., 128° E. Long. They were not seen subsequently.

Rhodostethia rosea, (Macg.) 1824.

None of this species was observed during the voyage along the Siberian coast, nor yet, with certainty, north of the New Siberian Islands during the first autumn.

In the second autumn (1894), when the ship was in 81° 5′ to 81° 8′ N. Lat. and 127½° E. Long., eight specimens, all young birds of that year, were shot between August the 3rd and 8th. No others were observed with certainty. The distance from the nearest known land (the New Siberian Islands and Cape Chelyuskin) was about 560 kilometres.

On August 3rd, three small gulls were seen flying round the ship; they were all shot by Nansen, and were at once recognised as young specimens of the roseate gull.[1]

When the first of them was observed in the distance by Nansen, he took it for a kittiwake; but he soon saw that it was more like a skua, with its long, pointed wings, its wedge-shaped tail, and its dark colour. When Nansen came out again after having been on board to fetch his gun, there were two birds together; they flew several times round the ship, close by, and were easily shot, as they were not shy. When the first had been shot, the second came and flew backwards and forwards above Nansen, who shot at it at too long a range, for fear of damaging its skin. After fetching more cartridges, he placed himself behind a piece of ice, with his head above the top "in order to keep an eye on the bird, which was circling above the fresh-water ponds, the lanes, and the dogs, dropping down now and again when it saw something in the water". It then directed its flight straight towards him, and came right above his head, evidently to see what he was. It was shot at too close range, so that the head was shot off.

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[1] One or two of the crew stated subsequently that three specimens of the same species (possibly the very same birds) had been observed several times on the previous day near the ship; they made no mention of them, however, believing them to be kittiwakes. They had circled for some time as if in play, about the masts, and it looked almost as if they were pecking at the ship's pennant.

Later in the morning came a third, which was also shot. It fell into a narrow channel in the ice, and when it was lifted up, it dropped out of its mouth two or three large shrimps, which, however, fell into the water.

On August 6th, a few specimens were again seen flying round the ship. First one came in the morning, but flew away again in a north-easterly direction, after having circled two or three times round the ship. In the afternoon, one appeared once more (possibly the same one), and was shot while seated on a piece of ice. In the evening, another specimen was shot (by Sverdrup). This, like the others, came from the NE.

On August 8th, three specimens came flying towards the ship, high up in the air. They were all shot, and were the last seen that year.

As already mentioned, they were all young birds of that year, and just old enough to fly. Most of those whose arrival could be observed, seemed to come from the NE. As clear weather had just set in after a long time of thick weather, this was possibly the reason of their making towards the ship.

In flight they most resembled the kittiwake, theirs, however, being still lighter, though sometimes appearing somewhat uncertain and, as it were, wavering (a circumstance which may be explained by their youth). They disported themselves in airy and playful movements, sometimes chasing one another, and now and then uttering a peculiar, faint cry, but generally silent. They were not shy, but often flew about in close proximity to the men; they seldom alighted on the ice, but apparently preferred hovering above the channels.

The youngest specimen of this species hitherto known and described, was one that was shot on October 10th, 1879, in Alaska (near St. Michael's, Norton Sound). This bird has been treated of in detail by Nelson in 'Birds of the Behring Sea and the Arctic Ocean' (Cruise of the Revenue Steamer 'Corwin' in Alaska, etc. 1881)[1]; and a figure of the specimen is introduced into the same author's 'Report upon Natural History Collections made in Alaska', 1877—81, No. III[2].

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[1] Washington, 1883, p. 106.
[2] Washington, 1887, p. 55, Pl. III.

Rhodostethia rosea, Macg. Two specimens shot Aug. 3rd, 1894.

If the ordinary breeding-time for *Rhodostethia* can be placed at the beginning of July, the specimen described by Nelson will have been about three months old[1].

The eight young birds from the 'Fram' Expedition corresponded with one another in all essential particulars[2]. Some were rather less pure in colour than others, and might be supposed to have been a few days younger; but on the whole, the plumage was such as is worn by a young bird just old enough to fly. The neck-feathers, for instance, were still soft and half downy.

Description of Young Bird (about one month old). (See Plate). The whole of the upper surface of the body (*i. e.* the upper surface of the head and neck, starting from the base of the bill, and including the shoulder, the interscapular region and the tertiaries) chiefly brownish black, with a more or less whitish colour intermingled, the inner part of the feathers being for the most part white, the outer brownish black. The crown, and the nape of the neck are the darkest, as there the dark outer margins of the feathers (in some specimens) almost completely cover one another.

All the back and shoulder feathers end (beyond the outer dark portion of the feathers) with a narrow border of pale pinkish grey.

The sides of the head are whitish; round the eyes the colour is dark, and a dark patch extends over the region of the ears, lighter in some specimens, and faintly defined, in others more distinctly brownish black.

The throat and abdomen are white. On the newly-shot specimen, Nansen found on the abdomen a scarcely perceptible shade of orange-red. A brownish black band runs right across the breast, broader and more marked in some specimens than in others. The reason of this band is that the feathers there

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[1] It appears from the figure given by Nelson, that the plumage in his specimen has already undergone some change from its very earliest young-bird's plumage (such as the 'Fram' specimens still wore). The colours, as a whole, have become lighter and purer, and a few originally dark markings have disappeared. Several pure white feathers, for instance, have appeared on the back; the cap has become lighter, and the dark band across the breast has disappeared.

As Nelson states (l. c. p. 55) that the number of tail-feathers is ten, his specimen must have been imperfect: their number is twelve.

[2] Seven of the specimens were preserved as skins, and their bodies in alcohol. The eighth, of which the head was nearly shot off, was placed in spirit. The whole collection was presented by Nansen to the University Museum in Christiania.

have narrow, faint, and indistinctly defined, brownish black borders. Some specimens, moreover, have traces of a brownish black shading along the sides of the abdomen.

The feathers of the lower part of the back are white, with broad, brownish black borders, of which the external margin shows a tinge of pinkish grey. The rump and the upper tail-coverts are white, some feathers, however, having very faint indications of a dark border at the tip.

The outer half of the shoulder-feathers and the upper wing-coverts is brownish black, with narrow blackish grey borders; the upper row of the secondary wing-coverts (overlying the secondaries and tertiaries), however, are already white in most of the specimens; while in two or three of them they are dark like the rest of the coverts.

Of the wing-feathers, all the primaries have black tips (about 20 mm. broad); in the 1st, 2nd and 3rd, the outer web, shaft and adjoining portion of the inner web is quite black, the rest of the inner web white. In the 4th and 5th, the white extends also to part of the outer web. The feathers from the 6th to the 10th are chiefly white (above the black tip). In most of the specimens, the black is sharply defined against the white; in a few (possibly the youngest), the line of demarcation is less distinct, and the colours less pure.

The secondaries are white, the innermost, however, with increasingly dark outer web. The tertiaries, which, when at rest, lie along the back, are chiefly brownish black with narrow pinkish grey borders, like the rest of the upper surface of the back.

The primary coverts are brownish black, the secondary coverts white, thus forming an oblong, white speculum upon the folded wing.

The lower surface of the wing is white, though brownish black near the outer margin: the shafts are white.

Of the tail-feathers, only the two lateral ones, as a rule, are entirely white; the rest have brownish black tips. In two or three of the specimens, the 3rd is also pure white, and in one of the eight, the 4th also. The brownish black tip is broadest in the elongated 6th (middle) tail-feather, where the breadth is sometimes as much as 42 mm. (in most of them rather less, in one only 26 mm.); in the long 6th rectrix, the dark terminal band runs in

a short point up the shaft. The middle (long) rectrices extend from 12 to 15 mm. beyond the others[1].

If the plumage of these young birds be compared with the corresponding plumage in other species of *Laridæ*, there is none that *Rhodostethia* more closely resembles in this respect than *Xema sabini*. The distribution of colour is essentially the same in both, particularly in there being dark feathers on the back, with narrow, but clearly-marked, pinkish grey, or greyish white borders. But the distribution of white and black on the wing-feathers is again quite different, and in this respect, *Rhodostethia* resembles no species of the genera *Larus*, *Rissa*, *Xema*, or *Sterna*. The black tips of the inner, short primaries (5 to 8), do not quite cover the white part on the underlying primaries, whereby an alternating row of black and white spots is produced along the superior border of the folded wing.

Food, etc. On an examination of the bodies of the specimens — which are all preserved in alcohol — it appeared that all the birds had been in good condition, and the gizzard, when they were shot, was more or less filled with food. The food consisted exclusively of crustaceans and small fish; no refuse, such as might have been taken from the neighbourhood of the ship, was found.

