

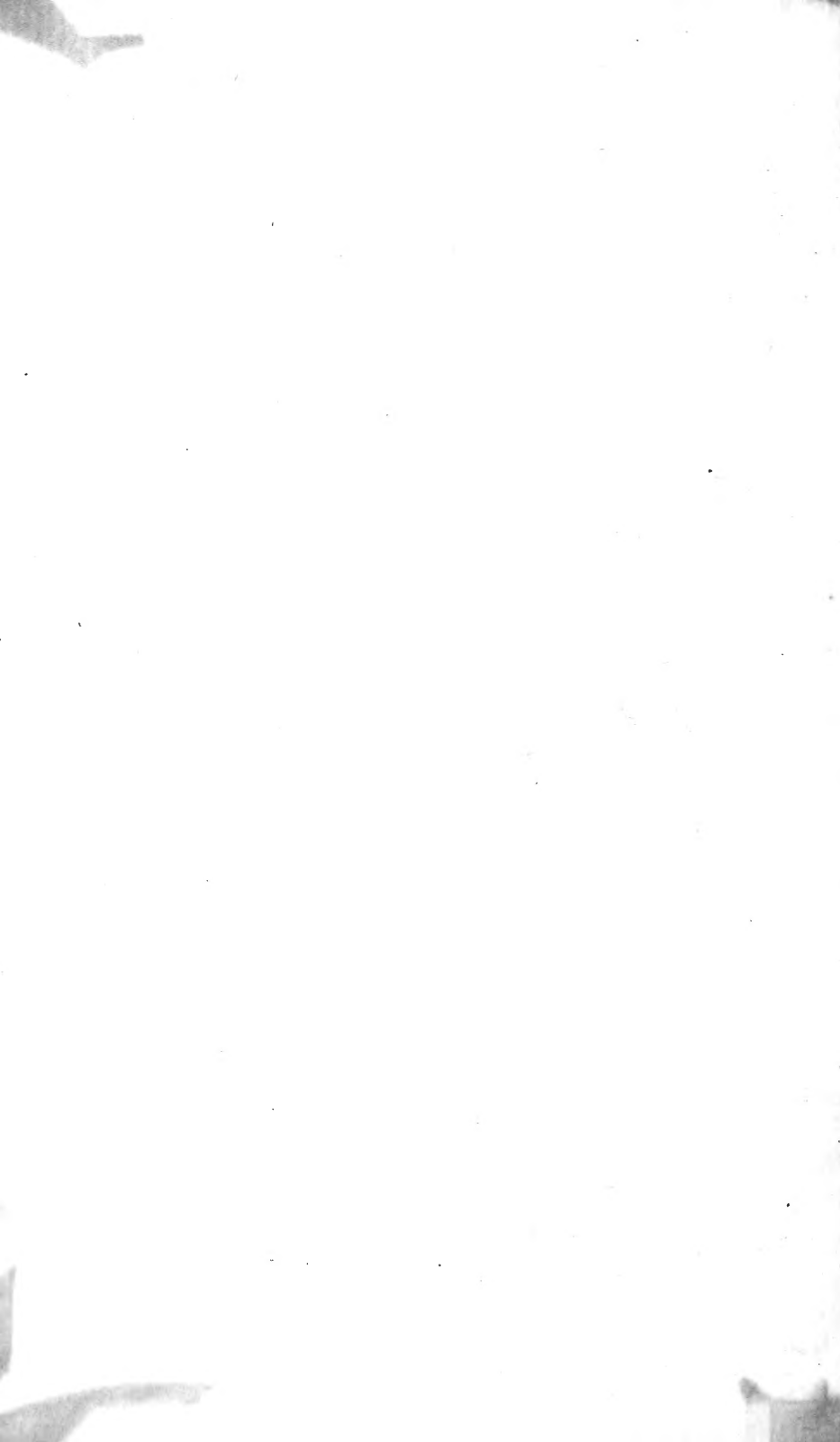
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Remarks

on

The Ornithology of Northern Norway

by

Robert Collett

With a Map

(From the Forhandl. Vidensk. Selsk. Christiania 1872)



Remarks on the Ornithology of Northern Norway

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Robert Collett.

With a Map.

Read at the Meeting of the Society on 20th Dec. 1872. (Printed in April 1873).

Each of the last three summers I have been enabled to prosecute a series of zoological researches in the northern and central portions of the Norwegian coast: in 1870, on the large islands off the Trondhjem Fjord, Hitteren, Frøyen, and others; in 1871, in the provinces of Namdalen and Nordland; in 1872, in West Finmark and the neighbourhood of Tromsø. The principal ornithological facts resulting from the first of these excursions having been already published,¹ the following pages will embrace my researches during the two last summers in the northern parts of the country.

To give a tolerably complete account of the avifauna of a region so characteristically situated and wide in extent as is the northern coast of Norway, the researches of years would hardly suffice. Therefore it is obvious, that what is here recorded, does by no means pretend to exhaust the subject. Nay, I am convinced from the observations I have made, that a rich harvest of facts may yet be gathered from further and more diligent researches in regions so attractive by their situation and general character.

My chief object in the present paper has been to compare and elucidate with regard to habits and geographical distribution the several species known as inhabiting the regions north of the Polar Circle in Norway. Observations from other localities on the North

¹ Ornithologiske Bemærkninger til Norges Fauna (Nyt Mag. f. Naturv. Vol. 18, p. 161).

Coast, in particular Nordland, will, however, be found subjoined, and I have likewise recorded such of the latest ornithological discoveries in the country as I held to be of a special interest.

As regards Finmark, the *eastern* portion of that Stift, or „Østfinmarken“ has been specially favoured, in having been made the subject of comparatively accurate researches, extending over a period of many years, — as witness the labours of Schrader,¹ Sommerfelt,² Nordvi. Bearing this in mind, I passed the whole of last summer in West Finmark and Tromsø Amt,³ provinces comparatively little known to ornithologists. The localities visited were chiefly the following: — In *Finmarken* Amt the tracts bordering on the Porsanger Fjord, the country round the North Cape, and the valley of Alten; in *Tromsø* Amt, the island of Tromsø, and the valley of the Maalselv. Store Tamsø, an island in the Porsanger Fjord, about 1 □ mile in extent, attracted my attention in a special degree: here I found a very considerable number of the Arctic *Grallae* and *Natatores*, for instance *Tringa minuta*, and *Branta leucopsis*. As in the valley of the Maalselv and in Alten, I observed not a few species of the central European fauna, which, owing to the influence of the Gulf Stream on the climate, are enabled to range to a latitude in Norway far exceeding their limits in the eastern interior portions of the European Continent: so also at Gjæsvær, a bird preserve and fishing locality west of the North Cape, I found several of the more easterly species beyond their extreme western range, as hitherto known.

The localities which I explored in the summer of 1871, were chiefly the tracts bordering on the Foldenfjord, and the southern portions of Helgeland.

The directors of the Bergen Museum kindly placed at my disposal the late Pastor Heltzen's MS. on the fauna and flora of Helgeland, belonging to that institution. In this voluminous work, which is brought down to the year 1842, all the species

¹ Journ. f. Ornith. 1853, p. 240.

² Öfv. Kgl. Vet. Akad. Förh. 1861, p. 67.

³ The most northern part of this „Amt“ is in latitude 70° 30'.

observed in Helgeland (Nordland) are accurately described and figured, the ornithological section being based on the earliest editions of Nilsson's fauna. In this work, which, however, is to be made use of with considerable reservation, I have found recorded as occurring in Nordland, several species that had not previously been observed in such high latitudes.

Finally will be found recorded various observations made in other parts of the country, in particular the coast region, and chiefly so far as they bear upon those relating to species occurring in the northern districts. From the researches of late years two new species, *Cygnus olor* and *Chaulelasmus strepera*, which had not previously been observed within the confines of the country, are now introduced into our fauna.¹

The total number of species *actually* belonging to the Norwegian fauna is thus at the present moment 250. Of these, 174 have been observed within the Polar Circle; of this number 160 having ranged as far north as within the limits of Tromsø Amt: and finally 150 species belong to the fauna of Finmark proper.

A. Incessores, Vig.

1. Passeres, Lin. Sundev.

Turdus viscivorus, Lin.

North of Bodø, near which town it was found breeding (Godman, Ibis 1861), it has been observed by Professor Sundevall only at Alten (70°).

Turdus iliacus, Lin.

Common in all the birch woods of West Finmark. On the island of Tromsø and in the valley of the Maalselv, the nests found between 16th and 20th June contained young in various stages of growth, from nestlings just hatched to half grown birds. In a

¹ Vide „Norges Fugle og deres geographiske Udbredelse i Landet“ in Forh. i Vid. Selsk. 1868, p. 116—193.

nest near Bosekop, in Alten, there were fresh eggs so late as 14th July 1872.

Turdus musicus, Lin.

Was tolerably abundant in the valley of the Maalselv, near Tromsø, in June 1872, its occurrence being not exclusively confined to conifer woods; rarer in Alten (70°), the most northern point at which perhaps, it occurs. As a breeding bird it is highly improbable that on the southern fells it ever passes beyond the limits of the fir region; in the summer of 1871, it was met with breeding at Maristuen, on the Fillefjeld, about 2800' above the level of the sea: hence its geographical distribution in Norway coalesces with that of the *Pinus sylvestris*; it affects, however, invariably spruce woods.

Turdus pilaris, Lin.

Exceedingly numerous in the birch woods of Finmark, yet in no locality in colonies so large as on the south-western coast. On Tromsøen, the nests, which are built not infrequently on dwelling-houses, contained young 16th June 1872; in Alten, adults of the year and fresh eggs were found at one and the same time. As the autumn advances, they journey southward, few individuals passing the winter in Finmark, a fact sufficiently explained by the nature of their food (berries of *Sorbus aucuparia*).

This species would appear to count a greater number of varieties than any other Norwegian bird, and several of such specimens are preserved in the museum of the university. The last two, a speckled white example, (November 1871), and a pale yellow albino (January 1872), were both killed near Christiania.

Turdus merula, Lin.

Occurs tolerably common along the inner shores of the Trondhjemsfjord (64°); I observed it at Namsos, June 20th 1871. Godman found it breeding near Bodø, the most northern known limit of its distribution.

Turdus torquatus, Lin.

Common along the whole coastal line, as far north as Lofoten. Not very numerous in West Finmark; the species here preferring the islands, where it has been found as far north as Fuglø (70° 20').

In East Finmark, it is seldom met with and only during the brief period of migration.

The notes and nesting habits of this bird have been variously described. The 10th June 1872, I lighted on several pair breeding in immediate proximity to one another (among *T. pilaris*) at Hjerkinhø (3100'), on the Dovre. The males mounted into the air like on *Anthus*, warbling in their ascent a melodious strain, which, though mellow and varied, was not loud, and very unlike the dismal call-note heard at other times. A nest, built upon the bare ground beneath a spreading juniper bush, contained 5 eggs, almost fresh.

Cinclus aquaticus, Lin.

Not very numerous in West Finmark, where, as in East Finmark, it occurs in the inland tracts. At the approach of winter, it moves towards the coast, and at that season of the year may not infrequently be met with on the island of Tromsø.

Regulus cristatus, Koch.

As a breeding bird, scarcely known north of Salten,¹ within the Polar Circle (67°). The correctness of Professor Rathke's statement, which makes it occur at the North Cape,² has been previously questioned by Sundevall; indeed Rathke's assumption must rest solely on the presence of stray individuals, there being no vestige of spruce growth here. In East Finmark, according to Nordvi, flights of these birds were observed repeatedly at Vadsø, April 12th 1853, and the following days, and individuals were even taken alive in the hand.

On the 20th May 1872, Mr. Landmark discovered a nest in Smaalehnene, containing 11 eggs, which had been sat upon for about 48 hours. (Length $13\frac{5}{10}$ — $14\frac{1}{10}$ mm, breadth $10\frac{6}{10}$ — $10\frac{8}{10}$ mm).

The nest being attached to the pendent twigs of a pine tree, some 30 feet from the ground, it was a matter of the greatest difficulty to sight it even at the distance of half a yard. The diameter, outside, was 90mm, inside, only 35mm. Height of nest

¹ In „Norges Fugle“ etc. (Forh. Vid.-Selsk. 1868, p. 121). „Alten“ is erroneously mentioned; hitherto it has not been found there, but may possibly occur.

² At first recorded by Rasch in „Nyt Mag. f. Naturv.“ B. 1, p. 370.

75mm. It was constructed principally of fine moss and lichens, closely interwrought with the strong silky threads which certain species of *Araneidae* spin round their eggs. Amongst the other materials were thin, dry pine twigs, and here and there a tuft of the down of *Cirsium*. The inside was thickly lined with the feathers of small birds, amongst which those of *Fringilla spinus* could be readily distinguished.

Ruticilla phoenicurus, Lin.

Numerous in Alten, near Bosekop, and on Tromsø in the months of June and July 1872; it is likewise of frequent occurrence in East Finmark, and has been found breeding near Renø (70° 20'). At Salsvand, north of Namsos, I found 23rd June 1871 a nest with 8 eggs, at a distance of less than 80 yards from a nest, then occupied, of the *Haliaëtos albicilla*.

A nest taken from the hollow trunk of a birch tree on 9th June 1872 was constructed chiefly of the hair of *Myodes lemmus*, and lined with the feathers of *Lagopus albus*.

Cyanecula succica, Lin.

Common in birch undergrowth in Finmark and on Tromsø; in West Finmark, it was most abundant along the shores of the Porsangerfjord and in Alten. From the middle of July full grown birds of the year were to be seen almost everywhere.

On the southern fells this species would seem to be steadily increasing from year to year. Both on the Dovre and Fillefjeld, and their ramifications, it is very abundant in wooded and willowed marshes; at the latter end of July 1872, this species with their full grown young struck me as being the most numerous of all the small birds in the wide marshy tract round Fokstuen on the Dovrefjeld, a locality in which nearly the whole of our alpine fauna is found represented. At the same time individuals of this species were occasionally seen in the sub-alpine districts of Gudbrandsdalen; it is by no means however probable, that the bird ever breeds here; it merely repairs from the adjacent fells at the close of the breeding season. In the lowlands they are rarely observed, and only on their migratory passage,

which may, perhaps, be partly accounted for by their shy and cautious habits. But in the vicinity of Christiania, where they have been more sought after, several examples have been procured of late years; two males, for instance, were killed on the 18th May 1871.

In the breeding season the males are, as a rule, anything but shy; they perch upon the tallest willows and sing their ever changing song, variations being constantly introduced. The azure throat, invariably with a centre spot of bay (only this form is known in Norway), render it a highly conspicuous bird, easily recognised at a distance. In both sexes the alarm note is very similar to that of *Saxicola*. The 10th June 1872, I found on the Dovre several nests, some of which contained incubated eggs; all of the nests were underneath willow bushes, and were constructed exclusively of the finest grass (*Poa*).

A very peculiar coloration marked the plumage of a female, shot on the Dovre, July 13th 1871. In this specimen the chin was blue blended with whitish; the breast lightish brown, on the sides bordered with a black band, spotted with white. Below the breast there was a blue stripe margined with red. Though not a sterile female (the ovarium contained eggs the size of a pea) this individual was very like a young male. On examining the stomach it was found to contain seeds and a *Clausilia*, exclusive of insects. In the stomachs of examples (young birds and adults) procured in Finmark were found only insects (*Coleoptera*, *Tipulidæ*), and their larvæ.

The size of individuals varies in a considerable degree; I have measured old males with a total length of 148 $\frac{1}{2}$, 152, 155, and 160 mm.

Erithacus rubecula, Lin.

Namdalen in June 1871; further north it occurs here and there in Nordland, extending into the Polar Circle.

Saxicola oenanthe, Lin.

Common along the whole coast-line. In Finmark it was numerous both on the fishing-grounds, whither it resorts in search of food among the fish drying on the „Hjelder“ (a kind of pole, on which the fish is dried), and high up among the snow patches on the desolate plateaus of the fells.

Praticola rubetra, Lin.

This species, which had not previously been observed within the Arctic Circle, I found not uncommon in the valley of the Maalselv, near Tromsø; a nest found here 18th June 1872 contained incubated eggs. Possibly the species occurs in Alten too.

Sylvia atricapilla, Lin.

On the southern fells it breeds regularly in the alpine birch woods; thus it was shot by Messrs Brown and Alston on the Fillefjeld at an altitude of 3800' above the level of the sea, in June 1871. In July 1871 and 1872 I observed it at Drivdalen, on the Dovre.

Sylvia hortensis, Gmel. *frugivora*.

Common in June 1872 in several localities along the valley of the Maalselv, near Tromsø (69° 20'). In Finmark, it has not been observed.

Sylvia curruca, Lath.

In a vertical direction, this species is chiefly confined to the lowlands; it is however met with here and there resident in the young conifer woods in the subalpine parts of the fell-sides. At Rusten, in Gudbrandsdalen, for instance, it is common; the 10th June 1872, I found a pair breeding in the willows at Hjerkin (20° 70'), on the Dovre. It has not been observed beyond 65° (Nordland).

Phylloscopus trochilus, Lath.

Occurs everywhere in Finmark; I even found it inhabiting the sparsely scattered growth of stunted birch bushes at the northern extremity of Magerø, close to the North Cape. In spots utterly destitute of vegetation it does not occur.

In the valley of the Maalselv, near Tromsø, a nest of this bird, lined with the feathers of an *Anas*, contained 6 fresh eggs June 18th 1872.

Phylloscopus rufa, Lath.

Abundant throughout Nordre Trondhjems Amt; in the month of June 1871 I found it as far north as the Bindalsfjord, in Helgeland (65° 10'), the most northern locality in which this species has hitherto been observed.

Hypolais icterina, Desm.

Namdalen, in Nordre Trondhjems Amt, June and July 1871.

In Nordland it occurs here and there up to the Arctic Circle (Bodø, Godman, 1857).

Calamodus schoenobænus, Lin.

The distribution of this species is peculiar. Occurring in some localities in the extreme north of the country, it has never, to a certainty, been shown to breed in the southern parts, a stray individual only having been killed near Christiania, in the spring of 1849.

North of the Arctic Circle, on the other hand, it appears to be common enough in most favourable localities, viz. where there is a due mixture of birch and willow growth on a soil more or less humid.

On Tromsøen (69° 40'), where it had been previously observed by Lilljeborg and Heuglin,¹ I found it in the summer of 1872 habiting the south and west of the island in considerable numbers. Whilst the female was sitting, the male bird sang incessantly from the top of the matted shrubs, its tones increasing in intensity as you neared it or its nest, and often it could with difficulty be forced to quit the spot. It would ascend into the air like an *Anthus*, and again descend with outstretched, quivering wings, alighting on the top of some neighbouring tree. Its peculiar and piercing song was mingled with the notes of other birds, among which could be plainly distinguished the call-note of the *Fringilla linaria* and the *Motacilla flava*, everywhere so abundant here.

The 21st July the young birds were fledged, but not full grown. The mother scurried off with her brood through the undergrowth; but they were never seen to leave the trees or bushes, and make for the tall grass. In the stomachs of the individuals shot were found *Diptera* and *Coleoptera*.

I also observed it in several places and in considerable numbers in the valley of the Maalselv, as well as on Tromsøen, but did not

¹ In stating that *Calamoh. phragmitis* is „der gewöhnlichste Sänger der Insel“ (Journal für Ornithologie 1871, p. 12), Heuglin surely means to imply in particular localities, for here as elsewhere, *Phyllos. trochilus* occurs in by far the greatest numbers.

meet with it anywhere in Finmark proper; it has however been found there in the inland tracts, at Kautokeino, for instance.

A couple of male birds, killed 18th June on Tromsø, measured as follows: Total length 142—142½ mm; wings 66, tail 52—51½, tarsus 20—21, middle toe 9 + 4½ mm.

Lanius excubitor, Lin.

Extends as a breeding species up to the Russian frontier, but occurs most frequently in the alpine valleys between the Dovrefjeld and the Trondhjemsfjord. I observed here, 30th July 1871, an individual in chase of an *Emberiza schoeniclus*.

In the stomachs of individuals taken in the fall of the year in thrush-snares near Christiania, I have found large insects (wasps), besides small birds.

Ficedula atricapilla, Lin.

Several pair found breeding in the valley of the Maalselv, near Tromsø (69° 40'), June 1872. It has also been found in East Finmark (Sommerfelt).

Muscicapa grisola, Lin.

Common in the valley of the Maalselv, near Tromsø; on the fell-sides, it was met with even in the uppermost birch woods; a nest taken here contained fresh eggs 20th June 1872. In Alten, it has been observed by Sundevall; in East Finmark, by several naturalists.

Troglodytes parvulus, Koch.

In July 1871, I met with this species at Bindalen, in the south of Helgeland, which appears to be the usual northern limit of its distribution. An individual was taken at Alstahoug (66°) in November 1842 (Heltzen).

Parus major, Lin.

North of the Trondhjemsfjord, it is tolerably abundant up to the boundary of Helgeland, where I found it breeding in Yttre Namdalen, June 1871. In Nordland, it rarely occurs, but has been met with as far north as Salten (67°).

On the southern fells, it does not as a rule breed beyond the fir region; in the summer of 1871, a pair were found resident at

Maristuen, on the Fillefjeld (2800'); in the winter-time, it also seeks the neighbourhood of inhabited spots on the loftiest fells (Nystuen, 3130').

Parus coeruleus, Lin.

The statement of Sommerfelt senr. in „Topografisk Journal for Norge“, Part 24, to the effect, that this species occurs in Finmark, would seem to be erroneous. It is a scarce bird not farther north than the Trondhjemsfjord, and may not yet have been observed in Nordland. On Inderøen (64°), I found a nest of young birds, 18th June 1871, in the hollow stem of a *Salix capraea*.

Parus ater, Lin.

Individuals have been found once or twice in East Finmark by Nordvi¹; but this bird does not customarily range beyond Nordland.

Parus borealis, Longch.

Supplants in the north of the country the following and is the commonest species of the genus north of the Arctic Circle; it is a tolerably well-known bird in most of the woody districts of Finmark, at least in West Finmark as far north as Alten. A nest was found on the 20th June in the valley of the Maalselv; it was built in a dead birch stump, which the bird had hollowed out for the purpose, the materials of the nest consisting of fine bark strips. In its nidification, the species is thus constantly distinguished from *Parus palustris*, which selects some natural cavity in the tree, and constructs its nest of moss, straws, and feathers.²

Parus palustris, Lin.

Occurs north of the Trondhjemsfjord, but in limited numbers only; on Inderøen (64°), I found a nest of young 18th June 1871. This is the most northerly locality in which its occurrence has been *satisfactorily* established. All statements concerning the species in the northern parts of the country, would seem to refer to the preceding species; for in no case are both mentioned together.

Parus cinctus, Bodd.

Distributed over most of the wooded tracts of Finmark, chiefly

¹ Öfv. Kgl. Vet. Akad. Förh. 1861, p. 90.

² Vide Dresser and Sharpe, „A History of the Birds of Europe“, Part XI.

in the fir-forests; hence, in West Finmark, it is most abundant in Alten, but has not been observed in the birch woods along the Porsangerfjord or in the neighbourhood of Hammerfest. It affects the birch woods mostly in winter, and has been repeatedly shot on Tromsøen, where there is little probability that it breeds. It has a similar distribution in the alpine districts of the south. Here it abounds in the uppermost fir-forests of the Dovre and Langfjeld and their ramifications, straying but rarely into the adjacent birch woods, and it does not occur regularly beyond the fir region of the fells.

An individual shot at Bosekop, in Alten, July 14th 1872, measured as follows. Total length 133 mm; wing 65, tail 63, tarsus 18, middle toe $7\frac{1}{2} + 5$ mm. The call-note of this bird resembles that of the *Parus borealis*, but each tone is briefer, less decided in expression, and uttered more precipitately.

Acredula caudata, Lin.

Has not been found north of Salten (67° 10'), where it is tolerably abundant.¹

Hirundo urbica, Lin.

Colonies of this bird were seen in the valley of the Maalselv, near Tromsø, and at Bosekop, in Alten, June and July 1872. Not observed in Porsanger; in East Finmark, it ranges as far north as Vadsø, building in several localities both in the mountain-walls and on the huts of the inhabitants.

Hirundo rustica, Lin.

Not rare on Tromsøen in June 1872; in Finmark, it has been observed in Alten, by Prof. Sundevall. Individuals have also been met with at Hammerfest, and it has repeatedly been observed in East Finmark, where it is known to have bred several times (Nordvi and others), at Vadsø, for instance.

Hirundo riparia, Lin.

Is the commonest species north of the Arctic Circle, and breeds in suitable localities up to the Russian frontier. Colonies of these

¹ Vide Sommerfelt senr. MS. of „Saltdalens Beskrivelse“.

birds were observed in the valley of the Maalselv and on the banks of the Altenelv, in the summer of 1872.

Motacilla alba, Lin.

Abundant in the more thickly populated districts, such as Alten and Tanadalen; in the remote coastal region it is also met with on some of the fishing grounds, though not on all, and generally but a single pair is observed in one spot. At the mouth of the Porsangerfjord, I found it on Tamsø and Kistrand, but it did not occur at Gjæsvær, near the North Cape.

Individuals have at long intervals been found wintering on the south coast, near Stavanger, for instance in 1871—72.

The University Museum was presented with an albino, shot in the neighbourhood of Christiania in July 1872.

In May 1871, a specimen of the form *M. Yarelli*, Gould, was presented to the Bergen Museum by my friend Mr. Friele; it had been shot in the neighbourhood of the town, where this form has been observed several times. In the present example, the back was wholly black, the feather tips of the rump and upper tail coverts gray.

Motacilla flava, Lin. (*forma nigricapilla*, Bonap).

Common in all fertile and grassy spots round Tromsø, in the valley of the Maalselv, and in Alten; I found it on the Porsangerfjord as far out as Kistrand, but not nearer the coast, and it does not occur at all on the most northern fishing-grounds. In like manner, it occurs in East Finmark.

Everywhere in Finmark, I found, besides the normal black-hooded males, several other males (possibly immature examples) with the crown of a light bluish green and a faint white superciliary stripe; it was plain, however, that such individuals could not belong to the true *Motacilla flava*; they merely indicated a transition stage approaching to it. In some few of the females, shot at the same time (middle of June), the crown was of a uniform greyish green, a white stripe being distinctly visible above the eye. The gradual fading or wearing off of the colours in the course of the summer, would seem to account for the difference in plumage.

Probably, it is such individuals which Sommerfelt (Öfv. Kgl. Vet. Akad. Förh. 1861, p. 78) affirms to be the true *M. flava* in East Finmark, and Schrader (Journal für Ornithologie 1853, p. 253) mentions as *M. cinereocapilla*, Savi.

A male bird, with large testes, which I shot on the Dovre, June 15th 1871, had the throat almost pure white with a centre patch of yellowish green, the breast white, washed with yellow, the belly yellow, with white feathers interspersed. This dress bore a strong resemblance to the winter plumage.

In the middle of July, the young birds were found in full livery everywhere on the marshy lands in Alten. The crown of the head is greyish brown with a faint yellowish tinge, back brownish, the feathers being narrowly bordered with olive-green. Wing coverts edged with a pale, dusky yellow, causing two transverse bars to appear upon the closed wings. Tail feathers fringed with reddish grey. A brownish belt, passing through the eyes, extends over the ear coverts, and over the eye is a distinct white streak, edged along the upper margin with darkbrown. Gorge white, bordered with a brownish stripe, on the breast widening into a number of thickly scattered spots. Belly dusky white, with a faint tinge of yellowish grey.

The chief species *M. flava*, Lin. is no doubt distributed but sparingly throughout Norway, and, it would seem, in the southern districts only; in the University Museum, there is a female, shot near Christiania May 22nd 1857.

Anthus obscurus, Penn.

Common along the whole coastal line on holms, islets and the heather grown rocks of the sea-shore. I found it breeding at Stappen, close to the North Cape, amidst myriads of *Uria*, *Alca* and *Fratercula*.

This bird seldom builds its nest, as do the other species of the genus, beneath a heathery knoll, but deep down under stones, or in the crannies of rocks, where the opening is narrow, and frequently two or three feet from the entrance. A nest of this species was constructed of straws, and thinly lined with hair and wool.

Food partly *vegetable*. In the stomach of a male, shot on the shore of the Foldenfjord, June 25th 1871, I found only *Coleoptera* (principally *Aphodii*) and their larvæ, and *Gammaridæ*; but in the stomachs of individuals shot near Christiania, in the spring of the same year, I also found seeds of divers plants growing on the shore.

In June 1865, I shot amongst the typical *A. obscurus* a breeding individual on the Hvaløer (near Bohuslehn), which differed materially from the other. The belly, deeply tinged with greyish-yellow, being almost destitute of spots, and the back a decided grey with hardly a trace of green, this individual certainly belonged to the form *aquaticus*, Bechst. (*spinoletta*, Lin.). I am not aware, that this form has been found elsewhere on the coast. In this example, the wing measures 86 mm, tail 59, and tarsus 23 mm.

Anthus pratensis, Bechst.

Abundant on the coast and in the interior up to the Russian frontier; it never breeds as a rule in the southern lowlands.

In the birch region of the Dovre, from 6th to 14th June (1870, 71, 72), almost all the nests contained eggs perfectly fresh; but on the sea-coast, even in the extreme north of the country, the broods would appear to be somewhat earlier; in Lofoten, for instance, nestlings were found 14th June 1872. The disparity is still more striking on the most southern of the flat holms and islands along the coast; on the Hvaløer (59^o), for instance, the young birds were fully fledged June 2nd 1865.¹

Anthus cervinus, Pall.

In Norway, this species is probably most widely distributed in East Finmark, being commoner there in certain localities, according to divers naturalists, even than *A. pratensis*. In West Finmark, possibly, it is less abundant, but would not appear to be wanting anywhere. On the Porsangerfjord, I found it at Kistrand, also on Magerøen (North Cape), and at Tromsø. South of the Polar Circle, its occurrence has not yet been established with certainty, though it has been supposed to have occurred at Trondhjem; nor is it

¹) Vide „Nyt Mag. f. Naturv.“ Vol. 15, p. 23.

known to have been observed during migration, no doubt owing to the easterly direction of its line of passage.

It occurs everywhere in company with the preceding species, and, as a rule, like the latter, is not a shy bird. I failed to discover any material difference between the habits of the two species.

In both sexes, I found the dress almost precisely the same, the throat of the females little if at all duller than that of the males. A male shot on Magerøen, 28th June, measured as follows:—Total length 162 mm; wing 87, tail 59, tarsus 21, middle toe $14\frac{1}{2} + 6$, hinder toe $9\frac{1}{2} + 11\frac{1}{2}$. In the stomachs were found only the remains of insects, particularly *Otiorhynchus blandus*, Schönh.

A nest at Kistrand contained eggs so late as 11th July; they were however not far from hatched. By their paler colour, mottled with the dull and comparatively large-sized spots of greyish brown that are seen almost invariably in the eggs of this species, and the peculiar twisting lines which, however, are frequently wanting, they were at a glance to be distinguished from those of *A. pratensis*. The nest lay beneath a willow-bush, and was constructed almost entirely of straws, save here and there a single horse-hair. The latter material is found in scarcely any of the nests sent to the University Museum from East Finmark, a disparity readily explained from the fact that, in most localities in Finmark, this material is not to be obtained.

Anthus arboreus, Bechst.

Common in the valley of the Maalselv, near Tromsø, in June 1872. Further north it has not hitherto been observed, though possibly it may occur in Alten.

Accentor modularis, Lin.

Tolerably abundant, in June 1872, on Tromsøen and in the inferior tract of the valley of the Maalselv. In the stomach of a male, shot in the latter locality, were found insects and their larvæ; but in the stomachs of individuals, killed near Christiania in the fall of the year, I have found only seeds and vegetable substances.

Professor Esmark shot a young example, nearly full grown (preserved in the University Museum), in Finmark, near Elvenæs

in South Varanger, on the 19th July 1866, and Sommerfelt, too, thinks he has procured eggs of the species from Tanen; hence it occurs breeding, from time to time at least, in East Finmark.

Critophaga miliaria, Lin.

But a single colony of this species has been hitherto observed in Norway, dispersed, apparently in small numbers, along the Jæderen reef, over a surface of about two geographical \square miles. This colony is obviously descended from stray birds, which must have found their way hither from the coast of Jutland (distant about 15 geographical miles).

In 1867, the year in which it was first observed, my friend Mr. Landmark killed 3 examples, at different spots on the reef. In June 1872, he observed here only one individual, which was suffered to escape.

In the Museum of Bergen one or two individuals of this bird are labelled „Norge“; whether rightly, is a question.

Emberiza citrinella, Lin.

In July 1872, by no means rare at Tromsø, at Bosekop, in Alten, and along the banks of the Altenelv (70^o). An individual shot in the last mentioned locality measured 182 mm, total length. Rare in East Finmark, but has been found breeding in Tanen.

On the southern fells, it is found, in a vertical direction, at an altitude of more than 3000' a. l. s. (Nystuen on the Fillefjeld).

Emberiza schoeniclus, Lin.

Common along the whole coast, as far north as Tromsø and Alten. At Bosekop (Alten), the young birds were fully fledged 17th July 1872. Not rarely observed in East Finmark; north of the Polar Circle, the species would appear to occur less abundantly than in the birch region of the southern fells.

A nest on Tromsøen was located, contrary to custom, in a perfectly dry spot at the root of a tree, amidst a group of tall birches. Chiefly insects were found in the stomachs and gullets of the nestlings, which was also the case with an old female, killed on that island; the brownish eggs ($\frac{1}{2}$ mm in length) of a parasitical insect -- seemingly difficult of digestion -- were found in

large numbers in the stomach of this individual. These eggs are found likewise in the stomachs of other species that devour the larvæ of insects infesting birchwoods.

Centrophanes lapponica, Lin.

Abundant both in East and West Finmark, more especially on the low holms and islands in the Porsangerfjord and along its shores. South of Finmark, it breeds down to the Polar Circle, and has frequently been found on the main-land and the larger islands (on Lofoten, for instance), though less abundantly. This species, too, in common no doubt with the majority of the small birds of Finmark, takes an easterly direction when migrating, and hence it is hardly ever seen in the lowlands of the south. The few individuals observed here in a long series of years belonged probably most of them to the colony on the Dovrefjeld.

In the summer of 1872, I found it most abundant on Store Tamsø, in the Porsangerfjord, an island remarkable for the number of interesting ornithological facts it supplies; here, in the month of July, it occurred more numerously than any of the smaller birds, affecting, as elsewhere, heather-grown spots. It evinced but little shyness, running boldly over the knolls of earth, then covered with *Empetrum* and blooming *Rubus chamaemorus*, and was thus rendered more conspicuous by contrast with the bright colours. I never heard their song after the young were hatched.

The nests of this bird, like those of *Anthus pratensis* and *cervinus*, are located beneath a knoll of earth, but can be easily distinguished from those of the latter by the thick layer of feathers with which they are lined. The principal materials employed are the same in both, stalks of dry grass.

The half-grown young, of which a description is given in *Nyt Mag. f. Naturv.* Vol. 18, p. 173, have the feet pale and the bill wholly brown, which is not the case with maturer individuals; the culmen, too, is not straight, but slightly curved. In this young stage, it is no easy matter, at the first glance, to distinguish them from young of the same age of *Emb. shoeniclus*, which have also a brown curved bill and light feet. The young of the latter spe-

cies, however, may be known by the shortness of the hind claw, which is never longer than the toe, by their black ear-coverts, the darker shade of the back, and especially of the crown, the light-brown stripe above the eye, which does not extend in front of it, as in *C. lapponica*, and by the greater curvature of the culmen.

The young males, when able to fly, but with the wings and tail not fully developed (about 4 weeks old), have the crown of the head almost black, most of the feathers here and there with brown radii; the white band, which, in the old birds, stretches back behind the ear and down above the ear-coverts, begins in the young ones on the forehead, the black crown being thus circled in front with white. Ear-coverts black, throat whity-grey, but the fore-neck marked with a blotch of black, which subsequently spreads over the breast. The broad band on the nape brownish-red, sides of the breast whitish, vent yellowish-white with a rusty tinge, bill yellow, tipped with black, feet brownish-black.

The young females, of the same size as the males, have the crown of the head brown with black shafts, the band on the nape indistinct and dotted, ear-coverts as in the males; throat whity-grey, the latter marked like the breast with darkish spots; vent, bill, and feet as in the males.