As already mentioned, the chief contents of the gizzards were crustaceans, and in all the specimens, parts of *Hymenodora glacialis* (Buchh. 1874) could be recognised[2]. Prof. G. O. Sars, who has kindly determined these

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[1] In the large collection of old and young specimens that was made by the International Polar Expedition to Point Barrow, in September and October, 1881 and 1882, three young birds (now belonging to the Smithsonian Institution in Washington) are described in detail in the report of this expedition (Report of the International Polar Expedition to Point Barrow, Alaska, pp. 124, 125. Washington. 1885), as they were supposed, from their plumage, to be somewhat younger than the other specimens. In these three specimens, "the middle rectrices are black-shafted, with this color extending more or less on the webs, continuous of the black of the tip".

In all the 'Fram' specimens, which were several weeks younger, the shaft, above the black tip, was white; in a single specimen, a darker shade extended a little way up from the tip on both sides of the shaft, which itself was white.

[2] This ephyrid, which is related to *Pasiphaë*, inhabits exclusively the Arctic Ocean. Professor G. O. Sars ('The Norwegian North Atlantic Expedition 1876—1878. Vol. XIV. Zoology. Crustacea', p. 37, Pl. IV. Christiania, 1885) considers this species to be a pelagic form that is not confined to any particular stratum of water; for while the type specimen was taken (during the 2nd German North Polar Expedition) on the very surface of the water in the sea to the east of Greenland, the numerous specimens of the North Atlantic Expedition were taken at various depths, down to 1862 fathoms.

remains of crustaceans, has only found one specimen of this species in the plankton-collections brought home by the Expedition. As these animals are very quick in their movements, they were probably not easily caught in the tow-nets, which were only slowly carried along with the drifting ice.

Of other Crustacea, only remains of *Gammarus locusta* were found, in one bird. This species is one of the commonest amphipods in the collections of the 'Fram'.

On the other hand, all the specimens contained remains of a *Gadus*, probably *G. saida*. This did not seem, however, to have been captured in the immediate vicinity of the ship, as only some vertebræ and a few otoliths remained. The length of the latter varied from 2·5 to 6 mm.

Of parasites, there were found a few small Tænioids in the intestinal tube (probably originating from the *Gadus saida*).

The eight young birds included both males and females. In those males where the testes were in the best state of preservation, the left was the longer (about 2·5 mm. long), and of a light colour; while the right one, which was rather smaller, was partly brownish black.

Larus glaucus, Fabr. 1780.

Only two or three specimens were observed while in the ice during the summer of 1894. The first specimen (that in all probability belonged to this species) was heard by one of the crew on June 19th: the atmosphere was misty, so that the bird could not be seen. On July 6th, one was certainly seen; it flew round the ship, and disappeared in a north-westerly direction (81° 31′ N. Lat., 124° 26′ E. Long.).

Lastly, on July 14th, a large gull was seen in the distance, that was supposed without doubt to belong to this species.

Pagophila eburnea, (Phipps) 1774.

From the spring right on until towards the end of August (1894), when the channels around the ship froze up, this species appeared very frequently, sometimes several birds daily. During this period, the ship was between 80° 50′ N. Lat., 130° E. Long. and 81° 52′ N. Lat., about 121° E. Long.

On May 13th, 1894, the first bird of the year was seen in the neighbourhood of the ship by Nansen and Johansen. It was either a gull (a kittiwake or an ivory gull) or a fulmar, but it was too far off to allow of its being determined with certainty. It flew over the ship towards the NNW., and was hailed as a messenger of spring.

On May 19th, at three in the afternoon, a gull was again heard. The weather was foggy, so that the bird could not be seen; but from its shrill querulous cry, it could be certainly recognised as belonging to this species. It also flew northwards, after flying once round the vessel. On the following day, a bird was again seen (possibly the one of the preceding day), and it flew southwards.

On May 23rd was heard the unmistakable' cry of an ivory gull, flying NW. or NNW.; but the bird itself was not seen, as the atmosphere was thick with a wet fog. On June 2nd, two birds came, and after flying two or three times round the ship, flew away; but they returned, and remained for some time in the neighbourhood of the ship.

On June 5th, five *P. eburnea* came flying up from the south, and more followed during the day. One of these was shot — the first bird after the winter.

On June 6th, ivory gulls were seen often and at various times. They seemed to be attracted by the refuse-heaps, but did not appear to have any fixed course. During the few days following, several more were seen (on the night of June 7th, two together; on the night of June 8th, a flock of six), all of which flew due north.

On June 22nd, four were seen together, flying towards the NW. On June 25th, a few more appeared, and one of them was shot by Sverdrup.

Throughout July, ivory gulls, as well as *Fulmarus* and *Rissa*, were seen frequently, though the particular occasions were not noted down. A few were also seen in August; but after the 23rd of that month, the channels round the ship froze up, and no more birds were seen that year.

All the specimens observed seemed to be in adult plumage. They appeared to live in a great measure on blubber, and preferred to keep near places where bears had been skinned. They often alighted on the ice, and were not very shy, though more so here on the ice by the 'Fram', than they

afterwards appeared to be by the winter hut on Franz Josef Land, and during the journey along that shore.

? Stercorarius crepidatus, (Banks) 1773.

One of the smaller species of *Stercorarius* was seen a few times in July, 1894, but not sufficiently near the ship to allow of any certain determination of the species.

On July 14th, a bird was seen, that Peder Hendriksen could say without doubt was a skua. Sverdrup saw two flying above him that night, when he went out to hunt a ringed seal (*Phoca foetida*). From their description, Nansen thought they must have belonged to this species, and not to *St. longicaudus.*

Fulmarus glacialis, (Lin.) 1766.

Like *Pagophila* and *Rissa*, this species was frequently observed while the ship was drifting with the ice the first year. It could not, however, on the whole, be said to be numerous, and when seen, was generally solitary.

The first specimen that could be determined with certainty, appeared on June 22nd, 1884, the second on the 26th. On the 29th, yet another was seen, and was shot by Scott-Hansen (81° 34′ N. Lat., 122° E. Long.).

In July and the beginning of August, they were observed more frequently round the ship, until the channels froze up towards the end of August, 1894.

Cepphus mandti, (Licht.) 1822.

On June 4th, 1894, at 1·30 A. M., Mogstad saw in the distance, "a black sea-bird, with white marks on its wings", flying past the ship in a direction true N. by E. (81° 29′ N. Lat., 122° E. Long.), which probably belonged to this species.

In the course of the summer, solitary black guillemots were repeatedly seen flying about over the open channels near the ship. On July 13th, two were seen together; they flew several times round the 'Fram', and disappeared in the SE. Subsequently they were occasionally seen in the channels. The last was seen here on August 12th.

Although the arctic black guillemot, like its congener on the continent, must, on the whole, be considered a littoral form, it here appeared that in the summer, these birds (probably the younger, immature ones) distributed themselves over the Arctic Ocean, at considerable distances from the nearest land. Further confirmation of this fact was obtained north of Spitsbergen, during the return voyage of the 'Fram'.

? *Alle alle,* (Lin.) 1766.

On June 26th, 1894, Mogstad and Jacobsen observed a small sea-bird, belonging to this, or the previous species, flying over the ship in a north-westerly direction. As it was at a considerable height, it was taken to be a little auk, and not a black guillemot (81° 37′ N. Lat., 121° E. Long.).

This may possibly have been a stray specimen, as no more of this species, nor of the larger *Alcidæ*, were observed. Breeding-cliffs and colonies of *Alcidæ* did not therefore seem to occur in the region traversed by the 'Fram' that summer.

III.

THE SLEDGE-JOURNEY AND FRANZ JOSEF LAND (1895, 1896).

Plectrophenax nivalis, (Lin.) 1766.

During the entire sledge-journey over the North Polar Sea, none of this species was observed until the arrival at the north-east side of Franz Josef Land, when half a dozen were seen on Torup's Island (Coburg Islands), on August 16th, 1895. Subsequently they were seen during the journey south, on Franz Josef Land, at most points where there was bare ground, though never in large numbers.

All through the winter, they were never seen. The first that appeared after the winter, was seen near the winter hut, on April 30th (1896).

Arquatella maritima, (Gmel.) 1788.

On June 5th, 1895, Johansen saw a wader flying over him, which may have been this species, or perhaps a phalarope (82° 18′ N. Lat.).

The purple sandpiper was seen once or twice during the journey southwards along the coast of Franz Josef Land, in 1895. In the end of August and beginning of September, a few specimens were seen on the shore near the winter hut.

On June 13th, 1896, off the south coast of Northbrook Island (west of Cape Barents), several flocks of waders, evidently belonging to this species, were seen flying westwards.

During June, July and August, 1896, the purple sandpiper was very commonly seen in the neighbourhood of Cape Flora.

Branta bernicla, (Lin.) 1766.

It is probable that this species has breeding-places both in the middle and northern parts of Franz Josef Land. On September 6th (1895), two of them were seen flying over the winter hut, (on Frederick Jackson Island) in a south-easterly direction. On June 1st, 1896, during the journey south from the winter hut, on Mary Elizabeth Island, were seen a quantity of excrements and empty egg-shells from the previous year, evidently belonging to this species. The island, called "Goose Island" in Nansen's journal, is flat, and the ground is to some extent composed of mud and gravel, and is in places covered with moss and other vegetation. (81° 7′ N. Lat.).

On June 5th, 1896, two brent geese were seen sitting on the shore-ice at Cape Richthofen.

Some of these birds were also seen during the stay at Cape Flora, in June and July, 1896, but no breeding-places were found there.

Somateria mollissima, (Lin.) 1766.

On only one occasion was this species observed on Franz Josef Land. A flock of six specimens was seen (simultaneously with the two *Branta bernicla*) swimming in the open water near the shore at Cape Richthofen, on June 5th, 1896. The flock included individuals of both sexes (80° 46′ N. Lat.).

Sterna macrura, Naum. 1819.

Two or three specimens were seen in the vicinity of Hvidtenland, on the 7th August, 1895, (on the north side of Liv Island), in 81° 42′ N. Lat.

This was the only time that this species was observed during the sledge-journey in 1895.

In June and July, 1896, several specimens were seen near Cape Flora. A pair seemed to be breeding somewhere in this neighbourhood, although no nest was found.

Rissa tridactyla, (Lin.) 1766.

During the sledge-journey, this species was seen frequently.

The first specimen in the spring, 1895, was observed on June 13th, in

about 82° 20′ N. Lat. By degrees they came to be observed almost daily, and several specimens were shot (together with *Pagophila eburnea* and *Fulmarus glacialis*) as food for the dogs. Here in the ice, however, they seldom appeared otherwise than singly or only a few together.

Close to Hvidtenland, they became more numerous, and were seen in great numbers all through the autumn along the coasts of Franz Josef Land, wherever there was open water (*e. g.* on the NW side of Karl Alexander Land).

Along the shore near the winter hut, great numbers of them were seen daily, until the middle of September, when the sea outside was entirely frozen over, and they disappeared. They were chiefly old birds. They almost always kept only over open water, busily engaged in catching crustaceans. Flocks of them moved incessantly up and down along the shore, hovering over the water moving with the tidal current, and darting down with a dull splash against the surface of the water, whenever a crustacean or other animal appeared; but they frequently had to share their booty with *Stercorarius crepidatus*. They seemed to live exclusively on small marine animals, and never touched the blubber and flesh of the bears and walruses killed by the travellers, in which respect they differed widely from *Pagophila eburnea*, and *Larus glaucus*.

After the winter, they first appeared at the winter hut on May 13th (1896), although there was no open water within a distance of 35 kilometres. The very next day several were seen. After this they were seen fairly frequently, but not in great numbers until May 22nd, 1896, when flocks of them were seen near Cape M'Clintock, whence there was only a short distance to open water.

Cape Flora, on the south coast of Franz Josef Land, was the first place where their nesting-places were actually seen. At the time of Nansen's arrival there on the 17th June, laying had not begun; the first eggs were found some days later.

The last specimens that could have belonged to Franz Josef Land were seen during the homeward voyage in the 'Windward', on the border of the open water in the Barents Sea, on the 9th August. These seemed to be chiefly young birds of the previous year.

Rhodostethia rosea, (Macg.) 1824.

For the second time during the expedition, *Rhodostethia* was observed, this time between the 11th July and the 14th August, 1895. This was in the region between the ice far to the north of Hvidtenland, and Dickson Sound, on the north-east side of Franz Josef Land. On this occasion, not only a few were seen as in the previous year, north of the New Siberian Islands, but great numbers; and they were principally older, fully coloured birds. After passing Dickson Sound (the sound between Hohenlohe Island and Karl Alexander Land), not another specimen was seen. The region in which they were observed this time, lies between 82° 10′ and 81° 30′ N. Lat.; and it is evident that they must breed somewhere on the north-east side of Franz Josef Land — perhaps on Liv Island — though no nesting-place could be discovered during the journey.

The first individual of this species was seen on the 11th July, 1895 (about 82° 8′ N. Lat.). Nansen and Johansen were then at least 50 kilometres NE of Hvidtenland, or about on a level with Cape Fligely. The bird came flying from the north-east, and disappeared towards the south-east; it was full-coloured, and in flying, distinctly showed the black ring round its neck, but it was not near enough to show the rosy colour on the under surface of its body.

On the days following there was fog, and the ice had closed up, and few birds of any kind were visible. On July 14th, another roseate gull, an old bird, was seen. It came flying low, made a tour round the camp, showing its beautiful rose-coloured breast and belly, and then disappeared into the mist to the west. On July 17th, the next was seen, on the 19th, two more, all full-coloured specimens, and flying from NE to SW (about in the direction of Hvidtenland).

During the latter half of July, they were observed more frequently, though not quite every day. On the 27th, two came together from the S, circled close above the heads of the travellers, and again disappeared in the south. One of these was a young bird, the first that had been observed this season. A little later, a full-coloured bird was seen. Hvidtenland had then already been seen in the distance.

As long as the travellers were in the drifting ice itself, far from the land, the roseate gulls could not be said to be numerous. They appeared, as a rule, only singly or in pairs, seldom several together. On July 29th, for instance, they were seen altogether four times, but only single birds; on the 30th (one pair in the morning and one pair in the afternoon) and 31st July, and the 3rd August, only single, full-coloured pairs were seen each time.

Only off Hvidtenland did they become at all numerous. On the 7th and 8th August, they were seen repeatedly (near Eva and Liv Islands), whole flocks of them flying about or sitting on the edge of the glacier, which was about 50 or 60 feet above the sea. Young and old were together. Whether there was any nesting-place in the neighbourhood, however, could not be ascertained.

Eva Island is completely covered with glacier, and does not appear to have a single patch of bare ground. From the top of Adelaide Island (August 9th), a strip of low, bare ground could be discerned on the NW coast of Liv Island, possibly an old beach-line, about 20 or 30 feet high, and perhaps 1 kilometre long, apparently forming a low beach, partly covered with rock débris. With this exception, Liv Island was also snow-white, and covered with a dome-shaped ice-cap sloping down into the sea on all sides, without any abrupt glacier edge. Of all the land that was in sight, this was the only spot free from snow, where birds could possibly breed; but whether the locality would be considered suitable as a nesting-place for this species, and whether it was large enough, is doubtful, although it seemed to resemble the places where nests of the ivory gull have been found.

The last specimens were seen near the Coburg Islands between the 11th and 14th August. After that they vanished completely, and no specimen was seen during the rest of the journey; and there was thus no sign of their inhabiting any locality in the region between Dickson Sound and Cape Flora.

In their movements they recalled *Rissa tridactyla*. They appeared to find their food exclusively among the pelagic organisms on the surface of the water. They never came near the provisions (like *Pagophila eburnea* and *Larus glaucus*) to take any of them. They generally flew rather low, and were on the wing night and day. They often flew close to the kayaks, but were never seen swimming. They were extremely graceful in their move-

ments; they often rested on the edge of the ice close to the open water. As mentioned above, they were frequently seen sitting upon the edge of the glaciers, where these went precipitously down into the sea.

Now and then they might also be seen resting on the floe-ice some distance away from the water's edge. On the 8th August, Johansen came upon one sitting, apparently asleep, right on the flat ice off the shore of Adelaide Island; and it let him come within a few paces of it. It was a young bird of that year.

On rare occasions, they might be heard to utter a single note, which Nansen thought resembled the cry of a wryneck (*Iynx*). They were generally silent.

They were not shot, as they were too small to serve as food.

Larus glaucus, Fabr. 1780.

On the drifting ice itself, only occasionally observed, but numerous near the land, from Hvidtenland southwards to Cape Flora.

On June 1st, 1895, the cry of a large gull was heard above the tent, and supposed to have been that of this species[1]. This was in about 82° 20′ N. Lat.

Subsequently one was seen now and again flying above the lanes; but only in the neighbourhood of land did they begin to be numerous.

A nesting-place was found on the 16th August, on the north side of Torup Island (Coburg Islands). The colony was not very numerous. The nests lay on the ledges along the lower part of the cliff, and generally contained two half-grown young ones[2] (81° 33′ N. Lat.).

All along the NW coast of Franz Josef Land, *L. glaucus* was numerous; but no other nesting-place than the one on Torup Island was seen. At about the end of August, the young birds of the year began to appear; and all through the autumn, old and young birds might be seen (together with *P.*

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[1] In 'Farthest North', this species is wrongly called in several places *Larus argentatus* (Vol. II, pp. 206, 230 & 238).