For the rest, the dark-brown colour of the feet in *C. lapponica* pales considerably in stuffed specimens. Such is also the case, in a striking degree, with the colour of the vent and of the feathers of the wings, both in old and young birds, the belly, in individuals just shot, being yellowish with a tinge of red, but this colour gradually fades into white.

There was often considerable disparity in the plumage of the females; in some, the dark blotch on the breast approached a whity-grey, sparsely sprinkled with black feathers. The total length of a male was $166\frac{1}{2}$ mm; wing 94, tail 65; total of a female, 156 mm; wing $84\frac{1}{2}$, tail 58. Only insects and fine gravel were found in the stomachs.

In 1872, the colony near Fokstuen, on the Dovre (vide *Nyt Mag. f. Naturv.* Vol. 18 p. 172), was found habiting the locality it had

always affected; in the latter year, particularly, it was very abundant. At the close of July, the adult young perched, scattered in groups, upon the fences to the meadows¹ (62°).

Plectrophanes nivalis, Lin.

Found breeding in considerable numbers on Magerøen and most of the smaller islands on the Norwegian shore of the Arctic Ocean. A nest found in a fissure of an all but inaccessible rock on an islet near the North Cape, contained nestlings 29th June 1872. Both parents brought food to their young, consisting mainly of *Tipulidæ*.

As a rule, the nests are built in cairns or mounds of stones, and as the bird sits close upon her eggs, it is no easy matter to find one. The eggs are laid a day or two before the middle of June; on the southern fells, often at a considerable altitude. At Suletind, on the Fillefjeld, for instance, 4 nests, containing each 4 or 5 eggs, were found the last two years by Mr. Lysne, all of them about 5000' a. l. s. It rarely winters in the most northern districts of Finmark, and does not occur abundantly further north than Tromsø; it subsequently passes the winter in the coast region, in countless numbers.

Pinicola enucleator, Lin.

The occurrence of this species north of the Polar Circle has not been satisfactorily established. At Saltdalen (67° 20'), it was observed by Smf. senr. in July 1818, and of late years, by Mr. Berbom. In Finmark it has not been found; possibly, however, it may breed in Sydvaranger, Nordvi having procured its eggs from Enare.

Pyrrhula vulgaris, Temm.

Common as far north as Salten, but does not probably range as a resident beyond the Polar Circle. Individuals have occurred at Tromsø, and Sommerfelt has observed it, though rarely, in East Finmark.

¹ In the University Museum there is a specimen of the male bird, shot near Christiania in the beginning of May 1839. In this example, the black on the head and breast is still fringed with the white edgings of the winter-dress; this is also the case with the reddish-brown band on the nape.

In the valleys of the south, it is not found, as a rule, in the uppermost woods of the conifer region; it is strange that it should occur on the Fillefjeld (2800' a. l. s.), where it has repeatedly been observed, especially in winter, in the birch woods near Maristuen.

Carpodacus erythrinus, Pall.

Hitherto observed, by Nordvi only, along the banks of the Polmakelv, in East Finmark, in 1867 and 1868. No new observation of late years.

Ligurinus chloris, Lin.

Namdalen, in Nordre Trondhjems Amt (65°) (June 1871), which would appear to be the northern limit of its distribution. In Heltgeland it has been found a few times only, by Heltzen (1842).

Loxia curvirostra, Lin.

North of the Artic Circle, but one or two individuals of this species have been procured, viz. in East Finmark, 1859 (Sommerfelt); it may, however, breed in the wooded districts of the interior.

Aegiothus linaria, Lin.

Abundant in Tromsø and Finmark Amts in every spot where there are woods of *Betula glutinosa*, their numbers being in proportion to the extent and luxuriance of the growth. In Lofoten, especially, on all the wooded islands, as also at Tromsø, in the valley of the Maalselv, and in Alten the air in midsummer rung incessantly with the call-note of the males, of which the song of this species principally consists, and which it invariably utters on the wing.

No apparent difference could be discerned between the large and the small-billed forms. Numerous intermediate varieties were plainly transition stages between the two.¹

About the middle of July, nearly all the nests contained fresh eggs, though a few, observed about the same time, were in course

¹ Sommerfelt junr. records in „Öfv. Kgl. Vet Akad. Förh.“ 1861, p. 81, that he has observed *Fringilla canescens* in the autumn, at Tanen, among flights of *Fr. linaria*. No example having hitherto been preserved, this species is not yet included in the fauna of the country.

Wie ich nach einem irrtümlichen
Begriff meines Museums angab. (Abhandl.
Naturwiss. Verein, Bremen W. 1875 p. 106
Fischer.)

of construction, whereas in others there were nestlings, and even full-fledged birds.

The nests were almost invariably located in the fork of a birch-tree, between the stem and one of the principal branches, and at some distance from the ground, often upwards of ten feet. They were seldom seen lower down, in woods of vigorous growth; in brushwood, on the other hand, they often lay less than a foot from the ground. The exterior portion of the nest is constructed of lichens and the stalks of a *Poa*, frequently on a thickish layer of fine dry birch twigs; the inside is well lined with feathers of the ptarmigan and the down of *Salix lanata* and *Eriophorum*.

The number of eggs in one nest did not, I found, exceed 5. Both parents sat in turns, the male keeping watch for hours together at the side of his mate. Average length of the eggs 16 by 12½ mm.

In nestlings, scarcely more than three days old, *sand* was invariably found in the stomach, the craw being crammed full of insects or the green-coloured larvæ of a *Geometra*, very numerous on birch-leaves.

In smaller flights, consisting of sterile individuals, it occurs throughout the summer off the breeding haunts, frequenting even the naked rocks and islets on the ocean-bank; such is the case, for instance, at Stappen, close to the North Cape, where this bird never breeds nearer than at a distance of several miles. Also in the deep vallies of the south, where the species never breeds, — the fells being its only breeding haunt, — stray flights are annually seen; in some years, vast numbers stay behind on the low lands (vicinity of Christiania 1863 and 1868), and are then distinguished by a very peculiar plumage (described in *Nyt Mag. f. Naturv.* Vol. 18, p. 175), widely distinct from the summer garb.

The chief detachment of the individuals breeding in Finmark migrates to the south at the approach of winter; large numbers however, remain behind, their food then consisting of the seeds of the birch.

Cannabina flavirostris, Lin.

In Norway, this species is observed most abundantly in the coastal region, where it is common, in divers localities, as far north as Tromsø (69° 39'): Lilljeborg is the only naturalist who has observed it near this town (1849).

The breeding-season commences about the beginning of May, and towards the middle of June the young are ready for flight. The broods keep apart, in company with the old birds, till late in the fall, when they flock together in great numbers, preparatory to migration. In June 1870, I found the species numerous on the sterile holms and islands — many of which are utterly destitute of arboreous vegetation — off the Trondhjemsfjord, where it seeks its food on the grass-grown ledges of the mountains. My friend, Mr. Landmark, has also found it on the islets off Jæderen, and frequently at a considerable distance from land; the 13th June he found here a nest of the season, already abandoned, on the lateral surface of a rock, and carefully concealed in heather and grass and brushwood of *Rosa* and *Cratægus*.

On the Fillefjeld, they are annually observed in the spring of the year, occurring in considerable numbers round Nystuen (3100' a. l. s.), where they often perch upon the house-tops. These detachments may possibly be found breeding on the adjacent fells, as they can hardly consist exclusively of sterile individuals.

Coccothraustes vulgaris, Vieill.

Perhaps resident in some localities in the south of the country. As before recorded,¹ I have observed this species, which, as a rule, occurs sporadically, each of the last 4 years near Christiania, but always in the same spot, viz. the palace-grounds, and only in winter. There is reason to suppose they have sometimes bred in the neighbourhood, for in the winter of 1870—71 several pair were observed. Their food here consists exclusively of the pip of the *Prunus padus*.

In the winter of 1870—71, flocks appeared at Christiansand,

¹ „Nyt Mag. f. Naturv.“ Vol. 18 p. 177.

in the gardens of the inhabitants, and several examples were killed (recorded by Mr. Clausen).

Fringilla coelebs, Lin.

The northern limits of the distribution of this species being near the Polar Circle (it is rare in Lofoten) I was surprised to meet with a pair in the neighbourhood of the North Cape, in June 1872. They had selected the rocky island of Gjæsvær (71° 10'), which, save *Salix herbacea*, is destitute of any arboreous vegetation. Here I observed it day after day searching for food in the inhabited spots; the male, perched upon the „Hjælder“, or sitting on the rocks and boulders washed by the Artic Ocean, would sound his well known trilling note throughout the sunlit summer-night as well as by day.

Last winter — so exceptionally mild — considerable numbers of this bird were constantly observed in the vicinity of Christiania.

Fringilla montifringilla, Lin.

Common on the coast in all the conifer woods and birch woods of Finmark, at least up to Alten (70°), but does not occur along the most northern fjords, the shores of which are destitute of forest growth.

Shortly after the middle of June, the nests contain fresh eggs, and by the 16th and 17th July, the young birds were numerous in the fir-forests of Alten. The nests are composed principally of moss, straws, and feathers, the materials being wrought together less compactly than is the case with *Fr. coelebs*; some few are thickly lined with reindeer-hairs or with the wool of *Salix*. They are commonly 8 or 10 feet above the ground, being located in the fork of a tree, between the trunk and the thickest of the branches. The number of eggs was sometimes 7, generally 6.

The stomachs both of old and young individuals were full of the larvæ of insects (*Geometridæ*).

Single individuals are annually found wintering in the southern tracts. Last winter (1872—73), as in that of 1863 - 64, large num-

bers resorted to the neighbourhood of Christiania, their food consisting chiefly of the berries of *Sorbus aucup.* and *Sambucus*.

On the 1st Feb. 1873, a male, exhibiting a very peculiar variation of plumage, was shot out of a detachment found wintering near Christiania. It was highly coloured, the uropygium *bright yellow*; the rusty-yellow of the breast being of a darker tinge than in the other individuals. It is preserved in the University Museum.

1 *Passer domesticus*, Lin.

Common in Nordland, as far north as Lofoten, even on the most outlying of the fishing-grounds. It would not appear to be a resident anywhere in Finmark, and has never been met with in the towns (Tromsø, Hammerfest, Vardø, Vadsø). Stray individuals have been observed by Smf. jun. in East Finmark.

3 *Sturnus vulgaris*, Lin.

Abundant in the coastal region of Nordland, — on Tjøttø, for instance, where large numbers were observed in July 1871; found less abundantly in Lofoten, and, is, as a rule, very rare north of those islands. At Tromsø, it has been repeatedly observed in the spring and autumn, and stray individuals have also been met with in East Finmark, by Smf. In several localities along the coast, single individuals and small flocks have been found wintering as far north as Værø, in Lofoten; they mostly frequent the sea-shore when in search of food. Each of the last winters, large numbers were observed round Stavanger, on Jæderen, and ranging northward to the coast of Romsdal; in 1872—73, they were also common in the neighbourhood of Christiania.

2 *Passer montanus*, Lin.

This species occurs dispersed and sparingly in Nordland, but north of the Polar Circle, stray individuals only have been observed, in Varanger, for instance, in the summer of 1855, by Smf.

Lycos Monedula, Lin.

Observed in flocks on Inderøen and at Levanger, in Nordre Trondhjems Amt (64°), in the month of June 1871; farther north, it is not known to have occurred.

Resident throughout the winter, especially in the coastal region, as far north as the Trondhjemsfjord; Mr. Schübeler observed it in large flocks on Inderøen the whole winter through 1871—72.

Corvus corax, Lin.

Exceedingly numerous on the northern coast, up to the Russian frontier, but does not occur in large numbers south of the Polar Circle. Everywhere a resident.

This species is certainly one of the most destructive birds in the coastal region; not only does it contrive, in its love of mischief, to loosen the „Hjælder“ from their supports, whereby the fish is thrown down and spoiled, it commits great havoc among the eggs and young of sea-fowl, and in winter-time robs the snares of the ptarmigan. For this reason, its destruction in these northern tracts is encouraged by a small pecuniary reward for every individual killed.

The young birds roam about among the rocks of the coast, their food consisting of the refuse of fish. In immature individuals, the entire vent, the hind part of the back, and nearly the whole of the head are without reflections, whereas the wings and upper surface of the tail, the rump, scapulars, and crown are highly glossed (shot at Foldenford June 21st, 1871).

Corvus cornix, Lin.

Perhaps the most pernicious bird occurring on the coast. It does far greater damage, by its deprivations among the eggs and young of sea-fowl, than all the birds of prey together. It is chiefly the coastal districts south of Lofoten which suffer from its ravenous instincts. In West Finmark, it is not so numerous, though, I found it everywhere, even on the outermost holms and islets at the North Cape. But farther south, along the whole coast, there is scarcely a rock inhabited by sea-birds which it does not ravage during the summer months. It is particularly partial to the eggs of all species of *Anates*, *Somateria*, and *Haematopus*, which breed some distance apart; the gregarious *Lari* and *Sternæ* are generally sufficiently numerous to repel its attacks. So soon as the young of these species are hatched, they are safe to be snapped up, when-

ever an opportunity presents itself of doing so with impunity. In the adjacent valleys, it evinces the same predatory proclivities, preying upon small birds and the eggs and young of black-game and ptarmigan.

The damage done in bringing up the young birds is also considerable, notwithstanding they are fed chiefly on insects in the earliest stage of their existence. The contents of the stomachs of a number of individuals will best show the omnivorous nature of this bird: —

A brood about five days old. Almost exclusively *Coleoptera*, in particular countless numbers of *Bembidia* and *Elateres* (chiefly *Cryptophnus rivularis*), and the larvæ of *Noctuæ* (Opdal, in Trondhjems Stift, 2000' a. l. s.).

A brood about 15 days old, half fledged. Quantities of seed-corn (barley), a number of *Coleoptera* of the species named above, a few *Araneidæ*, and the pelvis of an *Arvicola* (Opdal).

A brood almost fledged. Fish and fragments of the shell of *Patella* (Foldenford).

An adult of the year (Aug. 1871). Fragments of *Carcinus mænas* and entire cherries (Drammen).

They often breed on the naked rocks among sea-birds, here on the ground itself, and as a rule on the side of a large stone or rock.

They are resident along the greater part of the coast, ranging into East Finmark; in the interior, the species is more or less a true migrant.

Trypanocorax frugilegus, Lin.

From Heltzen's MS., — „Helgeland's Beskrivelse“ — where the species is minutely described — it appears to have been shot in Helgeland (66°) in the autumn. This is the most northerly point at which it is known to have occurred.

On Inderøen, in the Trondhjemsfjord, numerous flocks were found wintering in 1870—71 (Schübeler); large numbers have also been observed on the southern coast in that season, but rarely in the interior.

Pica caudata, Keys. & Bl.

Occurs throughout West Finmark, as far north as Gjøsvær, North Cape ($71^{\circ} 15'$), in almost all of the fishing localities, or in spots inhabited the year round. In East Finmark, it would seem to occur less abundantly.

On the sea-shore, in places destitute of arboreous growth, it builds sometimes under the eaves of dwelling-houses, sometimes in piled-up brushwood. In West Finmark, where they are protected by the inhabitants, being regarded as harmless birds, they live chiefly on the refuse of fish. So late as the 30th June (1872) I observed a pair at Gjøsvær, each day busily engaged in building their nest, underneath a jetty. In this spot, the same pair had brought up an earlier brood in the spring of the year.

Garrulus glandarius, Lin.

Occurs north of the Trondhjemsfjord in limited numbers. In July 1871, I found it in divers localities in Namdalen and towards the boundary of Helgeland. In Nordland, it has been observed, though rarely (Ranen) by Heltzen; it ranges even beyond the Arctic Circle into Saltdalen, where my friend Mr. Berbom has met with it of late years as a resident (recorded 1872).

Perisoreus infaustus, Lin.

Is common in the fir-forests of East and West Finmark, up to Alten (70°), but hardly further north, not ranging beyond the fir woods.

On the southern fells, it is also confined to the conifer woods, rarely passing into the birch region. On the Dovre, for instance, it is abundant in the uppermost fir-forests above Domaas, occurs likewise in Foldalen, and at Opdal, on the northern side of the fell, but on the loftiest fells, stray individuals only are met with.

Mr. Barth, inspector of woods and forests, has sent me a specimen-nest, procured April 1st 1869, from the Lesje woods, on the Dovre. The 3 eggs it contained were almost the same in colour; length 31—33 mm by 22 mm. Diameter of nest, outside, 150 mm, inside, 87, height 110—120 mm. It was constructed principally of *Usnea barbata*, and closely interwoven with dry fir-twigs, stripped

of the acicular leaves, a few of its own feathers and of those of the ptarmigan being inserted here and there. In the bottom were stalks of dried grass, and such uncommon materials as withered leaves and fragments of a wasp's nest.

In the stomachs of individuals snared in Nordmarken, near Christiania, in the autumn and winter of 1871, I found, besides roan berries, bilberries, and divers seeds, a *Sorex pygmæus*, and the larvæ of several species of *Geometridæ* and *Noctuæ*.

Ampelis garrulus, Lin.

The first reliable observation proving the occurrence of this bird as a breeding species on Norwegian ground, was made, not as might have been supposed in the tracts bordering on Russian and Swedish Lapland, but in the wooded region south of the Dovre. The 5th Aug. 1860, my friend Mr. Barth shot a young bird just fledged, which, with the rest of the brood, was frequenting the uppermost conifer woods in Vaage, Gudbrandsdalen (61° 50'). The eggs from which the brood were hatched must have been laid in the beginning of July. So far back as 1858, it was repeatedly observed in the course of the summer in the subalpine conifer woods of Valdres; an individual having been snared in Land (61°) at the latter end of May 1862, there is good reason to suppose, that the species, at least in certain years, breeds sporadically in the woods of *southern* Norway.

In the summer of 1868, Nordvi procured its eggs, for the first time, from South Varanger, near the Anarjoki, a tributary of the Tana. In the outlying districts of Finmark, it rarely occurs, a few individuals only having been observed.

At Bosekop, in Alten, I found this species abundant in July 1872. I observed the first pair on the 14th of that month in a wet clump of foliferous trees (*Salices*). The female being killed, the male would not quit the spot, but flew about wildly, uttering his ordinary cry, and at intervals a peculiar note, expressive of dread, never heard in winter.