[2] In 'Farthest North', this species has been wrongly translated as 'the black-backed gull' (Vol. II, p. 308). In the Norwegian edition, 'Fram over Polhavet' (Vol. II, p. 212), a photograph is given of the cliff with the breeding gulls.

eburnea) wherever any refuse blubber[1] was to be found, or a walrus or a bear had been cut up. They were very troublesome, making it necessary to cover up carefully all stores of blubber and meat with skins and stones, otherwise all blubber would soon have been pecked away by them.

Even towards the end of September, when the winter hut had been built, they were quite common, and, like the ivory gull, they almost every day and night alighted on the roof of the hut itself, to eat the remains of blubber still adhering to the walrus-skins covering it, and they were not a little troublesome with their persistent tapping on the frozen skins all night long. About the middle of October, when everything for miles round was covered with ice, some few young glaucous gulls still remained, daily visiting the roof of the hut, or the frozen bear-skins lying near it; and they were the last birds seen from the hut that year.

After the winter was past, the first specimens were seen at the hut on the 9th April, 1896 (*P. eburnea* and *Fulmarus* both having appeared considerably earlier), and soon began once more to visit the roof of the hut, as they had done in the autumn. During the journey south, they were seen frequently, right down to Cape Flora, though not in such abundance as either *Fulmarus* or *Pagophila*.

Pagophila eburnea, (Phipps) 1774.

This bird was observed in large numbers all through the sledge-journey after May, 1895. With its impertinent ways, and shrill, angry cry or scream, it was, in spite of its beauty, anything but a welcome companion. Like the carrion-birds in the desert, the same individuals often seemed to follow the travellers for a long time. They grew continually bolder, and at last were so tame that they ventured right into the tent to steal blubber.

As an example of their boldness, the following incident may be mentioned. One day (August 15th, 1895), when Nansen was asleep, lying on the ice with his head close to the side of his kayak, which was standing on the sledge, he was awakened by hearing a tapping close to his ear, and raising his head, saw an ivory gull pecking eagerly at a piece of blubber

[1] *L. glaucus*, as well as *Pagophila eburnea*, very much prefers the blubber to the flesh, in this respect resembling the bear, while the fox prefers the flesh.

lying on the deck of the kayak, only a foot or two from his head. The bird looked at him, but by a quick motion he caught it in his hand, grasping it over the back. It screamed, pecked at his fingers, and tried to get free, which it also succeeded in doing, but with the loss of its tail feathers, which remained in Nansen's hand. The bird flew away, as well as it could without a tail, but alighted on the ice only a hundred yards off. After a while it again approached, evidently on the look-out for some new opportunity of getting at the blubber.

Nansen has observed these birds following the bears, often with loud screams, especially where seals have been seen in the neigbourhood, and there is a prospect of any being killed. He has also frequently noticed them, hovering over himself, as it seemed with special interest, while he was stalking a bear, a seal, or a walrus. On such occasions they are less welcome than usual, as they may easily warn the stalked animal by their screams.

When an animal was killed and skinned, it was often astonishing to see how quickly flocks of these birds would be on the spot, even when they had not been observed for a long while previously. Suddenly their shrill, angry cry, resembling that of a tern, would be heard high in the air. This cry may at first come only from a single bird that has chanced to pass near the spot, whose quick, keen eyes have at once discovered the prey. The cry, however, will call others, and soon ten or twenty of them may have gathered, making a most disagreeable noise.

At the winter hut, Nansen also often had an opportunity of observing how a bird might chance to pass, and discover a place where, for instance, a bear had been cut open and skinned, or where pieces of blubber, meat, etc. had been left. After having examined the place, and perhaps eaten some of the blubber, it would again fly away eastward. But almost invariably it would then happen that after a while cries were heard in the air, and a flock of from five to ten ivory gulls came flying from the east, and without hesitation came directly to the place where food had been found. Nansen often recognized the very same birds. One young bird in particular, which was easy to recognize by some special black spots on one wing, was very often to be seen in these flocks.

On May 31st (1895), the first pair was seen during the sledge-journey, and two others were heard or seen the same day (about 82° 20′ N. Lat.).

On June 4th several were seen, and from that time they were seen almost daily. On June 4th, one specimen was shot and eaten — the first bird that was brought down on the sledge-journey. As it was shot, it dropped out of its mouth a large piece of blubber which it had probably taken from some seal killed by a bear. On June 7th, another couple of these birds were shot for food, but subsequently only a single one now and again was shot (as food for the dogs), as they were too small to give sufficient food for the value of a cartridge.

On Hvidtenland, on the 7th August, many of them were seen sitting on the edge of the glacier, and subsequently they were numerous along the NW coast of Franz Josef Land. At the winter hut, during the autumn, there were great numbers of them. They were chiefly old birds. Young birds were not seen before the beginning of September, and even then they were comparatively few. This fact may, however, indicate that there has been some nesting-place within no great distance; but none was seen. They continued to appear at the winter hut until the beginning of October, when all water had long been frozen over. Like *L. glaucus*, they daily perched upon the roof of the hut to peck at the blubber, often in great numbers, and it was very difficult to protect the stores against their attacks. When the travellers were inside the hut, they could easily distinguish the quick pecking of the ivory gulls from the slower, but stronger tapping of *L. glaucus*.

After the winter the first were seen as early as March 12th, 1896, when five came flying from the SE and perched on the cliff west of the hut. On April 5th, some more appeared, although no open water was to be seen in any direction. On that day, the first gull also paid a visit to the hut, but at first they were not so bold as they had been in the autumn, and it was some time before they acquired the same audacity. It could be seen by the track in the snow, that this first bird had alighted on the ground near the hut, and had walked a short distance without daring to approach the bear-skins and stores lying close to the hut. On April 9th, many ivory gulls were seen, and it was now not long before they regularly visited the roof of the hut, and the stores outside it, as they had done in the autumn, though not now in quite such large numbers.

They were seen frequently on the journey south towards Cape Flora, though never in great abundance. During the long journey over the ice

between Cape Richthofen and Cape Barents (Northbrook Island), they were seen occasionally, and *P. eburnea* seems to be less connected with open water than the kittiwake, which on the whole is seldom seen away from it.

Although *P. eburnea* often appeared simultaneously with *L. glaucus*, each species differed in several respects. When a pair of *L. glaucus* were going to swoop down upon a skinned seal or walrus, they first circled majestically above it, and then dropped down, and settled at a little distance, sitting there contemplatively for some little while, before they finally walked towards their booty. Here the smaller *P. eburnea*, which were already busy over their meal, would respectfully make way for them. *P. eburnea*, uttering its shrill, angry cry, darts like an arrow upon its prey. If a walrus or a bear were being skinned, they were instantly on the spot, and often pecked at the blubber 'almost under the very knife itself'.

Stercorarius crepidatus, (Banks) 1773.

During the journey along the north-west coast of Franz Josef Land, *St. crepidatus* was not uncommon, and it was observed almost daily during the kayak-voyage, nearly always together with *Rissa tridactyla*, which were the objects of their almost incessant attacks. At Cape Hugh Mill (81° 18′ N. Lat.), where the travellers were encamped on the 25th and 26th August, 1895, the frightened cry of the kittiwakes was heard all night long, as they were chased by skuas trying to make them relinquish the booty they had captured.

At the winter hut, during the latter part of August and the beginning of September, Nansen had a good opportunity of studying their ways. From a long distance, a skua, with its sharp eyes, would at once observe if one bird in a whole flock of kittiwakes made a catch — possibly a small fish or a crustacean — worth its efforts. The skua would then silently make straight for the poor bird, not missing it even amongst a score of other kittiwakes. Darting down like an arrow, the skua would now chase the kittiwake, which would utter the most pitiful cries of distress. The wild chase would be continued until the latter had to disgorge its booty, which it had long since swallowed, when the skua would dart down, and catch the falling food before it reached the water. It very often happened, however, that the kittiwake, un-

willing to give up its prey, was so hard pressed, that in its distress it would sit down on the flat ice, where the skua never attacked it; but though leaving it alone, it would always alight on the ice some distance off, and there wait patiently. After a while, the kittiwake, thinking itself safe, would fly away. The skua, following it with its eyes, would remain quiet, and allow it to fly some distance undisturbed; but it would then suddenly fly straight at the bird once more, and the wild chase would begin anew, until the kittiwake had at last to pay its tribute. Indeed, it even happened that this manœuvre was repeated twice. It seemed an almost ridiculous waste of energy, for it would apparently require far less effort to catch another crustacean on the surface of the sea where there were plenty of them; but Nansen never observed a skua catching anything in the water. Even if the booty dropped by the kittiwake, fell into the water or on to the ice, before the skua could catch it — which, however, very seldom happened —, the skua would often fly away without making any further effort to capture it.