Both of these individuals, as also a third shot the same day (♂), were found on examination to be in the middle of the breeding-

stage. In the two males, the testes were of the size of peas, the eggs in the females being still larger. Unfortunately I had not time to look for a nest, having to leave shortly after by the steamer. Alten (70°) is doubtless the most northern locality at which this species has hitherto been found breeding. A few days after, Mr. Berlin, a young German tourist, discovered two nests at the mouth of the Utsjoki, a Russian tributary of the Tana, but whether on Russian or Norwegian ground is unknown.¹ These nests were both found in birches from 4 to 10 feet from the ground, and contained respectively 2 and 5 fresh eggs each. As to time, this corresponds pretty nearly with the development of eggs in females shot in Alten; for this species, therefore, the breeding-season was either unusually late that summer (vide Wolley's dates), or the period is very wide.

The dress of the specimens procured differs in many respects, though not materially, from the normal winter garb; this is the case particularly with the colour of the head, which is much paler than in winter. On pushing back the hood, the long crest on the crown is found in winter-time (at which season it is cinereous gray with a faint reddish tinge) to be perceptibly darker than the nape; in summer, on the other hand, it is lighter, having a deep blush on the forehead, but a considerably paler tint behind. The same yellowy-red tinge extends on to the cheeks and nape, and, if the plumage be contrasted with that of specimens killed in winter, traces can also be seen on the back and over the whole of the belly.

In the female, the coloured extremity of the tail was exceedingly narrow, scarcely $2\frac{1}{2}$ mm, and whitish; on the outermost feathers, there was only a spot of whity yellow, triangular in form, on either side of the shaft. In the male, on the other hand, the extremity was broad (5—6 mm) and of a bright yellow. The coloured tips of the primaries, which, in the female, were white without a trace of yellow, were yellowish white in the males, much the same as in the females in winter-time.

¹ These details were communicated to me in a letter from Dr. Staudinger, who, in company with Herr. Berlin, passed the summer in Alten, collecting *Lepidoptera*.

In the males, the black on the throat is sharply defined below, whereas in the females it gradually blends with the russet grey of the neck. This disparity, however, cannot always be relied on in distinguishing the sexes, at least in winter.

The stomachs of these individuals were filled almost exclusively with the entire or dismembered bodies of *Tipulidæ*, of the species *Ctenophora*. One of the males, shot in a juniper-bush, had one or two of the berries in his gullet.

In the neighbourhood of Christiania, they sometimes stay as late as April (in 1860, the last were seen on the 4th, in 1867, on the 21st, in 1869, on the 8th of that month). They were uncommonly numerous in the winters of 1866—67 and 1871—72, particularly in the month of January 1872, when they appeared in immense flocks, consisting of thousands of individuals, and were brought in cart-loads to the game-market of Christiania. The plentiful supply of roanberries sufficiently accounted for their numbers.

Alauda arvensis, Lin.

Sang every day near my station on Tamsø, in the Porsangerfjord (70° 40'), in the beginning of July 1872. In East Finmark, it was found breeding at Tanen in 1851, by Smf.

An individual — possibly wintering — was observed in Smaa-lehnene, Feb. 1st 1872. I myself came across two or three stray birds near Christiania, 31st January 1861, and the following days.

Otocorys alpestris, Lin.

In certain parts, as numerous in West as in East Finmark. I found it in the summer of 1872 in all favourable localities on the shores of the Porsangerfjord, and even at Gjæsvær, west of the North Cape. It prefers the surface of barren granite rocks, thinly clad with grass or lichens, or of half naked boulders. At Vadsø, they are common in the streets of the town, and in the sandy churchyard, and are even found breeding on Renø, near Vardø. On the island of Tamsø, I observed them repeatedly searching for food close to the houses, in heaps of refuse.

So late as the end of June, the males were indefatigable songsters. They would ascend into the air, and, singing as they rose,

gyrating for a time at a definite height; mounting and descending with a peculiar wavy motion, they sound the while their intermitting modest note. Sometimes, after descending, and when perched upon a stone or even on the ground, they would warble a more coherent strain, not unlike the song of the sky-lark, and never heard when the bird is on the wing. They appeared to be anything but shy.

At Gjæsvær, the young birds were almost full grown¹ June 28th, the largest observed measuring 160 mm. Two males shot there measured as follows: — Total length 178—188 mm; wing 102—106, tail 67—71, tarsus 23—23½, middle-toe 12 + 7 mm. In the stomachs of the adults and of the young birds were found *Coleoptera*, (chiefly *Otiorhynchus blandus*²), fine gravel, and traces of vegetable substances.

The line of passage would appear to be east of Norway, for the bird is never met with in the southern districts at the period of migration. Two examples, shot some years since in the neighbourhood of Christiania, had possibly strayed, — which has been the case with *Centr. lapponica*, — from the Dovrefjeld, where, however, the species has not yet been shown to occur.

That individuals can endure a Finmark winter is hardly credible, though Nordvi observed it in Varanger as late as the 6th November (1872).

Upupa epops, Lin.

An individual of this species was caught at Melø, in Nordland, and transmitted to Mr. Heltzen (vide MS. 1842). The species has been observed several times in Finmark, both in Alten and in East Finmark; indeed, this bird would seem to have a propensity of straggling far and wide.³

Both in 1871 and 1872, this species, which on the whole is

¹ Dress described in „Nyt Mag. f. Naturv.“ Vol. 18, p. 180.

² A species whose hard elytra severely tasks the digestive organs; it is therefore found in the stomachs of most of the birds of Finmark that feed on insects.

³ Vide Dresser and Sharpe, „Birds of Europe“, Part VII, on its occurrence on Spitsbergen.

rare, occurred in several parts of the country, here and there in flocks, and may possibly have bred.

The 26th April 1871 a male was killed near Laurvig, on the Christianiafjord, and sent to the University Museum. It measured as follows: — Total length 310 mm, culmen 54, wing 14, tail 93, tarsus 22, middle toe 15 + 5½ mm. Longest feather in crest 66½ mm. In the stomach I found fragments of *Aphodii* and *Harpali*.

At the end of November 1871, a flock was observed at Opdal, on the north side of the Dovre (2000 a. l. s.) They perched in *Sorbus aucup.*, on the berries of which they were said to feed. An example was shot, and transmitted to the Philosophical Society of Drontheim.

In the beginning of Oct. 1872, an individual was again observed in Örkedalen, near Drontheim, by Mr. Nissen.

In the middle of Oct. 1872, a female was shot on Svano, near Bergen, and presented to the Museum of the town (recorded by Mr. Friele).

2. *Zygodactyli*, Vieill.

Dryocopus martius, Lin.

Not rare in Nordland in several localities, ranging even into the Polar Circle, where it has been observed at Salten (67° 20').

Gecinus canus, Gmel.

This species has not yet been observed beyond the Polar Circle, but may possibly occur in the large and luxuriant valleys of Tromsø Amt (Maalselvdalen for instance).

Picus leuconotus, Bechst.

An individual was shot in Helgeland, Nordlands Amt (66°); it has been minutely described by Heltzen (1842). This is the most northerly locality in which this species is known to have occurred in Norway.

Picus major, Lin.

Has been found as far north as Salten (67° 20').

Picus minor, Lin.

Occurs at Tromsø and in Alten (70°), and in East Finmark, everywhere as a resident.

Picoides tridactylus, Lin.

Distribution that of the foregoing. These two are the only members of the tribe that occur north of Lofoten. The food of this woodpecker, like that of the other species, is partly vegetal in the autumn months, individuals being annually caught near Christiania in snares set for thrushes and other birds feeding on berries. Besides the berries of *Sorb. aucuparia*, I have taken from their stomachs the following insects and larvæ: —

In the stomach of a male, shot 30th Nov. 1871 (total length 248 mm; wing 124, tail 83 mm), small *Coleoptera* and their larvæ.

In the stomach of a female, shot 15th Oct. 1871 (total length 225 mm; wing 117, tail 80 mm), large numbers of a *Hylastes* and the larvæ of a Dipter (*Cecidomyza*).

In the stomach of a female, shot 28th Nov. 1871, the half developed larvæ of a *Rhagium*.

Jynx torquilla, Lin.

On the west coast, where it occurs in limited numbers, this species has of late years been found breeding in several localities, not only in the interior of the country (Lærdal, Voss), but also in the neighbourhood of Bergen.

Cuculus canorus, Lin.

Distributed throughout West and East Finmark, but not found on the sterile foreshore and rocky islands of the extreme north. In Porsanger, it occurs as far out as Kistrand (70° 21'), and indeed is met with in every woody locality in Norway.

Exceedingly abundant on Tromsøen and in the valley of the Maalselv in the months of June and July 1872, several individuals having been repeatedly observed in immediate proximity to one another. It was often mobbed by smaller birds, particularly *Anthus pratensis* and *Fringilla linaria*. The cause of this singular phenomenon surely cannot be an instinctive consciousness of the injury and trouble it may occasion them (*Fringilla linaria* not even being one of the species known to hatch the eggs of this bird), nor is it possible, one would think, that the small birds are mistaken in their hostility; possibly, the true explanation is to be found

in its peculiar nature and habits, which awaken antipathy in them; a fate also shared by the *Scolopax rusticola*, which I have sometimes seen mobbed in a similar manner.

3. *Syndactyli*, Illig.

Coracias garrula, Lin.

One of the two examples last procured of this species, which occurs only sporadically and is never found breeding, was caught alive in Varanger (70°), in Nov. 1868. Another individual was shot in the birch region of the Dovre, at Foldalen, in July 1872.

Cypselus apus, Lin.

Occurs in small numbers north of the Trondhjemsfjord, but was seen in several localities up to Namsos in June 1871. In Nordland, it occurs from time to time, but not regularly every year.

Nordvi records that a single individual was observed in Varanger in November 1871, and found dead on the 15th of that month about two Norwegian miles from Mortensnæs (70°). It is said to breed in the south-eastern portions of Enare, Russian Lapland, near the village of Kyrre.

4. *Accipitres*, Lin.

Nyctea scandiaca, Lin. (*nivea*, Thunb.)

Distributed throughout Finmark in the region of the fells, and frequents even the larger of the rocky islands on the coast.

In the summer and autumn of 1872, immense numbers of *Myodes lemmus* migrated south and north from the Dovrefjeld and its ramifications; also from the fells in Søndre Trondhjems Amt, whence they made their way along the frontier towards Jemtland in Sweden. In these localities the number of snowy owls was observed gradually to increase, becoming in the course of the summer much greater than had been the case even of late years under similar circumstances.

The phenomena attending the occurrence of this species of owl in such numbers have not yet been satisfactorily investigated. No doubt its presence is *partly* owing to a temporary migration to spots where its favourite food is suddenly produced in such

abundance. Later in the season the number of individuals is doubled, which indeed is not surprising, as procreation in a species as a rule increases simultaneously with the supply of food.

Now it is a well known fact, that many birds breed more abundantly when food is plentiful than under ordinary circumstances. This, for instance, has been shown to be the case with several species of the owls that prey principally on small rodents which in certain years are exceptionally numerous; but whether such increase in the procreative powers is owing to the abundant supply of food, or is to be traced *rather* to the cause (whatever it be) which renders the small rodents *in that very year* so much more prolific than common, is still on open question. Neither in Valders nor on the Hallingdal-fells was there a migration of lemmings that year; but there, too, the snowy owl appeared in large numbers.

Meanwhile it is a fact, that the snowy owl does not always lay so many as 10 eggs at a time: it did so however last year in many cases, and the various circumstances attending the phenomena are not without interest.

As with all birds of prey, the eggs would appear to be laid not in uninterrupted succession; but with that species at intervals of indefinite duration during a *lengthened* period, foetation taking place previous to the laying of each egg. A natural consequence is, that the young of each brood are widely different in appearance, according to the stage of growth which each has attained. Thus, the first of the brood will be almost fledged before the last has broken the shell. And again, the nestlings, thickly clad with down, necessarily *assist in process of incubation*; the old birds have enough to do to provide for the young already hatched, several of which, being more than half grown, require a good deal of food.

A nest, located in a hollow on the bare ground, was found by Prof. Friis July 6th 1872, on the fells in Ringebo, Gudbrandsdalen. The brood were in four stages of growth. Four — of the size of a hazel-hen — were half grown, the wings being partially

developed; two were considerably smaller, and the remaining three were nestlings just hatched; finally, under the young there was an egg in an advanced stage of incubation. There was evidently an interval of several days between these stages. On the following day a pair of snowy owls were observed *in copula*,¹ and hence eggs were still being deposited in *their* nest. The male belonging to the first nest was shot; it proved to be a very old bird, perfectly white, with the exception of a few darkish spots on the tips of the wings.

Many of the nests were found that year on the fells in Gudbrandsdalen, and throughout the summer the „Kvitørn“ (white eagle) was seen in almost every spot. On the Dovre, these birds were seen for hours perching on the telegraph-poles, and were hardly to be driven off with stones.

In Valdres and Hallingdal no less than 29 eggs, taken from nests near Nystuen, on the Fillefjeld, were collected by *one* collector, Mr. Lysne, but as these were not left in the nest, the observations as with those made by Professor Friis could not be repeated. Here, too, the eggs were laid at irregular intervals the whole summer through; eggs in an advanced stage of incubation were found on the 1st June, (probably their wonted breeding-time), and fresh eggs on the 17th June and even the 19th July.

When the female is sitting, the male is ever on the watch, and warns his mate at the slightest sign of danger by a loud cry, whereupon she immediately quits her nest, and both birds, screaming incessantly, keep flying for hours together in the immediate neighbourhood of the nest. On such occasions, the males are bold to a degree, attacking savagely whomsoever ventures to approach their nest; they will swoop down on the sportsman or his dog, especially the latter, and can with difficulty be driven away. The females take matters more coolly, posting themselves near the nest in some conspicuous spot, but always out of gun-range. It devolves upon the male bird to go in search of prey, the duty of the female being to divide it when brought to the nest among her young. Hence the former are always in poor condition, whereas the females

are generally plump. Round about the nest are found mice and lemmings, dismembered and entire.

This species is an annual visitant in the coastal region of the south. A young male was caught alive in the streets of Christiania in March 1872.

Last autumn (1872), when they were abundant in the tracts bordering on the Throndhjemsfjord, an interesting observation was made here. Every evening, a considerable number of these birds congregated on a small rock close to the „Munkholm“, in the Fjord, where they sat like gulls and were easily killed.

Surnia ulula, Lin. (*nisoria*, Mey., *funerea*, rec.)

Like the foregoing species common in Finmark, but does not occur anywhere in large numbers, being dispersed throughout most of the districts; it is, however, generally more abundant in years when the lemmings undertake their migrations. Nests containing 9 eggs have at such periods been repeatedly found in Varanger (Nordvi); one with 7 eggs was taken last summer (1872).

Glaucidium passerinum, Lin.

The northern limit of the distribution of this species is Nordland (66°), where several individuals have been found and minutely described by Heltzen, (vide MS., 1842); individuals having been killed both in summer and in autumn, it is no doubt a resident. So far north as the Trondhjemsfjord, the species is tolerably abundant, but is no doubt most widely distributed in the south-eastern tracts of the interior (vicinity of Christiania, for instance), where it occurs in considerable numbers.

Every year not a few individuals are caught alive or shot near Christiania. One of the males presented to the University Museum (Dec. 1872) measured as follows: – total length 158 mm wing 95, tail 57, tarsus 18 mm. As is the case with most of the specimens procured, it was taken with the hand while attempting to prey on the small birds close to the houses.

Nyctala Tengmalmi, Gmel.

In the summer of 1872, several individuals were killed on

Inderøen (64°), the most northern locality in which it is known to occur. It very probably, however, ranges farther north.

A nest was found in the district of Ørkedalen, near Trondhjem, April 25th 1872. It was built about 8' from the ground, in the hollow stem of a *Populus tremula*. The female was taken sitting on her eggs, which were five in number and in an advanced stage of incubation. In 1871, a nest with 5 eggs had been found in the same stump.

In the stomach of an individual shot near Christiania in Oct. 1871 (Total length 248 mm; wing 177, tail 103 mm), I found a *Sorex vulgaris*.

Syrnium lapponicum, Thunb.

Almost every year an individual of this species is killed here and there in the south of the country, where it has occurred on the Hvaløer (islands), near the Swedish coast. A female, emaciated and apparently sterile, was shot near Christiania, towards the end of March 1870.

As a breeding bird, it is doubtless confined to the wooded districts along the Swedish and Russian frontier in Nordland and Finmark. In East Finmark, it has been found several times of late years, the last time in the summer of 1866.

Syrnium aluco, Lin.

Ranges north as far as Salten (67°), and is not rare throughout the whole of Nordland.

From nests containing young (Christiania, May 1st 1871), I took the following remains of the food which the old birds and the nestlings had been partaking of: —

Mus sylvaticus: an individual with the head gone (it was found entire in the stomach of a nestling scarcely five days old), and numerous fragments. *Arvicola agrestis*: a few individuals entire, and the fragments of a dozen. *Arvicola amphibius*: the whole of the cranium, in three parts. *Arvicola glareola*: a few individuals. *Sciurus vulgaris*: the cranium and other bones. *Sorex vulgaris*: numerous individuals. *Rana*, sp: parts of one individual. *Turdus*, sp: fragments. A small bird of another species: fragments.

Geotrupes stercorarius: numerous fragments (entire in the stomachs of some of the nestlings).

Bubo maximus, Sibb.

Distributed, but in decreasing numbers, over the whole of Nordland, and parts of East and West Finmark. In the latter localities it does not occur regularly, but has been shot and observed there several times.

Up to 1864, a reward was granted by Government for killing individuals of this species; the law, however, has been repealed, mistakes having frequently arisen, when paying the reward, from confounding it with the smaller species.

A nest of 4 fresh eggs was found 28th May 1872 on the Fillefeld, by Mr. Lysne; a day or two after another, containing 4 eggs slightly incubated, was found in the uppermost region of Valdres. An attempt was made to shoot the old birds near the nests, but they were too wary, and did not seem to be incomodod by the daylight. They were mobbed by numbers of *Turdus pilaris* and *torquatus*, and uttered loud and angry screams whenever these birds attacked them.

Otus brachyotus, Lin.