As a rule, the skuas observed were light-bellied.

They were still seen daily in the neighbourhood of the winter hut during the early days of September, chasing the kittiwakes. They seemed to have their haunt by a little pond, some distance to the east of the hut, where they had possibly had a nesting-place. They disappeared with *Rissa tridactyla*, when the water froze over towards the middle of September.

In the spring (1896), they had not yet appeared at the winter hut when the travellers left it on May 19th.

They were frequently observed at Cape Flora, especially near a little pond to the north-west of Elmwood, where a pair evidently had a nest. Several nests of this skua were found about Cape Flora by the men of the Jackson-Harmsworth Expedition[1].

During the homeward voyage in the 'Windward', several skuas belonging to this species were seen in the Barents Sea, especially along the edge of the ice, *e. g.* on August 9th (1896). The light-bellied, as well as the dark-coloured variety, was observed.

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[1] Clarke and Bruce, 'On the Avifauna of Franz Josef Land' (The Ibis, April, 1898, p. 269). Also 'The Mammalia and Birds of Franz Josef Land' (Proceedings of the Royal Physical Soc. of Edinburgh, vol. XIV, 1899, p. 104).

Stercorarius longicaudus, (Vieill.) 1819.

During the sledge-journey over the ice north-east of Hvidtenland, in 81° 45′ N. Lat., on July 30th, 1895, a skua was seen three times, which Nansen expressly states in his diary belonged to this species. The ice had just then begun to open up a good deal, and birds were seen more frequently.

This species was not observed on Franz Josef Land. During the homeward voyage in the 'Windward', a few specimens were seen in the open Barents Sea (near the edge of the ice), on August 9th, 1896.

Fulmarus glacialis, (Lin.) 1766.

This bird and *P. eburnea* were the two most frequently observed on the ice itself during the sledge-journey north of Franz Josef Land. The first bird observed in the spring of 1895 was a fulmar, which flew over the tent and the dogs on May 29th (82° 26′ N. Lat.).

The same day another specimen was seen. The ice was now to some extent broken up, and lanes were beginning to form.

The next fulmar was seen on May 30th, and from the middle of June they were seen very frequently (about 82° 10′ N. Lat.). They were also seen all through July, when Nansen and Johansen came nearer to Hvidtenland; but they did not seem to be especially numerous on the north or north-east side of Franz Josef Land, and no nesting-place could be found there.

A couple of these birds were shot on June 18th, 1895, and eaten. The travellers were then afraid of running short of food. In order to catch some of them to feed the dogs with, without expending cartridges, hooks were manufactured out of tins, to which were fastened pieces of meat, but without success. *P. eburnea* always managed to peck off the meat without swallowing the hooks, and the fulmars take their food almost exclusively from the surface of the water; indeed, they scarcely ever rest upon the ice, possibly because it is difficult for them to fly up. During the latter part of July and the first few days of August, 1895, one or two were often shot daily for the dogs, which at first refused to touch the strong-smelling bird, but gradually learnt to do so when food was very scarce.

They were seen near the winter hut until late in September, when all water was frozen over.

The first that appeared after the winter came as early as April 5th (1896), although there was no open water visible anywhere. On April 9th, many were seen. They afterwards appeared frequently, flying about over the ice outside the hut, and along the basaltic cliffs, though with what object it was impossible to discover, as they were never seen to settle, and the water was not yet open, nor were there any lanes in the ice. On April 29th, 1896, Nansen says in his diary: "Mollies are seen here constantly flying about, but I cannot make out why they come in here".

They were also observed frequently during the journey south from the hut. On June 3rd, they were found in large numbers established on the basaltic crags just east of the high, perpendicular, basaltic cliff of Cape Fisher (81° N. Lat.), the only nesting-place that was found during the journey. The rock here was not very precipitous, but had sloping terraces. On the high, precipitous cliff close by, there was a numerous colony of *Uria lomvia*.

At Cape Flora they were seen frequently in the course of the summer, but did not seem to nest nearer to that station than on Mabel Island[1].

During the homeward voyage in the 'Windward', some few fulmars were seen in the ice, August 8th, 1896; and along the edge of the ice, in the open Barents Sea, they were rather numerous on August 9th and 10th.

Most of the specimens belonged to the dark variety; only a few belonging to a lighter form were seen. The same also seemed to be the case farther north, on Franz Josef Land, and during the journey over the ice.

Cepphus mandti, Licht. 1822.

On May 29th, 1895, when the ice had become rather broken up, the first birds of the year made their appearance during the sledge-journey, namely, a pair of *Fulmarus* and a *Cepphus mandti*. The latter, which was already in full summer plumage, flew several times round the travellers, and disappeared, probably in one of the lanes which were just forming (82° 26′ N. Lat.).

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[1] *Cf.* Clarke and Bruce, The Ibis, 1898, p. 275.

Black (Spitsbergen) guillemots were subsequently seen now and then, mostly singly, in June, July, and the beginning of August, 1895, on the ice north of Hvidtenland, and on the north-east side of Franz Josef Land. Along the coasts of the latter they were very common, and small colonies of them were seen breeding along with much more numerous colonies of little auks, on Torup Island, at Cape Felder, Cape Helland, Cape Hugh Mill, on the cliffs east and west of the winter hut (Cape Norway), on the small island Steinen, west of the winter hut, etc.[1]

The dovekie, or black guillemot, was seen as late as towards the end of September, 1895, at the winter hut.

After the winter, a couple of *C. mandti* were observed as early as March 10th (1896). These birds (as also the little auks) could scarcely have passed the winter at any great distance to the south. They were then already in summer plumage.

They afterwards appeared frequently at the winter hut, as a rule in company with little auks, one or more of them generally accompanying each large flock of those birds, when they flew to or from the sea; but they were never numerous. They could be seen inhabiting the cliffs above the winter hut along with little auks, the latter, however, where they were found together, being always much the more numerous.

During the sledge-journey southwards, the dovekie was found inhabiting the cliffs at Cape M'Clintock, together with numbers of little auks, on May 23rd, 1886. It was too early to find eggs. There also seemed to be colonies of them at Cape Richthofen.

At Cape Flora, *C. mandti* was comparatively numerous. Some specimens were seen on the voyage out through the ice to the south of Franz Josef Land, on August 8th, 1896.

Uria lomvia, (Pall.) 1811.

During the whole sledge-journey in 1895, only three specimens of this species were seen. On June 18th, (1895), one was shot (together with a

[1] According to Payer's description, the black guillemot also breeds on Crown Prince Rudolf Land — Cape Auk — where he saw it in April, 1874. (Payer, 'Oesterreich-Ungarische Nordpol-Expedition 1872—1874', p. 325. Vienna, 1876). Nansen thinks there are colonies of them at several places on this island, *e. g.* at Cape Brorok.

pair of fulmars) for food. The next day another was shot (82° 15′ N. Lat.); but after that, only a single one was observed flying southwards over the camp, on August 11th, half-way between Hvidtenland and Franz Josef Land. All through the journey south along the NE side of Karl Alexander Land, and up to the winter spent on Frederick Jackson Island, not a single specimen was seen.

The apparent total absence of these birds in the northern part of Franz Josef Land aroused Nansen's attention, as Payer, in the report of the Tegethoff Expedition and the sledge-journey to the most northerly limits of Franz Josef Land, mentions finding "*Alken*, Tauchern und Teisten"[1] — in the English edition wrongly translated "auks and divers"[2] — in great numbers at Cape Auk in Crown Prince Rudolf Land. One reason why Nansen did not believe he was near Crown Prince Rudolf Land was just that he found none of those guillemots which were said to be found there in thousands. It is therefore probable that the word "Alken" ("auks") has by some mistake come into Payer's description, and that he has meant nothing but little auks and black guillemots or dovekies (Teist); and it is not improbable that *Uria lomvia* really has no nesting-place on this northern part of the group of islands.

They were never observed at the winter hut (Frederick Jackson Island), either in 1895 or 1896. During the journey south, they were seen for the first time south of Cape M'Clintock and Mary Elizabeth Island, in the early days of June; and on June 3rd (1896), a numerous colony of them was seen a few kilometres farther south at Cape Fisher, in 81° N. Lat. It is possible that this is their most northerly nesting-place on Franz Josef Land. Cape Fisher is a basalt cliff almost 900 feet high, rising perpendicularly out of the sea; and here there were thousands of *Uria lomvia* living, and flocks were incessantly flying to and from the open water, which was only a kilometre or two off. There seemed to have been open water right up to the

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[1] "Wir fanden jetzt alle Felswänder des Kronprinz Rudolphs Landes mit Tausenden von Alken, Tauchern und Teisten besetzt. Ungeheuere Schwärme erhoben sich, und alles Land, auf das die Sonne schien [April, 1874, 81° 44′ N. Lat.], belebte das leidenschaftlichen Schwirme der beginnenden Brutzeit". Payer, 'Oesterreich-Ungarische Nordpol-Expedition 1872—1874', p. 325. Vienna, 1876.

[2] Payer, 'New Lands within the Arctic Circle', vol. II, p. 154. London, 1876. The right translation should evidently have been: "guillemots, little auks, and dovekies", *cf. ibid.* vol. II, p. 91.

cliff only a short time before, and this is evidently the rule here all the year round.

South of Cape Fisher, there seem to be several nesting-places, and these guillomots were observed along the coast wherever there was open water. They appeared, for instance, to be breeding at Cape Richthofen (80° 50′ N. Lat.); and some kilometres north of this promontory, a cliff was seen which also seemed to be inhabited by them. Along the south coast of Northbrook Island, great numbers of them were seen, and they were here much more numerous than *Alle*.

Lastly they were found (as already mentioned by Clarke and Bruce) in great numbers, breeding, at Cape Flora and other promontories on Northbrook Island and the adjacent islands; and during the travellers' stay at Elmwood during the latter part of June and beginning of July, 1896, quantities of eggs were collected by Jackson, and many birds shot for food.[1]

A few were also seen in the ice in the northern part of the Barents Sea, on August 8th, 1896, apparently belonging to the brooding tribe on Franz Josef Land.

Alle alle, (Lin.) 1766.

This species was one of the first that appeared far north in the ice during the sledge-journey, and it soon became one of the most numerous there.

The first was seen on June 9th (1895), when there were a good many lanes in the ice (about 82° 20′ N. Lat.). After the 18th June, when the west wind began to blow, and open the ice somewhat, they suddenly appeared in great numbers. On June 19th and 20th, great numbers were seen in the lanes, where they flew to and fro in search of food, diving just outside the tent-door.

From that time they appeared almost daily, always coming from the south, and returning towards the south. They generally kept in pairs, or three or four together, and used to lie in the lanes from six to eight hours a day, but were afterwards invisible. Their visits also depended upon the

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[1] Clarke and Bruce, The Ibis, April, 1898, p. 271.

condition of the ice. If the ice were open, they were numerous; if it were closed up, none were seen.

Off Hvidtenland they were not seen, on the whole, in very great numbers; and on these glacier-covered islands, there are no places for a colony. The first colony seen during the journey, was on the east and north sides of Torup Island (Coburg Islands), on August 16th. They were here nesting on the cliffs, above *Larus glaucus*. The number of birds in this colony amounted to thousands (81° 33′ N. Lat.).

This is certainly not the most northerly colony on Franz Josef Land. Nansen saw many basaltic cliffs on Crown Prince Rudolf Land, which would evidently afford good nesting-places for them, *e. g.* Cape Brorok. As referred to above (p. 38), Payer mentions in his report of the Austrio-Hungarian North Pole Expedition of 1872—1874, that in April, 1873, he found thousands of "Alken, Tauchern und Teisten" on the cliffs in Crown Prince Rudolf Land, in 81° 44′ N. Lat. ('Cape Auk')[1]. It is probable that this means principally *Alle alle* (probably also a small number of *Cepphus mandti*).

During the journey south along the north-west coast of Franz Josef Land, colonies were found established on almost every cliff that could afford them a nesting-place. They were found, for instance (besides on Torup Island), in great numbers on Cape Felder, where, on August 16th, they had young ones scarcely ready to fly; on Cape Helland on August 18th (81° 24′ N. Lat.), and in several places on Frederick Jackson Island, Cape Hugh Mill, the cliffs above, west, and east of the winter hut, on Steinen, west of the winter hut, and in the fjord farther in.

Next they were found (on May 23rd, 1896) on Cape M'Clintock, and (on June 6th, 1896) on Cape Richthofen. Cape Fisher, on the other hand, appears to be inhabited exclusively, or almost exclusively, by *Uria lomvia* (and *Fulmarus glacialis*).

South of the last-named promontory, the birds did not seem to occur in such large numbers; but, as already mentioned by Clarke and Bruce[2], they have settlements on Cape Flora and in several places in the southernmost parts of the group of islands.

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[1] Payer, 'Die österreich-ungarische Nordpol-Expedition 1872—1874', p. 325. Vienna, 1876.
[2] The Ibis, 1898, p. 272.

Alle alle seems, on the whole, to reign almost supreme among the *Alcidæ* on the north-west coast of Franz Josef Land, but always together with a minority of *C. mandti*; and only south of Cape Fisher, in 81° N. Lat., did *Uria lomvia* become the more numerous of the two.

At the winter hut, they were seen for the last time in the autumn (1895), towards the end of September. After the winter, they had already made their appearance by February 25th (1896), and must thus have spent the winter not very far away to the south. In the afternoon of the above-mentioned day, first a flock, about ten in number, was seen coming from the inner part of the fjord, and flying close past the hut, along the cliffs westwards; and a little later, a flock of four came the same way. Later in the afternoon their cheerful twittering was heard again, and then they were evidently perched on the cliffs above the hut, but it was too dark to see them. The sea was still covered with ice as far as the eye could see, and the sun could not appear above the horizon until the following day. They may possibly have been on the cliff previously, without having been observed on account of the darkness.

In the beginning of March they were seen very frequently. At some part of the day, the cliff above the hut was full of them; at other times they were totally absent, having evidently gone out to the sea. Their flight to and from the cliff above the hut, and the nest-rocks farther up the fjord, seemed to be very regular in the beginning of March. Immense flocks of thousands upon thousands of them came often flying in early in the morning from the sea across the ice-covered fjord to their resting-places (nest-rocks) on the cliffs, although the distance from the open sea to the hut was at least forty kilometres, and much more to the cliffs farther up the fjords. In the afternoon, at about 2 o'clock, they would once more set off toward the sea, the flight often lasting until late in the afternoon. They often flew very high, when the air would be quite filled with the flying legions. And they seemed to steer direct west, or on some days more north-west, where the dark sky indicated that there was open sea in the distance, which was possibly seen by them from their heights; they always seemed to have a distinct object, for which they made a straight course without any uncertainty.

They fly with great velocity, and the flocks close together. They make a strange whistling or vibrating sound when they fly, probably with their wings, recalling somewhat the sound of a flying snipe in the spring. This sound is so loud, that a flock could be easily heard, even when it was so high that it was difficult to see it.

Nansen has the following remarks about them in his diary:

March 4th, at 10 A. M. The cliff above the hut was full of little auks. and they flew about, twittering, from one projecting ledge to another, and also sat on the surface of the glacier. When we again came out between 3 and 6 P. M., they had disappeared.

March 5th and 6th. No little auks were seen while the travellers were out taking a walk in the afternoon.

March 7th, at about 7 P. M. Two flocks of little auks were seen flying up the fjord, and two flocks were flying out towards the sea, or northward along the coast.

March 8th, at 9 A. M. Ten flocks of little auks were seen by Johansen while he was out, flying in from the sea.

March 10th, at 6 A. M. Johansen saw what he estimated to be millions of little auks flying up the fjord from the sea. There was an incessant succession of immense flocks, one after another. "At 2 P. M. when we came out, there was an incessant flight of flock after flock out towards the sea, and this continued until late in the afternoon. Two black guillemots were also seen."

March 11th, 3 to 7 P. M. No birds were observed.

March 12th, 10 A. M. The cliff above the hut full of little auks; many flocks were seen passing on their way out towards the sea.

March 16th, 4 to 7 P. M. The cliff above the hut full of little auks.

Farther on in the spring, after the middle of March, the flight was less regular. They would then appear later in the day, and stay longer on the cliffs. Their nesting-time had not commenced when Nansen and Johansen left the winter hut on May 19th (1896).

The arctic foxes, which had paid daily visits to the hut all through the winter, and had had the audacity to make regular excursions to the roof to take the meat that was stored there, and from which they could hardly be

driven away, entirely disappeared when the little auks began to make their appearance on the cliffs.

On August 9th, the travellers saw the last of these birds. They were six in number, sitting on the last ice-floe passed, on the edge of the open water in the Barents Sea, south of Franz Josef Land.

IV.

THE LAST TWO SUMMERS IN THE ICE. NORTH-EAST OF FRANZ JOSEF LAND, 1895; NORTH OF SPITSBERGEN, 1896.

Plectrophenax nivalis, (Lin.) 1766.

During the summer of 1895, north-east of Franz Josef Land, the 'Fram' was visited by snow-buntings only four times.