Scattered over Finmark, especially in the interior districts, and has been found nesting certainly as far north as Karasjok (70°), but can hardly breed in the outermost coastal region.

Contemporaneous with an extensive migration of *Myodes lemmus* on the southern fells in 1872, it was more than usually common in these parts of the country, and I observed numerous individuals, conspicuous by their peculiar flight, hovering over most of the mountain mosses on the Dovre.

Falco gyrfalco, Lin.

Numerous in the woody tracts of West and East Finmark, but rare in the outermost coastal region, which however it frequents in the autumn and winter months.

The nests are almost invariably located in the top of a large fir tree, and they contain eggs the last week in April, at which season there is scarcely any sign of spring here. In West Finmark alone, from 1854 to 1861, Wolley found upwards of 20 nests, containing

from 3 to 4 eggs each, almost all of which had been laid towards the close of that month, a few clutches even earlier (16th April 1857, 16th April 1858), scarcely any later (the latest 7th May 1854).

Falco communis, Gmel.

In Finmark much rarer than the foregoing species, its chief habitat being the coastal region and the islands adjacent. It would seem to breed somewhat later than *F. gyrfalco*, a nest, containing 4 eggs, having been found by Wolley¹ in West Finmark 8th June (1859). In East Finmark, it has been found breeding in South Varanger, and near Vadsø, by Nordvi.

Falco aesalon, Gmel.

One of the commonest birds of prey in Finmark. It undertakes at intervals excursions from the wooded districts to the plains of the fells. In these northern regions it generally builds on the ground, selecting some rocky acclivity. A nest thus located was found on Tromsøen, in June 1872; the eggs and the birds are both preserved in the School Museum.

On the southern fells the eggs are, as a rule, deposited in an abandoned nest of *C. cornix*, the inside being partly filled up with moss by the new occupants, whereby the eggs are crowded into a corner.

It was observed on the Dovre during the summer of 1872 in greater numbers than common, owing to the migration of *M. lemmus*.

Cerchneis tinnunculus, Lin.

North of the Trondhjemsfjord it soon becomes a rare bird, and in Nordland, where, however, it has been observed in several localities, it can hardly be numbered among the species of regular occurrence. The vicinity of Tromsø (69° 40') is the most northerly point at which it has been found (Lilljeborg, Sep. 1849).

In the south, it not infrequently breeds on the fell-sides above the forest belt. Messrs Alston and Brown found a nest on the Fillefeld, about 4000' a. l. s., in the month of June 1871; from the stomachs of the individuals killed near the nest were taken *M. lemmus*; in those of a pair shot near Christiania in the spring 1872, I found, with the exception of a *Zootoca vivipara*, insects only.

¹ Ootheca Wolleyana, Part I, London 1864.

Astur palumbarius, Lin.

Breeds sparingly in the neighbourhood of Tromsø and in the valley of the Maalselv (a specimen bird was shot here 21st June 1872), and here and there in the wooded tracts of East and West Finmark, but hardly farther north than Alten (70°); in the latter locality it has been shown to breed. Wolley found a nest here (constructed originally of *Sciurus*), containing three eggs, in the top of a tall fir-tree, April 29th 1855. Some few individuals would even appear to be resident in the extreme north of the country, birds having been observed and killed in the winter months at Tromsø, and on the shores of the Varangerfjord.

Astur nisus, Lin.

Volasjøhø, on the Dovre, 27th July 1872, about 4000' a. l. s.

North of the Polar Circle, it has hitherto been observed only in the interior of East Finmark, where Nordvi has repeatedly found it breeding. The greater number would appear, like the foregoing, to leave the country at the approach of winter; stragglers however are everywhere met with resident.

Buteo vulgaris, Bechst.

The northern limit of the distribution of this species in Norway has not yet been sufficiently defined. It would appear, however, to occur north of the Trondhjemsfjord (in the spring of 1872 the Philosophical Society of Trondhjem procured a specimen from Selbo), for in Sweden the species ranges considerably further north.

In the stomach of a female shot near Christiania April 18th 1872, I found fragments of a *Sorex vulgaris*, two *Arvicola glareola*, and an *Arvicola agrestis*. From the stomach of an other individual killed that summer, was taken a *Coluber natrix*.

Archibuteo lagopus, Brünn.

Common on Tromsøen and throughout the whole of Finmark, more especially on the plateaus of the fells. In June 1872, I saw several individuals, shot in the valley of the Maalselv, for which rewards were demanded on the supposition of their being the goshawk.

Both in 1871 and 1872 abundant on the Dovre, where they were observed at a considerable altitude.

On the Fillefjeld, they occurred in large numbers in 1871, the country round then swarming with *Myodes lemmus*. Mr. Lysne alone collected 28 of their eggs, the nests containing from 2 to 4 eggs each. Several pair bred twice that summer, and fresh eggs were to be found the whole season through. So late as the 6th and 9th *September*, Mr. Lysne discovered nests containing together 7 eggs, some of them newly laid. The colour of these autumn sets was considerably paler than common, in several cases being nearly white. All the nests were located from 3,400' to 5,600' a. l. s. (some of them almost at the summit of Suletind) on the ledges of the fells, and close to a patch of grass.

Aquila chrysaetos, Lin.

Occurs scattered and in small numbers north of the Polar Circle; it is a resident in East Finmark and in the neighbourhood of Tromsø. An individual from the latter locality, shot in the winter season, is preserved in the Museum of the town.

Haliaetos albicilla, Lin.

Probably more abundant in the coastal region of Trondhjems Stift than anywhere in the country, especially off Fosen, Namdalen, and Helgeland, in the province of Nordland. Indeed it is common along the whole coast, up to the Russian frontier, everywhere as a resident, and in particular is never wanting on the „Fuglebjerge“, at Stappen even, close to the North Cape, where I met with it in June 1872.

On the 23rd June 1871, at Salsvand in Namdalen, I examined a nest, which had been occupied for a succession of years, though robbed of every brood. It was built in the naked trunk of a dead fir-tree, about 40' high. The ground beneath the tree was white with excrements, and sterna and other bones of *Mergus* and divers sea-fowl were everywhere strewed around.

The nest was 3' high and measured about 6' in diameter. At the top it was almost flat, the exterior being composed of naked firsticks, about an inch thick. The inside was lined to the very edge with a thick layer of moss, straws, dry grass, stalks of

Calluna vulgaris and *Empetrum*, and with *Fucus vesiculosus* even, though the sea was distant half a Norwegian mile.

In the nest were two young birds, almost fledged. The biggest measured as follows: — Total length 770 mm; tarsus 110, middle toe 72 + 31, culmen 67, from cera to the tip of upper mandible 50½ mm. Iris blue-black, cera and the entire beak horny brown. Toes and naked portions of tarsus yellow. Colour of the body nearly the same in both nestlings. The head was a brownish black, and the whole of the body deep brown, relieved with the normal spots of a paler hue. Shafts of tail feathers lightish. The stomachs were full of fish and contained besides a considerable quantity of grass, which, having formed part of the lining of the nest, may have been swallowed accidentally. The old birds kept at a distance, never approaching within gunshot.

Another nest, discovered on an island in the Foldenford, distant thence about two Norwegian miles, had been built in a rocky wall. The young birds, however, had flown June 29th 1871.

Pandion haliaëtus, Lin.

Found breeding in West Finmark, up to Karasjok and Alten (70°); in the latter district two individuals were killed in the summer of 1872; it ranges as far north in East Finmark. Wolley found a nest at Rovasjoki, West Finmark, in 1855 and 1857, in the top of a tall fir-tree.¹

The 25th June 1871 a nest was discovered near Salsvand, on the Foldenford, in the topmost branches of a pine; it was constructed of sticks, and thickly lined with moss and lichens. The nestlings, two in number and about 8 days old, were different alike in size and colour. The biggest (total length 220 mm) was enveloped in *black* velvety down, but not thick. In the down the white shafts of the feathers, (the extremities hung with downy tufts), could be plainly distinguished; on the head, all the shafts were black. The smallest of the nestlings (187 mm) was covered with *white* down, the line of the back only being black; above the

¹ Ootheca Wolleyana, Part I, p. 68.

eye, and extending backwards towards the region of the ear, was a blackish stripe. Shafts of feathers indistinct.

Both nestlings were gorged with fish.

5. Pullastræ, Sundev.

Columba palumbus, Lin.

A single example of this species, which does not commonly range beyond the Trondhjemsfjord, was shot in the parish of Hemnæs in Helgeland (66° 10'), in June 1838. Of this individual a minute description will be found in Heltzens MS.

Columba oenas, Lin.

Of this species, too, individuals were also observed in Nordland by Heltzen (1842). It occurs even beyond the Polar Circle, in Salt-dalen for instance (vide Sommerfelts MS. of „Saltdalens Beskrivelse“).

The stomach of an individual shot near Christiania in the spring of the year, contained corn (wheat), quartz, and the seeds of divers plants, chiefly of the *Vicia*.

Turtur auritus, Ray.

Is found almost everywhere in Norway, and both in the north and south of the country.

In Finmark, it would appear to have been observed in the last century even,¹ and examples have been occasionally shot along the shores of the Varangerfjord up to the present time, generally late in autumn. It was also found in West Finmark, at Tønsnæs, north of Tromsø, in November 1867.

It is highly improbable that the numerous individuals which have occurred during a long succession of years in various parts of the country were all of them stray birds; but, on the other hand, it is hardly possible to name the habitat of a colony whence the individuals in question can have spread.² In wellnigh every spot at which tolerably accurate observations have been made, it has been found to occur, individual pairs appearing to breed sporadically in most dissimilar localities throughout the country.

¹ Vide Leem's „Beskrivelse over Finmarkens Lapper“, Copenhagen, 1767, (note p. 245, by Gunnerus).

² Vide Sundevall, „Svenska Fogl.“, p. 172.

B. Cursores, Illig., Sund.

6. Gallinæ, Lin.

Tetrao urogallus, Lin.

The distribution of this species coalesces with the limits of the fir (*Pinus sylvestris*) in a vertical and horizontal direction. Abundant in the valley of the Maalselv, and occurs as far north as Bosekop, in Alten (70°), where it is well known; I myself observed a female there, on the 16th July 1872. In the interior of Finmark it is not so common, but has been met with however at Karasjok, (an individual having been shot on the roof of the village church, in January 1872). It ranges as far north in East Finmark (Syd Varanger).

Every winter I have met with sterile female individuals, which to a greater or less extent had assumed the garb of the male. It is obvious that the reason of this sterility cannot always be old age, several of these females having been young birds, and in the latter a diseased state of the ovarium must be the true cause. The most remarkable example of this kind I found in the game-market of Christiania, Oct. 18th 1872. In dress ~~and~~ size (Total length 655 mm) it exhibited so striking a resemblance to an old and fully coloured male as to be with difficulty distinguished from one. As in all probability very few individuals are characterised by such a dress, and as it is scarcely possible for any individual to approach closer to the male bird in appearance, the sterile females can probably always be distinguished from the males by the following peculiarities of plumage: — The beard-like feathers on the throat speckled with white, bill dark, tail finely speckled with greyish red, (without the large white spots of the male capercaillie).

Tetrao tetrix, Lin.

The valley of the Maalselv, near Tromsø (69° 20'), is the extreme limit of its distribution; here it occurs in limited numbers only. Stray individuals have been shot near Tromsø, somewhat further north.

A. J. & F. F. 74 p. 234: Syd Varanger.

Sterile specimens of this species are often met with, and such sometimes attain very nearly the dress of the young male.

Tetrao urogallo-tetrix.

(„Rakkelhane“, hybrid between *Tetrao tetrix* ♂ and *urogallus* ♀).

Nilsson having given such conclusive evidence of the hybrid origin of this bird (called in the vernacular „Rakkelhane“) that the question was regarded by naturalists as settled,¹ he proposed *Tetrao urogalloides* (or *urogallides*) as an appropriate name for this form. At the same time he showed from his own observations and those of intelligent sportsmen, that this hybrid is bred from between the black cock and the female capercaillie (*Tetrao tetrix* ♂ + *urogallus* ♀), whether the connexion arises from the black cock repairing to the breeding-haunts of the capercaillie, or rather (which perhaps is more frequently the case) from the female capercaillie, prompted by a morbid tendency to mesalliance — so often the result of inordinate sexual desire — consorting with black game and pairing with the handsome and gallant male of that species. True, this hybrid has been supposed by some to be the result of the male capercaillie mating with the grey hen (*Tetrao urogallus* ♂ + *tetrix* ♀); but the supposition has invariably been scouted as improbable, and indeed no such form of hybrid has been hitherto observed.²

Nilsson's designation *Tetrao urogalloides* has been accepted by all Scandinavian naturalists, and indeed by most others that do not hold to the belief, that this hybrid forms a distinct species. The

¹ This opinion was first entertained so far back as the middle of the last century (Reutensköld, „Kgl. Vet. Akad. Handl.“ 1744).

² In 1868, Mr. Victor Fatio (Bull. Soc. Vaud. Vol. IX, no. 58, p. 594) described a specimen, preserved in the museum of Lausanne, which he calls „*Tetrao medius inverse*“. Respecting this example, he presumes „non seulement que le sujet de Lausanne est un métis, mais encore que c'est le *Tet. urogallus* qui est son père“. This specimen (its total length is stated to be 655 mm), is, however, hardly a hybrid between *T. urogallus* and *tetrix*, for „sa queue au lieu d'être en lyre, est plutôt en éventail“; to judge from the subjoined description of its coloration etc., it would seem to represent but one of the numerous garbs of sterile females of *T. urogallus*.

name, however, is not strictly applicable, partly because the „Rakkelhane“ is a *compound* and not a simple species, and should therefore, as such, have a *compound* and not a simple name; and partly because, as Sundevall has shown, the termination *ides* is calculated to impart a wrong notion concerning the *male* parent, to which in grammatical correctness it should refer.

Probably it was thought unnecessary to inquire further into a matter comparatively so unimportant. But seeing that this form occurs in a wild, and only in a wild state, it would be well to find an appropriate name whereby to give it a place in the system. In the year 1869, Sundevall proposed a change in that respect, and suggested the name of *Tetrao urogallo-tetricides*, which might be regarded as satisfactory; the termination *ides*, however, could surely be dropped, partly because it is superfluous, and partly because it would prove impossible to apply it in analogous cases. The easiest way out of the difficulty would seem to be a simple compound of the names of both parents, the name of the mother being subordinated to that of the father. Thus we get the designation *Tetrao urogallo-tetrix*.¹

Of this hybrid, a considerable number of individuals are annually procured from various parts of the country, male examples being every winter found at Christiania among game brought from the interior wooded districts of the south; most of them come from Gudbrandsdal and Østerdal and the southern portions of Trondhjem Stift, and from Thelemarken in Christiansand Stift. In several of these localities the hybrid origin of the bird is well known to the inhabitants. Along the west coast it can only be produced in the most inland tracts (*T. urogallus* is not widely distributed here). The most northerly point at which it has been found or indeed *can* occur, is the Balsfjord, near Tromsø (69° 20'), this locality being the extreme range of one of the parents (*Tetrao tetrix*).

Of the individuals hitherto examined from Norway, one only was a female; this bird (wing 255 mm, tail 113, tarsus 42, middle toe,

¹ Vide corresponding terms in botany: *Verbascum thapso-nigrum*, Schied., *Cirsium acauli-oleraceum*, Näg., *C. oleraceo-heterophyllum*, Näg. etc.

41 + 13 mm, is preserved in the University Museum; the others were all males in winter plumage. I once found a young male not fully coloured in the game market of Christiania Oct. 3rd 1870.

The Rakkelhane would appear to consort in preference with black game, and most individuals of which any particulars are known, have been killed among birds of that species. It has been recorded of one individual (Odalen in April 1871), that it was shot in its „Spil“, in a breeding-haunt of capercaillie.

Bonasa betulina, Scop.

Found sparingly in the northern localities of Trondhjem Stift, and occurs as a rare bird in Namdalen (65°). According to Heltzen, it has been observed even in some parishes of Helgeland, but Mr. Berbom did not meet with it at Salten (within the Polar Circle).

According to Mr. Pedersen, a taxidermist at Tromsø,¹ this species occurs in the valley of the Maalselv. When visiting these parts, I made enquiry of the inhabitants, but they did not appear to know the bird; indeed the locality must be without the actual limits of its distribution. Heuglin too, relying on the same source, records (no doubt erroneously) the occurrence of this species in East Finmark.

Lagopus albus, Gmel.

Probably most abundant on certain of the flat islands, distinguished by a vigorous birch growth, lying to the north of the Polar Circle, especially in Lofoten and along the coast of Nordland and Tromsø Amts. The islands best known in this respect are those of Hasselø, in Lofoten, and Karlsø, north of Tromsø, a very considerable number of this species being annually killed there, and apparently without effect on their increase.

On the 14th June the males were to be seen on the „Spil“ in all directions among the bushes on Hasselø. On Tromsøen this bird may be said to be almost domesticated; it nests in the gardens of the inhabitants and in the grounds of the neighbouring villas, no wise disturbed by the daily avocations going on around.

¹ Petermann. „Geographische Mittheilungen“ Vol. 17, p. 57; „Journal für Ornithologie“ 1871, Vol. 19, p. 107.

By the 21st July the young birds had attained the size of a hazel-hen.

For the rest, this species is pretty evenly distributed throughout the whole of Finmark, in every spot where a growth of birch or willows is to be found. In the extreme north — every vestige of arboreous vegetation having vanished — its absence is supplied by *L. alpinus*.

Perhaps nearly half a million individuals of both species are annually shot and snared in Norway, three-fourths of the number belonging to *L. albus*.

A very interesting and curious variety of the common grouse in winter dress, I am just enabled to describe. It was purchased by the Museum of the University in March 1873, having been snared among the normal *L. albus* in Thelemarken a month before. It is a male, with small testes; the bright coloured eyebrows *smooth* with a toothed comb, the toes feathered almost to the claws, and the tail is rounded: hence it is no hybrid. Total length 346 mm; wing 201, tarsus 33 $\frac{1}{2}$ mm.