The first appeared on May 22nd. It fluttered around the ship, twittering, for some time, and then flew off towards the north (84° 40′ N. Lat).

On June 10th, two more appeared near the ship, and on the day following, one. On June 19th, one more was seen, but after that, no others were seen that year. The most northerly specimen was the one observed on June 11th (84° 45′ N. Lat., 83° 5′ E. Long.).

In the summer of 1896, when the ship was north of Spitsbergen, the first bird of the year, a snow-bunting, was seen on April 25th. It settled upon the deck, was fed with meal, and became quite tame. It remained there a few days, disappearing on April 28th (84° 17′ N. Lat.).

On May 3rd, another of these birds settled near the ship. On the 6th, two came; but the dogs would not leave them alone, and they soon took their departure.

On May 25th, three made their appearance at one time. These three remained near the ship until far on into June, finding their food in the refuse-heaps. They were also often seen by the water-hole, where they appeared to be looking for crustaceans.

Two of the three specimens were males, the third a female. The males soon began to fight with one another, and on June 9th, one departed. The two birds left behind appeared to pair, and began to show signs of wishing to build; they chased one another as if in play, and were seen flying off with bits of straw, and scraps of wood-wool in their beaks. But as the ship shortly after began to move southwards, and the snow-buntings remained by the refuse-heaps, there was no opportunity of ascertaining whether any nest was actually built. The ship, at that time, was in about 83° N. Lat., or about 230 kilometres from the northern point of Spitsbergen.

Aegialitis hiaticula, (Lin.) 1766.

On June 13th, 1896, two specimens of this species were shot north of Spitsbergen, in 82° 59′ N. Lat. Both specimens are now preserved (the one as a skeleton) in the Christiania Museum.

a. Wing, 120 mm.; tail, 60 mm.

b. Wing, 124 mm.; tail, 56 mm.

They were both in usual summer plumage.

The appearance of this species in the ice far above Spitsbergen, is not without interest, as hitherto only a few scattered individuals have been observed upon these islands, and there is no certain knowledge of its having been found breeding there.

Crymophilus fulicarius, (Lin.) 1766.

Was observed two or three times during the summer of 1896, in the ice to the north of Spitsbergen.

On June 10th, two specimens were shot (by Juell) in one shot, in 83° 1′ N. Lat., thus about 250 kilometres north of Spitsbergen. The weather that day was calm and clear, and the wind had been NW for some days.

On the day following, four more small waders were seen, supposed to have belonged to this species The ship was then a few kilometres farther south.[1]

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[1] On June 11th, a wader was seen (by Mogstad) flying past the ship. It resembled the above-named species, but seemed to be considerably larger.

The two specimens shot were both preserved, and are now in the Zoological Museum in Christiania. They appear to have been male and female, and to have been a pair. The one that is probably the female, is larger and more brightly coloured than the other; the whole of the under surface of the body is bright red, without any lighter feathers. The upper surface of the head is of a uniform black, the sides of the head and the broad band towards the nape pure white.

The colours of the male are not so pure. The feathers on the middle of the belly are whitish, the crown has red-edged feathers, and the eye region is of a dull white colour.

a. Wing, 136 mm.; tail, 67 mm.

b. Wing, 130 mm.; tail, 63 mm.

Somateria mollissima, (Lin.) 1766.

On June 19th, 1896, two eider ducks were shot north of Spitsbergen (82° 55′ N. Lat.). They were male and female; they came flying up from the south, and settled in one of the channels in the ice. The ice that day was pretty closely packed. Both specimens were old and full-coloured.

No other specimens were seen in the ice.

Sterna macrura, Naum. 1819.

A single tern was observed during the summer of 1895 (June 21st), when the 'Fram' was in 84° 32′ N. Lat., 80° 30′ E. Long. It came so close to the ship, that Sverdrup was able to send a shot after it. As previously mentioned (p. 25), Nansen saw a pair of these birds in the beginning of August of the same year, somewhat farther south (north of Hvidtenland).

Similarly, north of Spitsbergen, a single specimen was seen on June 9th, 1896, in 83° 1′ N. Lat. Neither this species, nor *Larus glaucus*, seemed to frequent the open channels north of these large islands where they breed.

Larus glaucus, Fabr. 1780.

This species was not observed with certainty from the 'Fram' during the summer of 1895, north-east of Franz Josef Land. On June 12th, a large

gull was seen and shot at by one of the crew; but it could not be recognised with certainty (84° 48′ N. Lat.).

Nor did this species appear in any great numbers during the summer of 1896, in the ice north of Spitsbergen; single specimens were observed only two or three times. One was observed on May 13th, flying over the channels (83° 51′ N. Lat.). This and a pair of *Pagophila eburnea* were the first sea-birds that appeared that year.

A single specimen was seen on June 9th, and lastly one on July 31st, when the 'Fram' had already begun to approach the northern shores of Spitsbergen.

? Larus marinus, Lin. 1766.

On June 30th, 1895, in the ice north-east of Franz Josef Land, a black-backed gull was seen by two of the crew when on a hunting expedition. Mogstad was near enough to it to send a shot after it, and in doing so, distinctly saw its black back. In his journal, he calls it "Svartbag" (the Norwegian name for *Larus marinus*).

After the shot had been fired, the bird settled by a little channel to the west of the ship; but when, shortly after, a fulmar was shot from the same spot, the gull flew away. This was in 84° 35′ N. Lat., 75° 0′ E. Long.

Rissa tridactyla, (Lin.) 1766.

During the summer of 1895, only a few solitary kittiwakes were observed in the ice in the middle of June, north-east of Franz Josef Land. The first was seen on June 10th. On June 16th, two more were seen, and one of them was shot from the deck by Dr. Blessing. A fulmar was shot on the same day (84° 52′ N. Lat.). This is the most northerly latitude in which birds are hitherto known to have been shot.

Lastly, a single specimen was seen on June 19th.

The contents of the stomach in those specimens where they were examined, were, as a rule, crustaceans. In one individual, a specimen of a *Gadus saida* was found, about 70 mm. in length.[1]

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[1] *Gadus saida,* Lep. 1773. This species was only once observed in the ice itself during the expedition. On July 16th, 1895, in 84° 42′ N. Lat., Dr. Blessing, when on an excursion

Above Spitsbergen they were more numerous, though few in comparison with the ivory gull.

On May 26th, small flocks of six were seen two or three times hovering over the channels in the ice, the first observed that year. On May 30th, some specimens were again seen (83° 50′ N. Lat.).

After this they were seen frequently, and several specimens, all old and full-coloured, were shot.

Rhodostethia rosea, (Macg.) 1824.

The roseate gull was also seen from the 'Fram' in the summer of 1895, but in a higher latitude than Nansen and Johansen had found it (p. 26).

The first specimen was observed by Mogstad on July 18th, when the ship was in 84° 41′ N. Lat., 74° 30′ E. Long. On July 19th, another was seen by Mogstad and Sverdrup together, when they were out seal-hunting. The bird flew within 15 or 20 paces of them. Both specimens were fully coloured, and all the characteristic marks of the species were observed.

The next specimen was seen on July 22nd, by Scott-Hansen (84° 36′ N. Lat.); and lastly, single specimens were seen on the 4th, 9th and 11th August, one of them being shot at by Mogstad, but without success. The last specimen was seen by Blessing during a *ski*-expedition on August 16th (84° 27′).

Thus altogether seven specimens were observed that year between the middle of July and the middle of August, all fully coloured. Young birds were not observed with certainty.

The species was not observed north of Spitsbergen during the last summer (1896).

Xema sabini, (Sab.) 1818.

A gull with a black head was observed by Mogstad one day in July, 1896, in about 83° N. Lat., when the 'Fram', with steam up, had begun to

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to collect *algæ*, saw a specimen of a *Gadus* lying motionless in front of a projecting piece of ice in a channel; but it disappeared under the ice like lightning when he attempted to come near it. Its length was about 120 mm. No other fish has hitherto been observed so far north as this. This species is known to Norwegian sealers by the name of "Is-Mort", Mort being the general name for the young of various species of *Gadus*.

force her way out of the ice above Spitsbergen; but in the hard work of those days, no note was made of the date. The observation was communicated to others of the crew, and its authenticity is beyond doubt.

Pagophila eburnea, (Phipps) 1774.

This species was seen almost up to 85° N. Lat.

On May 14th, 1895, in 84° 38′, a bird, supposed to have been a *P. eburnea,* was seen flying from the north-north-east towards the south. This was the first bird that appeared in the spring of that year. The first undoubted specimen was seen on the 2nd June (in the same latitude) by Scott-Hansen. In the course of the summer they were seen singly several times, and altogether three specimens were shot in the beginning of July. But they did not appear to frequent this part of the ice in any great numbers.