The colour is a mixture of white and black. The head and back are finely speckled, each feather being brownish black with white tips; the region from the lower mandible and that beyond the eye is entirely black. The primaries are brownish, with shafts of the same colour, the outer web is fringed with white. The first secondary (white) is short; in 2—8 the shafts and the outer webs are white, the inner webs dark brown, fringed with white. The tail black, the two middle feathers broadly (10—12 mm) tipped with white; belly white, but the inner parts of the feathers being black, this colour is only visible in places. The under tail-coverts black, broadly tipped with white.

Lagopus tetrici-albus.

(„Rypeorre“, hybrid between *Lagopus albus* ♂ *Tetrao tetricus*. ♀)

The bird, called „Rypeorre“, (a name originally adopted from the Swedish), has been known to naturalists, so far back as the close of the last century, as a hybrid, bred between *Tetrao tetricus* and *Lagopus albus*. Here, too, it is the Black Cock, which, pairing

with the female ptarmigan (*Tetrao tetrix* ♂ and *Lagopus albus* ♀), is the reputed father of so singular a progeny. Nilsson and most other ornithologists named this form *Tetrao lagopoides* (or *lagopides*), and Sundevall („Svenska foglarne“ p. 255), reasoning from the analogous facts recorded of the foregoing hybrid (vide p. 236), *Tetrao lagopodi-tetricides*.

In tracing the origin of this hybrid, which has hitherto almost invariably occurred in but one dress and one sex, it is necessary first to investigate, whether there be not two distinct forms of „Rypeorre“, the one bred between *Tetrao tetrix* ♂ and *Lagopus albus* ♀, the other between *Lagopus albus* ♂ and *Tetrao tetrix* ♀. A similar hypothesis, as previously mentioned, has been started to account for the parentage of the Rakkelhane; but the argument proving its fallacy with that form of hybrid, holds equally good as regards the „Rypeorre“. Now, it is an established fact, that all individuals of the Rypeorre-hybrid, if procured at any given season of the year, are *singularly alike* both in size and coloration of plumage, and hence their origin cannot surely be traced to *more than one* of the two possible connexions.

As previously stated, the exertions of Swedish sportsmen and naturalists have provided ample proof of the true parentage of the Rakkelhane. On one occasion, eggs taken from a brooding *Tetrao urogallus* ♀, were incubated by a domestic hen, the issue being a brood of Rakkelhøns. Such a fact, taken in connexion with the similarity of appearance presented by all individuals of the Rakkelhane-hybrid, renders further evidence superfluous.

So direct a proof of the Rypeorre has not yet been obtained, and it must therefore be inferred from less conclusive facts.

Nilsson having suggested in his *Ornithologia suecica*, Vol. I. p. 303, the probability of the Rypeorre-hybrid being bred „a *T. tetricæ* patre et *Tetr. subalpino* femina“, the conjecture has from that time to this remained unchallenged. By reason of his fine plumage, elegant form, and excess of vitality, *Tetrao tetrix* ♂ has been able to form these alien connexions. No other evidence, I believe, has been advanced in proof of the assertion but the fact, that female

ptarmigan are said sometimes to make their appearance at the „Aarfuglelege“, (breeding-haunts of black game).

On closer inspection, this theory of parentage does not appear to be in strict accordance with fact. Nay, the origin of the „Rypeorre“ can, I maintain, with far greater probability be explained as the result of *Lagopus albus* ♂ pairing with *Tetrao tetrix* ♀. This view has indeed been formerly entertained in a few instances but found little favour with naturalists. The following are the chief arguments that have led me to adopt it.

It is well known that the Rakkelhane ♂ greatly exceeds its male parent in size, whereas, in that respect, it exhibits a perfect resemblance to its mother. Now, reasoning from analogy, the size of the male Rypeorre should correspond exactly with that of its supposed mother (*Tetrao tetrix* ♀). and exceed that of its supposed father (*Lagopus albus* ♂) in due proportion. And this indeed is found to be the case. That the female *Lagopus albus* should generate the large-sized, strong-limbed Rypeorre is every whit as improbable as that *Tetrao tetrix* ♀ can be the mother of the Rakkelhane.

The coloration, too, of the parent-birds favours, I think, the assumption. That the *Tetrao urogallus* ♀ should pair with the black cock, which, though smaller in size, resembles even closely her proper male in plumage, is not surprising; but that the female ptarmigan should pair with the black cock, a bird so different in appearance from her true mate, is not so easy to explain. On the other hand, it is far from improbable that a young grey-hen which has never paired, in a moment of surprise should yield to the amatory advances of a male ptarmigan in his dark-coloured summer dress.

It has been long known that ptarmigan will repair to the breeding-haunts of black game; but, whenever there has been a question of sex, these unbidden visitors have been regarded as females. Now, whether *female* ptarmigan actually consort with black game in their breeding-haunts is a point which has not yet been satisfactorily settled; indeed, I am inclined to think there is little

probability of such being the case. On the other hand, it has been *proved incontestibly*, that *male ptarmigan do*. One out of the small number of ptarmigan killed from time to time on the heights round Christiania (a locality in which this bird very rarely breeds) was a male individual, which had boldly intruded into a „Legeplads“ of black game, where he was seen to deport himself in a manner precisely similar to that of the legitimate lords. The sex of this specimen was examined by Prof. Rasch. These visits of the ptarmigan to the breeding-haunts of black game are much more frequent than is generally supposed. It has been stated by experienced sportsmen, that in Nordland and some parts of Nordre Trondhjem's Amt, localities where the vertical range of each of the two species may be said to coalesce, *a few male ptarmigan are to be found at almost every breeding haunt of black game*.

The cause of this abnormal passion in the male ptarmigan is not easily traced. True, the males of *Lagopus albus* are supposed to exceed the females in number, in which case a supernumerary individual of the former sex, which had sought in vain for a mate among his own species, would not hesitate to pair with a grey hen he might chance to fall in with. But connexions of this kind are repugnant to nature, and in many cases the only feasible explanation is to be found in a violent, irresistible desire to breed *out* of the species. As regards the Rakkelhane, it is not stated that paucity of females is the cause which induces the black cock to mate with the hen of the capercaillie.

Again, the male ptarmigan scarcely yields to the black cock in the violence of its sexual instincts, which is shown by a remarkable fact, of which my friend Professor Friis was an eye-witness. In the spring of 1857, he observed on one of the most elevated farms in Nordmøre, Bergens Stift, a male ptarmigan which haunted the homestead for several days in succession in amatory companionship with a white speckled domestic hen. The result of this singular connexion is unknown.

As the Rakkelhane resembles its progenitor (*Tetrao tetrrix*) in coloration of plumage, so also does the male Rypeorre. This

similarity between the Rypeorre and its male parent is in many respects very striking, and though considerable numbers of the Rypeorre are no doubt annually produced, they are seldom recognised as such, being sold as fine examples of ptarmigan in the spring or autumn plumage.

Finally it is worth recording, that two young males, shot in the month of October 1845, at Hedemora, in Sweden, were accompanied by a female bird, apparently their mother, which was supposed to be a grey-hen.¹

For the theory of parentage here advanced there is indeed no positive proof; but there can be little doubt that some intelligent sportsmen will ere long witness the male ptarmigan and grey hen *in copula*, if indeed still more conclusive evidence be not obtained.

Should our views on this subject prove correct, the names of the Rypeorre-hybrid, — *Tetraolagopoides* and *Tetraolagopoditetricides*, can be no longer retained. If, indeed, it is necessary to bestow a special designation on this median form, the generic name should undoubtedly be derived from that of the *male* parent, the specific name being a compound of the mother's subordinated to that of the father. The name would, then, be *Lagopus tetrici-albus*; and this mode of designation could be easily applied to hybrids which, though yet unknown, may possibly, nay probably *do* exist.²

The hybrid origin of this bird was unquestionably first pointed out in the year 1795, by Amtmand Sommerfelt, who, in the „Topographisk Journal f. Norge, Part. 14, p. 50, gives an excellent description of two specimens from the districts bordering on the Mjøsen (Eidsvold, Biri). These individuals, which were clearly male birds in winter-dress, are recorded as a „Blanding af Aarfugl og Rype“, (hybrid between black game and ptarmigan).

¹ Öfv. Kgl. Vet. Akad. Fö h. 1847, p. 201.

² For instance, between the species of *Lagopus*, which perhaps would account for some few of the abnormal diversities of plumage, that is found in these birds.

This, too, is the first time the bird is found mentioned by a native author.

In 1823, an individual was described by Pastor Sommenfelt¹ (afterwards rector of the parish of Saltdalen) in the „Mag. f. Naturv.“ 1st Series, Vol. 2. This individual, also procured from a district bordering on the Mjøsen (Toten), was a male in *summer* plumage. The brief description (transcribed below) is, I believe, the only one that has ever been given of a true summer specimen.

of summer, felt l.e. August saw autumn, affording of Lohven by rypheum

The first individual preserved in any Norwegian Collection was a male in winter dress; it was sent to Professor Esmark from Røraas, in 1837.

In the course of the next 30 years not more than half a dozen individuals are known to have been observed; they were all males procured from the south of the country (Christiansand Stift, Bergen Stift, Hamar Stift).

From 1870—73 the University Museum has been so fortunate as to obtain 6 new specimens, but all male birds. One of them was a young individual in autumn plumage, the rest being in the normal winter garb. Five were procured from the south eastern tracts of the interior (Gudbrandsdalen, Østerdalen); the remaining bird was shot in Saltdalen (65° nearly), north of the Polar Circle, the most northerly point at which it is known to have occurred (the skeleton only of this individual is preserved).

No female of this hybrid has hitherto, I believe, been met with in Norway.

Of the habits of the Rypeorre scarcely anything is known from Norway. Of 6 individuals which I have had an opportunity of examining the last few years in the flesh, 5 had evidently been caught in snares set for ptarmigan. Now, most of such snares being set on the fell-sides in the birch belt (on the southern fells from 2500 to 3500' a. l. s.), it would seem to be a resident at the same altitude as its male parent (*Lagopus*). The sixth individual was transmitted from Saltdalen, in Nordland, by Mr. Berbom, who had killed it in winter, amongst ptarmigan. Here, the locality was a mountain ridge, covered

¹ Son of the last mentioned gentleman.

with a growth of birch, and distinguished by round rocky elevations, small mosses, and tarns. In this spot there is always a good supply of ptarmigan and black game, whose respective ranges in northern latitudes sometimes coalesce; and apparently there was no lack of pairing-birds for either of the two species.

The craw and stomach of an individual, shot in Gudbrandsdalen Dec. 7th 1870, contained a number of fragments of a *Salix* (some of them 15 mm in length), fragments and numerous berries of *Myrtillus nigra*, tops of *Calluna vulgaris* (about 30 mm in length), and a few leaves of *Arctostaphylos alpina*. That of another individual (Dec. 6th 1872) was filled with the tops and seed of *Carex stellulata*, amongst which were found a few berries of *Oxycoccus palustris* and *Juniperus communis*, some of the latter being unripe; in the specimen last procured (28th Febr. 1873), I found leaves of *Vaccinium vitis idæa*, and fragments and buds of a willow and of *Myrtillus nigra*.

Of these several descriptions of food, *Arctostaph. alpina* indicates a habitat of considerable altitude, and some of the others, that this bird — in winter-time at least — frequents humid localities.

In all these winter-individuals the testes were only small, and greyish white in colour; the left was generally larger than the right, and measured 5 mm in length; the breadth and height was about 3 mm.

Diagnosis.

Tail slightly forked, number of retrices 18; The outward bend of the feathers is scarcely perceptible.

Toes half covered with whitish plumlets: thus, the innermost joint of the middle toe is entirely feathered, the middle one naked above, but covered on the sides, the outermost quite naked. The naked portions are marked above with transverse rings and the sides with 1 or 2 series of rounded scales; under the latter there is a larger (♂) or smaller (♀) toothed comb.

Claws shaped almost like those of *Lagopus*, long and broad and very slightly oblique, the inner edge being a trifle broader than the outer.

Measurements of specimens preserved in the University Museum.

	Total Length.	Wing.	Outermost Rectrix.	Tarsus.	Middle Toe with Claw.	Length from Nostrils.	Myxa.
1. Young male in au-Gudbrandsdalen, Oct. 8th. 1872.	—	237	131	48	36 + 16	13	12
2. Male in almost full winter plumage.	—	256	130	45	37 + 19	13 ¹ / ₄	12
3. Male in winter plumage.	508	255	142	46	36 + 18	14	12
4. Male in winter plumage.	480	252	140	45	37 + 21	14 ¹ / ₄	13
5. Male in winter plumage.	470	246	131	48	40 + 19	14	13
6. Male in winter plumage.	480 ¹	238	147	45	39 + 18	13 ¹ / ₂	12
7. Male in winter plumage.	499	245	161	47 ¹ / ₂	39 + 20	14	12
8. Female in winter plumage. ²	380	190 ³	125	48	—	—	—

¹ One of the *vertebræ colli* having been crushed, this measurement is perhaps inexact by a millim. or two.

² Preserved in the Museum of Stockholm, and described by Prof. Sundevall in "Öfv. Kgl. Vet. Akad. Förh." 1844, p. 80, and in "Svenska Foglarna", p. 256; by Prof. Nilsson in "Scandinavisk Fauna", Ed. 3, II, p. 89.

³ In "Svenska Foglarna", p. 256 the measurement given is 120; probably a misprint.

Bill: culmen not so plainly ridged as in *Tetrao tetrix*; the side branch of the upper mandible strongly developed. The lower mandible considerably smaller than the upper, (as in *Lagopus*). Eyebrows with numerous small wart like skin-laps, and finely toothed above.

Male in winter dress, Nov.—March.

Bill black.

Head black and white. The white is a broad band, passing in front of and through the eye, and terminating above the ear-coverts in the direction of the neck. The black is a broad band, which encircles the upper and lower mandibles, expands beneath the latter into a black patch on the gorge, about the length of the bill, stretches under the eye, covers the ear-coverts, and extends under the white band mentioned above down to the end of the neck. This band however is seldom entirely black, the feathers being more or less tipped with white. *Front* and *crown* of the head black sprinkled with white.

Eyebrows bright vermillion, with numerous small wart-like protuberances; above slightly toothed. Their total height (at the end of winter) is 11 mm, of which $4\frac{1}{2}$ mm forms the toothed comb. *Eyelids* white.

Neck, like the back, rump, and crown of the head, deep black, the margin of the feathers being sprinkled with white; it has, however, a somewhat lighter appearance, from the greater thickness of the plumage here. A few feathers entirely black are interspersed at intervals.

Back and rump black, the outer part of the feathers sprinkled with white. Below these whitish tips, however, in most of the individuals, there is a broadish space, on which can be traced almost obsolete transverse bands, speckled with reddish-brown; it is, however, frequently concealed by the overlapping feathers, and not easy to discover in all individuals.

Interscapular region much the same as the back; a few feathers entirely white, entirely black, or black interspersed with broad white edges.

Throat unspotted white.

Fore part of neck brindled with black and white, the base of each feather being as a rule black, the outward extremity white. Below, the black feathers predominate, and form a broadish black patch on the breast, the feathers of which have strong reflections, and are either entirely black or but narrowly fringed with white. This pectoral blotch is never wanting, though sometimes it is a little mixed with white feathers.

¹ *Under plumage* white, but seldom without a few black feathers interspersed, more especially between the feet and on the flanks. The presence or absence of these black spots is no doubt entirely individual, and would not appear to be in any way dependent on the season of the year. Indeed the colour of the flanks varies more than does that of any other part of the body.

Rectrices black with fine white tips, which are broadest on the median feathers (from 4 to 8 mm), continuing to narrow towards the extremity, and assuming on the outermost the appearance of a thread-like white line. The outermost tail-feather is from 12 to 24 mm longer than the 5th, which is about the same length as the other median rectrices. Hence the tail is forked, much as in *Tetr. tetrica* ♀.

Upper tail-coverts black, with a broad (about 10 mm) white margin. In some individuals, there is a faint sprinkling of brownish on the outer web.

Under tail-coverts white; the length is about that of the rectrices, perhaps a trifle shorter.

Primaries grey-brown with whitish edges; the outer web almost entirely white, faintly sprinkled with greyish-brown. Shafts dark-brown.

Secondaries: the first entirely white, and remarkably shorter (as much as 30 mm) than the others. The latter are principally white, but a trifle speckled with greyish-brown along the shafts. One of the individuals examined has the first six secondaries almost entirely white. The tips (20 to 30 mm) are white, whereby a white transverse band appears upon the closed wings.

Alula speckled with white and greyish-brown; shafts greyish-brown, white predominating in the outer half of the outer web.

Wing-coverts speckled with white and greyish-brown, and tipped with white. Outer web of *those of the primaries*, almost pure white, shafts dark-brown, inner web much sprinkled with brown. Outer web of *those of the secondaries*, sprinkled with brown, the shafts and outer web being white. Thus on the closed wing appears first a transverse band chiefly white (a few black feathers, however, are often interspersed); then the secondaries with their points protruding beyond the coverts, exhibit first a greyish-black band tabbed with white, and then their white tips.

Tibia white.

Tarsus white with a sprinkling of greyish-black, more especially in front, down towards the toes.

Toes white, their plumage being thick and long, the tips covering the major portion of the outermost (naked) joint.

Claws horn-brown, with lighter edges and tips, and exceedingly long (on the middle toe from 19 to 21 mm). (Norway, Mus. of Christiania).

Female in winter dress.

Head and neck a deep tawny brown, with black transverse bands; the feathers tipped with white.

Back yellowish brown, with black transverse bands, the tips of the feathers being pale grey, sprinkled with black.

Scapulars marked with largish circular spots.

Under plumage white, each feather blackish at base; on the breast and flanks some of the feathers are black, marked transversely with yellowish brown stripes.

Rectrices black, speckled with brown at the outer parts, and with broad white points. Tail slightly forked. Outermost tail feathers, about 8 mm larger than the median, black, with the outer web speckled; the others speckled with black and yellow.

Upper tail-coverts speckled all over with brown; the tips of the feathers white.

Wing-coverts speckled, the outer web white, with the exception of the outermost feather, which is entirely speckled.

Combs of the toes very short. (Helsingeland, Sweden, 1843—44, Sund. and Nilss.; Mus. of Stockh.)

Male in summer dress (July).

„*Caput, collum, dorsum, pectus, Tetraonis Tetricis feminae*“.

„*Remiges primariae et secundariae albæ; plurimæ tetricum albæ.*

Rhachis remigis primæ fusca. Rectrices nigrae apicibus albis, duabus mediis nigris ferrugineo — undulatis exceptis. Cauda non forficata. Abdomen et femora ut in T. tetrice femina, modo pennis singulis albis ornata. Digiti sublanati. Magnitudo T. tetricis feminae“.¹
(Toten, Sommerfelt, 1823).

Young male in autumn dress (primo Oct.)

Bill black, slightly ridged.

Head and neck rusty yellow, each feather being marked with narrow transverse bands of greyish. The *crown of the head* and *anterior portion of the neck* appear a trifle darker, the black and rustcoloured transverse bands being here of about equal breadth. The black spot on the gorge, characteristic of the winter dress, is here whitish-grey, and consists of new feathers, some of them having *blood-shafts*.

Throat light reddish-grey, and almost unspotted.

Back and rump black as in the winter dress, the outer part of the feather being sprinkled with white; between the latter, which are new, there are several remaining from the summer dress, being speckled with black and rusty yellow.

The scapulars have numerous large feathers, speckled with black and rusty yellow; the shafts of several are lightish.

Anterior portion of breast much as head and neck, — reddish-brown with narrow black transverse bands. A few black (winter) feathers have appeared, some margined with white.

Under plumage almost pure white, a few black feathers only being found in the flanks and between the feet. On the flanks,

¹ The size of this individual shows it to have been a male.

too, there are a number of reddish-brown feathers with narrow transverse bands of greyish-brown.

Tail-feathers as in the winter dress, black with white tips, broadest in the middle (9mm), at the extremities almost obsolete. Outermost rectrix about 30 mm larger than the middlemost.

Upper tail-coverts partly black with white tips (normal winter dress), partly marked with alternate transverse bands (about 3 mm) of black and rusty yellow. Both the former and the latter are *new* and have blood-shafts; hence the latter, which belong to the autumn dress, must be moulted immediately on their attaining the full size.

Under tail-coverts white.

Primaries as in winter dress, chiefly dark greyish-brown, with the tips and the outermost narrow web entirely white, or speckled with white.

Secondaries: Base of feathers speckled with white, tips white.

Upper wing-coverts: Base of outer web black, tips white, or white speckled with black. Base of inner web black speckled with white, tips white.

Under wing-coverts white.

Tibia white; here and there, but generally concealed by the white feathers, there are a few banded with black and brown, and others white with the inner web black.

Tarsus white, unmixed with greyish-black.

Toes: Plumage thin and short, the whole of the naked portion of the middle toe and the other toes being very conspicuous. The toothed horny comb developed much as in old birds.

Claws dark horn-brown, comparatively short (on the middle toe 16 mm). (Gudbrandsdalen 8th Oct. 1872, Univ. Mus.)

Young male in half winter dress.

Head and neck with a number of pale rusty yellow feathers, and one or two transverse bands of dusky-grey. These feathers are paler than the corresponding ones in either black game or ptarmigan.

Back has a number of reddish-brown feathers (the *breast* but very few) transversely marked with black, oblique, and slightly

tabbied bars. For the rest, normal winter dress, with the large black pectoral blotch.

Tail, under plumage (very little black in the latter) and all other parts as in adult individuals.

Combs of toes distinct (Sundevall, 1844, Stockh. Mus.).

Adult bird at end of winter.

Dress normal winter garb; in the *head* and *neck*, however, there are a few dark reddish-brown feathers with black transverse bands. Above the eyebrow, too, the plumage is interspersed with feathers of the same hue. *Front of tarsi* without any mixture of a darker shade. *Under plumage* white with a very few black feathers (Østerdalen, 1851, Univ. Mus.).

Another specimen (March 1868) has the black patch on the chin reduced to a single black feather; the flanks and under plumage with a few large reddish-brown feathers. (Voss, Bergen Stift, Mus. of Bergen).

Lagopus alpinus, Nilss.

On the 19th June 1872 I found the first nest of the year in Maalselvdalen, in a spot above the forest belt blooming with *Rhododendron lapponicum*, *Diapensia*, and *Andromeda tetragona*. There was a clutch of 11 eggs, which had been sat on for about 4 days. Several white feathers from the breast of the female lay at the bottom of the nest. The old birds were both present. In the male, the belly and root of the beak were to a considerable extent still white, the plumage of the female approaching much nearer the normal spring dress. In the stomachs of these individuals I found gravel only, but the craws were filled with the leaves of *Salix herbacea*.

Young in down, about 4 days old, were found on the 9th of July, near the Porsangerfjord. From their stomachs I took *Diptera* and berries of *Empetrum*. Here, too, both of the old birds were close by, searching for food among the grass in a birch copse, which, however, lay in close proximity to the naked rocks.

Mr. Aall, proprietor of the Næs Ironworks, near Arendal, kindly lent me for examination, in February 1872, a remarkable specimen of

the ptarmigan, which had been shot in Lower Thelemarken in the winter of 1864. This individual has been hitherto erroneously regarded as a hybrid of this species¹ (the other parent unknown).

The distinctive feature in this specimen, which is perfectly normal in form and size, consists in the colour of the tail and wings. The feathers of the tail are black, marked with 8 or 10 brown transverse bars, and tipped with brownish. Viewed from beneath, the tail is more uniformly black, the *inner* web being but slightly spotted. Of the *remiges*, the outermost of the primaries is entirely white, with the shaft of the same colour; the other shafts are brown, the *inner* web being sprinkled with brownish. Back white, with here and there a brownish black feather; breast reddish brown and belly white. The upper wing-coverts, hidden by the white scapulars, are of a light reddish brown. (Tail rounded off, and toes fully feathered).

The smallness of the bill in this individual, coupled with the length of the tail (112 mm) and wing (196 mm), show it to be a form of *L. alpinus*. Probably it is a young female (no trace of lores), which, though full grown, from some cause has retained the dress of the young bird during the winter.

Perdix cinerea, Lath.

This species, which in the autumn of 1862 was even abundant in the lower south-eastern districts, had disappeared almost entirely the ensuing winter, and has since then occurred in small numbers only here and there in the south-eastern lowlands. In some localities, Fredrikshald for instance, the general opinion is, that *Astur palumbarius* destroys more birds of this species than are killed off by the winter cold, their numbers being kept up only by immigration from Bohuslehn.

Attempts to acclimatize this bird have been made in the neighbourhood of Stavanger and Trondhjem, to which localities the species

¹ I myself have recorded it as such in „Forh. i Vid. Selsk.“ 1868, p. 158, the details, of which I was then in possession, being meagre and inexact.

can hardly have penetrated of itself. Near the latter town 30 brace were turned out into the fields, (I believe in 1860), and at first appeared to thrive pretty well. In the autumn of 1862 individuals were observed as far north as Levanger, near which town a large covey, flying in a northerly direction, was seen on the 15th Nov. Although their numbers must have been thinned very considerably by the rigorous winter of 1862, some appear to have survived, covies having been observed in 1865 and 1866, in Indherred (64°), in 1867, in Børsen, in 1872, in Ørkedalen and Stod, districts situated on the northern and southern shores of the fjord.

Seven individuals, procured from Spain, were turned out in the neighbourhood of Stavanger, in 1862. The following year a brace was observed, but nothing more has been seen of them. On the Rosendal estate, in Hardanger, a similar attempt has been made, and with the same result.

As regards the distribution of this species in a vertical direction; it may be observed, that a covey of 8 or 10 birds was seen in the autumn of 1860, at Nystuen, on the Fillefjeld, about 3200' a. l. s.

Coturnix communis, Bonn.

Of late years this species has become more abundant in the southern parts of the country.

A nest, containing 9 eggs, was found in a field of oats so late as the 4th Sep., 1870, in Surendal, by Mr. Brandt.

7. *Grallæ*, Lin.

Charadrius pluvialis, Lin.

Common in open spots everywhere north of the Polar Circle, up to the Russian frontier, both on the mainland and the larger islands on the coast. On the 19th June, 1872, I flushed and shot a *male* bird, which had been sitting on 4 eggs, in the valley of the Maalselv: the female was not observed.

In most localities along the coast, small flocks of sterile individuals (doubtless last years birds, as yet immature) are seen flying about from place to place. In July, 1871, I examined at different times several specimens from such a flock; they consisted of both males

and females, in good condition. The intestinal passage contained numerous *Ascarides*, some of which had passed up into the stomach. The latter was full of the larvæ of *Eateres*, and a few other *Coleoptera*.

On the south coast, some of the flocks tarry til late in the autumn; Mr. Bahr found them as late as November, 1871, on the frozen marshes in the Jæderen district, and possibly it may occur here in the winter too; Febr. 16th, 1862, I saw an individual in the game market of Christiania.

Squatarola helvetica, Lin.

A few individuals only have been observed or shot in Finmark, in the fall of the year, from the latter end of August (Nordvi), — never in the actual breeding-season, and there is, I believe, no proof of the species ever having bred on Norwegian ground. The line of migration to and from their eastern breeding-haunts passes along the coast of Norway; this is the case in particular with the autumn flights, many of which are annually observed on the sea-shore in the west and south of the country.

In the stomachs of individuals shot near Christiania, in September 1870, I found insects, chiefly *Coleoptera*, of the genus *Bembidium*, *Curculionidæ*, *Aphodii* and *Harpalini*, also *Hemiptera*, a few freshwater molluscs (*Limnæus palustris*), gravel, and seeds of a sea-shore plant.

Eudromias morinellus, Lin.

Everywhere scattered over the plateaus of the fells in Finmark, but is not a very conspicuous bird in the breeding-time.

A nest taken near the Porsangerfjord, July 5th, contained 3 eggs, almost incubated. Wishing to preserve the young birds as specimens, I hatched them myself, in the course of four and twenty hours, for the most part by keeping them on my breast. Their total length was 78 mm, tarsus 25.¹

In the stomachs of individuals shot in June, 1871, on the Dovre, I found *Coleoptera*, chiefly *Bembidium*, larvæ of *Elateres*, *Lumbrici*, and fine gravel.

¹ Dress described in *Nyt Mag. f. Naturv.* Vol. 18, p. 196.

As regards the migratory passage of this species, it is singular that it does not approach the inland districts of the south-east; one or two stray individuals only are known to have been shot near Christiania, in May 1866. Such individuals whose summer habitat is the mountain region of Nordland and Finmark and the country extending south to the Trondhjemsfjord, migrate possibly in a more easterly direction, passing perhaps along the shores of the Baltic, whereas those from the south-western fells follow the coastal line of Norway.

Aegialites hiaticula, Lin.

Common everywhere along the coast on sandy and clayey ground. Throughout West Finmark, it is numerous up to the North Cape. A few individuals resort to the mountain meres of the interior.

The cavity of the nest is lined with small pebbles, of the size of a hazel nut, or sometimes with fragments of the shells of molluscs. In Finmark, fresh eggs are to be found about the middle of June, and on the 2nd July the first nestlings were observed, near the Porsangerfjord. The old birds betray by their excessive alarm the proximity of the nest; uttering a timorous cry, they feign to be wounded, and shuffle off over the ground with flapping wings and outspread tail, to divert attention from their brood to themselves.

Young in down have the back grey tipped with black, and marked at the sides with a black band. Cubitus and scapulars brown mixed with black, manus white. The crown of the head is grey tipped with white, the forehead whitish, and without spots. A black band stretches from the beak round upon the nape, where it is broadest. Nape white.

In the stomachs of the individuals shot I found *Amphipoda*, young *Litorinæ*, *Coleoptera*, and fine gravel.

Vanellus cristatus, Mey. & Wolff.

Occurs in Nordland sporadically, and is even an occasional visitant on the islands north of the Polar Circle. On Borgevær, for instance, they are not infrequently seen in pairs towards

the close of March, but have left by the middle of May (recorded by the proprietor, Mr. Irgens) A solitary individual has been observed in East Finmark.

Jæderen, near Stavanger (59°), has always been the chief habitat of this species, the decrease in its numbers of late years being attributable solely to the reckless manner in which the nests are robbed of the eggs. Mr. Bahr, a gentleman resident on the spot, states that in one year from *three to four thousand* eggs were shipped to England from Egersund.

Strepsilas interpres, Lin.

Occurs scattered along the coast up to the Russian frontier. In West Finmark, I found it in several localities on the shores of the Porsangerfjord (Tamsø, Kistrand), here and there abundant.

The last few years I have examined a considerable number of the nests of this species, in particular on the coast of Namdalen, in June 1871. They are mostly built under large stones or beneath broad-leaved plants (*Archangelica littoralis*), or juniper bushes. Several pair were generally found breeding close to one another. The eggs — invariably 4 to the set — were quite fresh in the middle of June. In the breeding-haunts, the birds exhibited great alarm, but did not, like the *Charadrii*, feign to be wounded. Incubation-spots are found in both sexes. The stomachs contained small *Coleoptera*, the young of *Litorina*, small crustacæans, coarse gravel, and scales of fishes, (swallowed perhaps accidentally).

A clutch of eggs, in an advanced stage of incubation, were hatched in the course of 48 hours, by exposing them to the moderated heat of a spirit lamp. The young brood were a lively set, skeltering about in the warm sunshine, as if to make the most of their brief existence. When the heat was excessive, they would often be suddenly paralysed, but soon recovered on being taken to a cooler spot, devouring with avidity the flies I had collected for their food.

Young in down, 2—3 days old, measured 92 mm, total length. Colour of black grey, slightly washed with yellowish, and sprinkled with tips of black. A narrowish black band, stretching

along the crown of the head, reaches down on the forehead, but not entirely to the bill. A similar stripe extends from the upper mandible to the eye, and there is a black spot at the gape. Sides of throat grey, belly white. Wings and scapulars coloured as back.

Young in down, about 8 days old, had become imperceptibly lighter; the down on the nape was a greyish white, the crown of the head having a considerable mixture of black, bill greyish black.

Several individuals are every year found passing the winter in small flocks on the western coast of the country. In 1872, individuals were seen at several places, up to Frøerne (64°); in 1873 some were also shot at Molde, by Mr. Kaurin, Febr. 1st, in company with *Tringa maritima*.

Hæmatopus ostralegus, Lin.

Occurs probably on every island and large holm along the whole coastal line; it was observed even at Stappen, close to the North Cape, the 26th June 1872. A few pair were found breeding at the northern extremity of Magerøen, on the banks of the meres. Detachments of this species, consisting of immature individuals, are everywhere to be seen in the breeding-season.

The eggs repose on a layer of small pebbles or fragments of muscle-shells; this, however, is not invariably the case, as was seen in a nest found at Tjøttø, on the 15th July. Mr. Schübeler found a nest, most remarkably located, on Inderøen, near the Trondhjemsfjord, in June 1872; it was built in a cavity at the top of a felled pine-tree. Even when able to fly, the young birds lie exceedingly close, and are flushed with the greatest difficulty. The old birds display the greatest anxiety for their brood, feigning to have their wings paralysed, precisely as do the *Charadrius* and *Totanus*, and I have often seen them plunge fearlessly into water, and swim about with astonishing facility. The young are often seen close to the shore, sporting and diving like young ducklings. In the stomachs of young, I found diverse species of molluscs, particularly *Litorinæ*, also the larvæ and pupæ of *Noctuæ*.

Young in down, about 2 days old. (Tarsus 22 mm, culmen 19 mm). The colour of the back is a mixture of black and dusky grey,

the roots and tips of the down being of the former colour, and the middle greyish; gorge entirely blackish. The crown and occiput are distinctly marked with a number of black spots, and a broadish band, extending from the mandibles, passes through and beyond the eye. Along the back is a black angular figure, fringed with rusty-red, the top of the angle bordering on the upper part of the rump, and the legs reaching to the scapulars. Belly white, parted from the back by a black longitudinal stripe. Outer margin of wings white. Upper mandible brown-black; inner half of lower do. pale yellow, outer half black.

Young in down, somewhat older (about 8 days). Total length 192—200 mm; culmen 25, tarsus 37—38 mm. Dorsal region decidedly darker, the down, which is black tipped with grey, not being so thick as in the earliest stage. The angular-shaped figure on the back is still visible. Outer margin of wings with a black longitudinal stripe. No perceptible difference in the bill and other parts. Blood-feathers on the wings and scapulars.

Young in down, about half grown (12 to 13 days). Total length 246 mm, culmen $30\frac{1}{2}$, tarsus 43 mm; shafts of feathers protruding almost everywhere at the roots of the down. The occiput has now become decidedly darker; other parts as in the former stage, the spots and patches however are less distinct.

Young almost fledged. The upper part of the throat and root of the bill only, being still covered with down, they have nearly attained the summer plumage of adults. The entire head and throat are black, the feathers of the dorsal region, and particularly of the scapulars, being here and there tipped with brown. Upper tail-coverts marked with narrowish bands of black, on a ground of lightish brown. Bill yellowish, outer half black.

On the south coast, individuals are found wintering almost every year. In the winter of 1870, this bird was generally to be seen in the poultry market of Stavanger (recorded by Mr. Bahr).

Grus cinerea, Bechst.

Occurs, but not regularly, north of Trondhjems Stift, having been shot and observed several times in Nordland. In the autumn

of 1865, an individual was killed in West Finmark, close to the North Cape, and according to Zetterstedt,¹ another was shot on Skjærvø, in 1821, about the beginning of June. The species has also been observed in Varanger, by Smf. and Nordvi. Generally found straggling in pairs.

Gallinago major, Lin.

I observed it on Tromsøen (69° 40'), 21st July 1872, in a marshy spot in a birch covert. Is not known to occur in Finmark proper, but may possibly occur.

A few are found wintering on the south coast; thus several individuals were shot near Stavanger in the winter of 1870—71.

Gallinago media, Leach.

Breeds on marshy lands along the whole coastal line, up to the Russian frontier.

A nest on Tromsøen contained 4 young in down, just hatched, June 17th 1872. It was found in a birch covert, in a comparatively dry spot, located on the top of a grassy knoll. Though scarcely dry, two of the young had dropped the small bony protuberance on the foremost part of the upper mandible; the fragments of the shells were still in the nest.

Young in down, just hatched, measured as follows: Total length 86 mm, tarsus 18—20, middle toe 18 + 3½, culmen 12—13 mm. The entire body a dark rusty red mixed with black, and with white tips, the outer half of the down being black tipped with white. The white tips predominate on the tibiæ and hinder part of the back. Wings and belly of a rich chestnut brown, in some individuals a trifle lighter than in others; on the throat is a blackish patch; a black stripe stretches between the bill and eye.