The last specimens, two together, were noted on the 10th July.

In the summer of 1896, north of Spitsbergen, the first two specimens were seen flying above the ice-channels on May 13th (83° 50′ N. Lat.).

By degrees they became exceedingly numerous, and after the middle of June, they were seen daily, sometimes in small flocks. They were always to be found at the refuse-heaps, or by the bears' carcases, and a number of specimens were shot in the course of the summer; in and about the beginning of August alone, forty-one were shot, fourteen of them upon one day (July 29).

? Stercorarius longicaudus, (Vieill.) 1819.

During the summer of 1895, skuas were only seen in the ice to the north-east of Franz Josef Land, on one occasion, namely, the 4th September. On that day four or five specimens were observed, and one of them was shot at, but without result (84° 47′ N. Lat., 77° 17′ E. Long.). Scott-Hansen, who came fairly close to them, took them to be *St. longicaudus,* on account of the "very long tail-feathers".

These specimens were the last birds observed that year.

North of Spitsbergen, the species was not observed with certainty. On June 10th, Scott-Hansen saw in the distance two skuas flying over the ship in a north-north-westerly direction, and thought they must belong to one of the smaller species.

Stercorarius pomatorhinus, (Temm.) 1815.

This species was observed repeatedly in the middle of June, 1896, in the ice north of Spitsbergen, as a rule in small flocks of from three to six birds, but once in a large flock of nearly twenty. Two specimens were shot, and minutely described in Dr. Blessing's journal.

As early as June 13th, a skua was seen that had "a forked tail", and was probably a young bird of this species.

On June 19th (82° 57′ N. Lat.), four appeared together, and one of them was shot by Mogstad. The length of the wing is stated by Dr. Blessing to have been 340 mm.; the middle tail-feathers extended 60 mm. beyond the others.

On June 21st (82° 53′ N. Lat.), a straggling flock of about sixteen birds, all of the same species, was seen, and one of them was shot by Capt. Sverdrup.

Both the specimens shot were old birds, and fully coloured.

It is, on the whole, surprising to find this species comparatively numerous in the ice far to the north of Spitsbergen. It has hitherto only been known as a sporadic visitant of Spitsbergen.

Fulmarus glacialis, (Lin.) 1766.

The first fulmar in 1895, north-east of Franz Josef Land, appeared on the 30th May. Subsequently they were seen now and again, singly or two together, but scarcely more than twenty specimens in all in the course of the summer. Six of these were shot, all in a latitude above 84° 30′ N. One of them was shot by Blessing on June 16th. Before it died, it vomited the contents of its stomach, which proved to be the jaws and portions of the body of a cephalopod (84° 52′ N. Lat.). In other specimens, only crustaceans were found.

The last *Fulmarus glacialis* of this year was seen on September 14th, and was the last bird observed that autumn. On that day, the 'Fram' was in 85° 5′ N. Lat., 79° 0′ E. Long., *and this is the highest latitude in which birds have ever been known to be observed.*

This specimen is thus spoken of in Sverdrup's journal:

"14th September, 1895. ..... Bentsen saa iaftes en Havhest, som kredsede om Skibet en liden Stund, og trak derpaa vestover, efter Raakene".[1]

Fulmars appeared in far greater numbers in the summer of 1896, in the ice north of Spitsbergen. The first was seen there on May 22nd (83° 45′ N. Lat.). They were afterwards seen all through the summer, singly or in small flocks, circling above the channels, and occasionally picking up little animals or refuse from the surface of the water. From the middle of June until the beginning of August, when the ship forced her way out of the ice, about seventy specimens were shot by the crew, fifteen of them in one day (July 16th; 83° 14′ N. Lat.). They were principally utilised as food for the dogs.

Cepphus mandti, (Licht.) 1822.

The Spitsbergen guillemot was one of the birds that was observed comparatively often during the summer of 1895, north-east of Franz Josef Land. They were generally seen, however, only singly or a few together; on the 29th May, four were observed at one time, and two of them were shot (84° 32′ N. Lat.). Altogether a dozen of this species were shot that summer, all in a latitude higher than 84° N. The ship was then at least 330 kilometres north-east of Franz Josef Land.

This guillemot, which (like the continental form, *Cepphus grylle*) finds its food principally among the littoral fish-species, thus leads here also, in these high northern latitudes, and at a distance of several hundred kilometres from the nearest mainland or island, a kind of littoral life in the channels, or among the floating pieces of ice; and it is probably *Gadus saida* that constitutes its principal food.

North of Spitsbergen, in the summer of 1896, the Spitsbergen guillemot was unusually numerous by the open channels, from latitude 84° N., southwards as far as the northern shores of Spitsbergen, this, and *Alle alle*, being the most numerous of all the species of birds that appeared in these latitudes. Sometimes as many as twenty of these guillemots might be brought down on one day, and almost one hundred and fifty were shot for the table. Dr.

[1] "Bentsen saw a fulmar this evening, which circled about the ship for a while, and then flew away towards the west, following the channels".

Blessing writes in his journal for June 12th (83° N. Lat.): "Bird-shooting goes on busily every day. Black guillemots and little auks are the birds most shot, both because there are most of them, and because they are the best for eating".

In order to learn which of the two sexes was most numerously represented in these legions, Dr. Blessing examined a number of specimens shot at the end of June and the beginning of July. It then appeared that out of forty individuals, twenty-six were males and fourteen females. In all the females, the ovaries were not fully developed, the eggs being no larger than little grains, and only in one specimen the size of small peas. The testes of the males were also quite small, and thus all the specimens were probably young and incapable of reproduction.

The first Spitsbergen guillemot of the year was observed as early as the 13th May, (in 83° 57′ N. Lat.), and on the 29th, a specimen was shot, being the first bird killed that year.

All the specimens observed were in their normal summer plumage.

Uria lomvia, (Pall.) 1811.

While *Cepphus mandti* and *Alle alle* occurred in great numbers in the open channels north of Spitsbergen in the summer of 1896, *Uria lomvia* and *Fratercula arctica* were comparatively rare there, only a few specimens of each of the last two species having been observed from the 'Fram'.

Of Brünnich's guillemot, for instance, scarcely more than a dozen specimens were seen altogether. The first was seen flying northwards past the ship, on June 19th (82° 55′ N. Lat.); and on June 23rd, the first specimen was shot (among the little auks occurring that day in great numbers). Finally, three more were shot on the 12th and 13th July (83° 11′ N. Lat.).

Fratercula arctica glacialis, (Leach) 1821.

A single specimen was observed above Spitsbergen, flying northwards along a channel, on July 12th, 1896 (83° 11′ N. Lat.). Mogstad writes in his journal, that for several days there had been few birds in the channel, but on the above-mentioned day a number of birds made their appearance, especially black guillemots and little auks, and a pair of Brünnich's guillemots were shot.

No other specimens were observed in the ice.

Alle alle, (Lin.) 1766.

This species was, on the whole, rarely observed during the time that the 'Fram' was drifting north-east of Franz Josef Land, in the summer of 1895; several specimens, however, were shot between June 21st and July 7th, all in a latitude between 84° 30′ and 84° 48′ N. Several were also observed in the channels, but the dogs always frightened them away.

Little auks, on the other hand, appeared in great numbers in the ice north of Spitsbergen, during the last summer. From the middle of June to the middle of July, 1896, while the 'Fram' was all the time moving in about 83° N. Lat., they were found daily in the channels, and at least two hundred were shot for the table. On one day alone — the 23rd June — twenty-nine were shot.

The first little auk appeared that year on May 28th (83° 56′ N. Lat.). They were most numerous on clear days, while during fog they were less plentiful.

The reason of the great difference in the number of birds north of Spitsbergen and north of Franz Josef Land, was doubtless that during the summer of 1895, the 'Fram' was drifting in closely-packed ice, where there were comparatively few open channels. In 1896, there was more or less water round the ship all the summer, and the temperature, on the whole, was higher.

Dr. Blessing also examined a number of little auks shot about the beginning of July, 1896, in order to learn the proportion of the two sexes. It then appeared that among forty birds, there were only ten females.

As the ship gradually approached Spitsbergen, the number of this species increased. Mogstad writes in his journal for August 6th (81° 34′ N. Lat.): "I saw from the crow's-nest today, a channel in the west, that was literally full of little auks; a number of them were sitting on the ice, and many were lying asleep on the water. In other places, I saw flock after flock flying northwards". On the 12th August, he writes: "A countless number of little auks. All day we have been steaming among great flocks of them, consisting chiefly of young birds. This means that we have not far to go before coming to open water".

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RHODOSTETHIA ROSEA (MACG) 1824.

YOUNG IN FIRST PLUMAGE.