Not infrequently found wintering on the south coast. Observed near Bergen, by Mr. Friele, in the winter of 1869, also on the coast of Jæderen and in the neighbourhood of Stavanger, in 1870. In Saltdalen, north of the Polar Circle, Mr. Berbon observed individuals as late as 23rd December, in open spots on the marshes.

¹ Resa genom Sveriges och Norrriges Lapmarker, Vol. II, Lund 1822.
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Gallinago gallinula, Lin.

Was observed north of the Polar Circle, in the autumn of 1849, near Tromsø, by Lilljeborg, and in Varanger, East Finmark, by Sommerfelt.

This species occurs nowhere in numbers, but is generally met with in single individuals. My friend Mr. Brandt found it even common in Surendal, Søndre Trondhjems Amt, both in 1868 and 1871, not a few specimens having been killed by that gentleman in the autumn months. In the neighbourhood of Bergen it winters every year. Individuals have also been shot near Christiania, and elsewhere on the south coast, in the months of January and February.

Scolopax rusticola, Lin.

As a breeding species, the northern limit of distribution would appear to be a little north of the Arctic Circle, being by no means a rare bird in Saltdalen. In Lofoten and Vesteraalen, stray individuals only have been observed. It has been also found on Tromsøen (69° 40').

On the sides of the fells, its occurrence is confined as a rule to the conifer belt, but individual pairs breed at a greater altitude. In 1868, on the Thelemark fells, Professor Rasch found young birds, — which obviously must have been hatched in that locality, — upwards of 3600' a. l. s. On the Fillefjeld and the fells of Valdres, it was met with in several localities in the summer of 1871, and in 1872 birds of the year were observed on the fells of Gudbrandsdal at the same altitude. Almost every summer of late years, I have observed individuals in Drivdalen, on the Dovre, above the forest belt, on their „rôdings“.

This evening flight continues till late in summer; individuals thus engaged, were observed as late as 24th July, at Hadeland (1867).

As a curiosity, it may be mentioned that I saw two half-fledged birds in the game market of Christiania, so late as Aug. 28th, 1871.

A few birds are annually found wintering on the south and west coasts, as far north as the Polar Circle, where Mr. Berbm met with it near running springs in, the beginning of January.

Limicola platyrhyncha, Temm.

The occurrence of this species within the boundaries of Finmark has not been sufficiently established, though it very probably ranges up to Alten and Syd Varanger.

The extensive swampy tracts near Fokstuen, on the Dovre, are the oldest and best known habitat of this bird in Norway. It is however a rather common bird on all the fells in the southern parts of the country. On the Dovre, I have found it every season for some years past resident on stretches of exceedingly marshy ground, with a sparse overgrowth of *Carices*. Their numbers however are anything but great. In June 1838, Mr. Lagesen „succeeded in killing“ 26 of these birds, and in taking as many nests; but this would be hardly possible at the present time.

When searching for food, they hurry hither and thither, with nodding head and bill pointing obliquely to the ground. If flushed, they will utter a few mellow, flute-like tones, at intervals mingled with a harsher note. From the stomachs I have taken the remains of insects only, *Harpalini*, *Bembidia* and divers larvæ.

The size of the female would appear slightly to exceed that of the male. The total length of the former was from 176 to 182mm, whereas the males measured from 172 to 176 mm; other parts in like proportion. The left *testis* was twice as large as the right.

A nest found hereabouts, on the 9th June 1872, contained 4 eggs, which had been sat upon for about eight and forty hours. It was lined with a few straws, and located in one of the most swampy spots, the eggs being half immersed in the cold water. The eggs measured from 32 to 33 by 22 mm; on a whitish ground they are thickly covered with reddish brown spots, which collect and form a zone at the bigger end. One of the eggs was lighter (the spots less numerous) than the rest. The old birds kept in the neighbourhood of the nest and displayed considerable anxiety. Incubation-spots were found in both sexes.

The breeding time would appear to be about the middle of June, fresh eggs have, however, been found as late as the 24th June, and young birds not fully fledged at the end of July (by Mr. Dann).

Calidris arenaria, Lin.

As in September 1870,¹ large flocks of this species were observed on the flat shores of Jæderen in 1871, on their autumn flight. On the 10th of September, Mr. Bahr brought down at one shot, out of a flock consisting of this species and *Tr. cinclus*, 10 of the latter and 6 of the former. These individuals, which were feeding on the beach when the tide was out, were all in the normal autumn dress.

Further north than Tromsø, near which town birds of the year were observed, by Lilljeborg, in the autumn of 1849, it has not been shown to occur. The statement according to which this bird is said to breed in the interior of Norway, must be regarded as premature.²

Tringa canutus, Lin.

The occurrence in Norway of this bird as a breeding species has not yet been sufficiently established. Sommerfelt and Nordvi have observed it, though rarely, in East Finmark, and believe even they have found its eggs there. In the autumn, at the beginning of September, it makes its appearance along the whole coast.

Tringa maritima, Brünn.

Breeds scattered in the marshes of East and West Finmark. The 16th June, near the North Cape, I observed a brood protected by the male bird; of the female I saw nothing. The male measured as follows: — Total length 209 mm; wing 126½, tail 59, tarsus 21, middle toe 20 + 5 mm. The pectoral region dark cinereous grey bordered with whitish, and dotted here and there with black. The belly and under part of the rump are not white, but dark grey, each feather for the most part being blackish, and broadly fringed with white. This white margin is still broader in individuals shot in Lofoten, 1833, by Professor Esmark, the whitish breast and belly being spotted with black and white.

Young in down, newly hatched (about 4 days old), measured as follows: — Total length 85 mm, culmen 11, tarsus 20 mm. Upper parts reddish brown with black shadings, and tipped here and there

¹ Vide *Nyt Mag. f. Naturv.* Vol. 18, p. 208.

² „*Norges Fugle*“, p. 164.

with white; on the back is a largish patch of brown, dotted with white-tipped plumlets, and circled in by a black annular band. Belly white, wings same colour as back; manus white. Femora brown mixed with black, the inner side white.

Region of the eye whitish, crossed by a black longitudinal streak from the bill to the eye; a somewhat fainter stripe of the same hue stretches obliquely from the gape.

Winters in countless thousands along the whole coastal line up to the North Cape and the Russian frontier, but in Finmark less numerous than farther south. Rare on the innermost shores of the great fjords, stragglers only having been met with on the Christianiafjord farther inland than Drøbak. An individual was killed near that town on the 12th November 1871. On examination of the stomach of this specimen, it was found to contain young of *Litorina* and *Mytilus edulis*, together with seeds of a sea-shore plant; that of individuals shot in the summer in Finmark, contained only the remains of insects, in particular *Otiorhynchus blandus*, Schönh.

Tringa subarquata, Gld.

Occurrence in Finmark as a breeding species not yet authenticated. On its autumn passage, this bird, like the rest of the *Tringæ*, is met with everywhere along the coast, as far north as Tromsø, and, in certain localities, in considerable numbers.

Tringa minuta, Leisl.

Hitherto, this species has been known in Europe as a bird of passage only; it breeds however in several localities in the interior of Finmark. In July 1872, I found it common on Store Tamsø, in the Porsangerfjord, its favourite haunt being among the shingle of the beach, where food is most plentifully found. In common with the other species of the genus, this bird displays little timidity. I failed to discover any of its eggs or young; the organs of generation in the specimens examined were, however, fully developed in both sexes, and both had large incubation spots.

Male and female in summer plumage have the crown reddish brown with a number of black spots, the innermost part of the

feathers on either side of the shafts being as a rule black. Gorge entirely white. Cheeks of a light reddish brown with hardly a spot; on the forehead the spots are exceeding small, yet distinct, fainter on the sides of the throat. A band of reddish brown extends from the gape to the eye. Dorsal plumes black, deeply margined with rusty yellow. Pectoral region a light brown blended with grey, and sprinkled with a profusion of brown and reddish brown spots. Vent and lower part of abdomen white. Inner half of quill-shafts dusky brown, outer do. white. The 2 black middlemost tail-feathers are banded at the edges with reddish brown.

The *male* is somewhat smaller than the female, the individual examined measuring: — Total length (about) 140 mm; wing 92, tail 37, tarsus 20, culmen 15 mm. The greyish brown of the breast was more circumscribed, and the eyebrows less distinct. The *female* measured as follows: — Total length 154 mm; wing 97, tail $40\frac{1}{2}$, tarsus 23, culmen 18 mm. A white superciliary stripe extends along the side of the head.

This bird no doubt also breeds in East Finmark, Nordvi having repeatedly observed it in Varanger and along the banks of the Tana in the summer months.¹

From the stomachs I took the remains of insects, exceedingly minute; in those of individuals shot near Christiania on their autumn passage, towards the latter end of August 1870, the seeds of an aquatic plant were also found.

Tringa cinclus, Lin. (*alpina* Lin.).

The most widely distributed of the genus along the coastal line and on the southern fells, — breeding abundantly in some localities, the Jæderen marshes, for instance. Common in Finmark, up to the Russian frontier. Sometimes found wintering in large numbers on the southern coast.

The nests are located on marshy ground, generally at the top of a heathery knoll, and are composed exclusively of straws.

¹ In „Norges Fugle“ (Forh. i Vid.-Selsk. 1868, this species is erroneously recorded as having been found by Esmark near Vadsø. The bird observed turned out to be *Tr. Temminckii*.

Young in down, about 2 days old (Tamsø in the Porsangerfjord, July 3rd 1872), measured as follows: — Total length 83mm, tarsus 21, culmen 11mm. The coloration was very similar to that of *Tr. maritima* and *Temminckii*. The brown spot on the back was distinctly visible. Crown of the head a rich chestnut, mixed with black, and sprinkled behind with white-tipped down. Over the eye stretches a broad yellowish band; a short stripe passes through the eye, and behind there is a black spot immediately beneath it. Wing brown. The protuberance on the bill already dropped.

This brood was guarded by the female bird and not, as I had observed in *Tr. maritima* and *Temminckii*, by the male.

This species varies considerably in size, and the female, as in most of the *Tringa*, is larger than the male. A pair shot in Nordland, on the 15th July 1871, measured: — Male, total length 188 mm, female 204 mm. The latter had the dorsal plumes widely margined with reddish grey. Some few individuals retain their summer plumage till late in autumn, and I have observed individuals with the vent black as late as the 19th September.

The stomachs of the individuals shot in Nordland contained *Coleoptera*, finely bruised *Litorinæ*, a number of black seeds, and coarse sand.

The young immature individuals of the preceeding year, congregate in flocks, and frequent the sea-shore and the neighbouring swamps.

Tringa Temminckii, Leisl.

Breeds on the shores of West-Finmark, and possibly in greater numbers than the foregoing species; as a breeding bird, it is distributed throughout the whole of Finmark, at least down to Alten and Tromsø (69° 40').

With regard to its habits, this bird differs in many respects from several of its congeners. When observed in the neighbourhood of its nest or of its young, it exhibits considerable alarm, and will hover for hours together round the person who approaches, uttering the while a peculiar trilling note, — *tirrr, tirrr*. I

have often seen it sweep along the ground with pendent wings, or perch in the top of a willow. The females were never met with near the nest or the young brood; indeed it would seem that the males, partially at least, take upon themselves the duties of incubation. The individuals killed on leaving the nest, or when guarding their young (they were shot to investigate the fact), were every one of them *males*, and had large incubation spots. From the stomachs I took insects common on the sea-shore, larvæ of *Staphylinidæ*, and fragments of quartz.

The nests were for the most part found in the grass, in a comparatively dry spot, and often in the middle of a cultivated field; but are the young birds no sooner out of the egg than they betake themselves to a wetter locality. The nest of this bird being rarely built on the top, or at the side of a knoll, it is a matter of great difficulty to discover one. The male will not quit his post till you are within a pace or two of the nest.

The breeding-season commences about the middle of June, perhaps a day or two later. Young in down were observed on Tamsø, July 3rd, and in the course of the next fortnight, a brood or more every day; but I found a nest of eggs at Kistrand as late as the 7th July.

Young in down, just dry (12 hours): — Total length from 60 to 62 mm only, tarsus 16, culmen $7\frac{1}{2}$ mm. Coloration that of *Tr. maritima* and *cinclus*. The brown dorsal patch not very distinct, vent washed with brownish. In all individuals examined, a black line extended from the base of the upper mandible to the eye; traces of a similar stripe, stretching from the lower mandible downwards under the eye, is sometimes visible, but this, perhaps, would subsequently be found to disappear.

Philomachus pugnax, Lin.

Breeds scattered on the plateaus of Finmark, up to the North Cape and Varangerfjord; indeed Finmark may be regarded as the chief breeding-ground of the species in this country. The ruff of the males varies in colour, from whitish yellow almost to black.

Both in 1871 and 1872, I found this bird resident in the neigh-

bourhood of Fokstuen, on the Dovre, (3100' a. l. s.); hence the species belongs to the division of the Finmark avifauna stationary in these southern latitudes (62°). Probably a few pairs breed on the Jotun-fells and in the adjacent tracts, individuals having been shot there in summer; in the lower parts of the country it is not known to breed with certainty.

The females, too, vary considerably both in size and in the coloration of their summer plumage. Of two individuals shot on the Dovre, June 9th 1872, the tarsus in one measured from 43 to 44 mm, and was light-brown in colour; in the other, it was 39 mm, and dark-brown. The stomachs of these individuals contained *Lumbrici*, the larvæ of divers insects, and gravel; those of individuals shot near Christiania on the autumnal passage, 1870, were filled exclusively with the seeds of a sea-shore plant. Most of the Waders that frequent the southern lowlands on their autumn passage would appear to subsist partly on *vegetable* food.

Phalaropus hyperboreus, Lath.

Common in grassy spots in pools of water throughout the whole of West Finmark, both on the islands and the mainland, and in particular near the sea. It has not been observed in the deep mountain meres.

South of Finmark, it breeds more or less abundantly, even in the extreme coastal districts of Nordland. A small colony of this species is stationary on the southern fells (Dovre, Langfjeldene, 62°). In the winter months, it occurs in the southern fjords.

This bird is not at all shy; it leaves the water with great facility, into which it again plunges, swimming about with nodding head. All the males examined had incubation-spots. In the stomachs I found the larvæ of *Phryganea* and other aquatic insects. The total length of the males varied from 172 to 178 mm.

Half-fledged young (Alten 17th July: head and throat only covered with down, the dorsal and ventral plumes having downy tips). Culmen 19 mm, tarsus 20 mm. Throat, flanks and the transverse band on the breast, brown blended with grey. The crown of the head, which in the middle is plumed, black, and encircled

with a band of reddish yellow, broadest on the forehead. Ear-coverts brownish black, down on throat grey inclining to reddish. Dorsal plumes and secondaries fringed with a deep rusty red, the down attached being black tipped with rusty. On the belly, white feathers protrude from between the tips of the greyish down. Rump brown washed with reddish, feet yellowish green. — The stomachs contained *Hyphydri* and other aquatic insects.

Young in autumn dress (Varanger Aug. 1866), Culmen 22mm, tarsus 19 to 21, tail 45, wing 103mm. Crown of the head and nape brownish black. A band of the same colour stretches from the ear-coverts to a short distance beyond the eye, touching it on the under lid. Other parts of the head, (the front and a broadish well defined eyebrow), the neck and the gorge, white. Sides of neck and breast pale greyish brown. Upper dorsal plumes, scapulars, and secondaries black, deeply margined with rusty yellow. As in the old birds in summer plumage, the primaries are tipped with white, whereby a transverse bar appears upon the closed wings. Hinder part of back and rump black, the median tail-feathers being narrowly fringed with rusty yellow. Feet, when dry, greyish green.

Two individuals (shot by Professor Esmark on the shore of the Christianiafjord, in the month of October), in the dress described above, are preserved in the University Museum.

Phalaropus fulicarius, Lin.

Visits sparingly, and without breeding, the shores of Scandinavia, in the seasons of migration and during the winter. In East Finmark, it has been observed in summer plumage at the end of August, in winter dress in October (Smf.).

Like the foregoing species, this bird winters in the southern fjords. In the month of December, 1864, a pair were shot among the islands in the bay of Christiania, and several other specimens in winter dress, from Norway, are preserved in the University Museum.

Male and female in winter dress (Christianiafjord, December 1864). Front and sides of head white, occiput and nape down between the scapulars black; on the latter part, the black extends on

both sides, a few rusty spots, which subsequently perhaps become obsolete, being visible below. A black circular patch surrounds the eye and stretches down over the orifice of the ear. The entire back and the long feathers of the scapulars ashy-blue, and almost unspotted; each feather has narrow whitish edges with here and there a black feather interspersed. Quills black with whitish shafts, the edges of the coverts being whitish or greyish-yellow. The innermost coverts of the secondaries are broadly margined with white, whereby a white transverse band of considerable breadth appears upon the closed wings. The posterior portion of the back and rump brownish black, the feathers having faint rusty edges; the rectrices, too, are brownish black with greyish edges. Under plumage white with a faint reddish tinge, in particular on the fore part of the neck. Sides of the breast light bluish-grey, blending with the colour of the back. Feet (in a dry state) greenish-grey, with lobes of the same colour.

Adult in autumn plumage (Christianiafjord, October 1855). Crown of the head entirely black, with a few spots of rusty yellow. The black patch on the neck extends over the entire scapular region and is closely speckled with yellowish-brown dots. Head as in winter dress; the ashy blue of the back sprinkled with a number of black feathers. Under plumage and other parts as in winter dress.

Totanus glottis, Lin.

Breeds scattered in most of the districts of Finmark and on the fells of the south. At Bosekop, in Alten (70°), in 1872, the young birds were half grown by the 14th July, the scapulars and sides of the breast being covered with feathers. (Tarsus 39 mm, culmen 23, middle toe 31 + 5 mm). Readily distinguished from the other species of *Totanus* by the upward direction of the lower mandible, a peculiarity perceptible even in young just hatched. The dress at a somewhat later stage exhibits no material difference from that of the young on emerging from the shell.¹

¹ Dress of young in down described in „Nyt Mag. f. Naturv.“ Vol. 18, p. 205.

In the neighbourhood of the nest or of the young brood, the parents display the greatest alarm. This species is a much wilder bird than *T. calidris*, in company with which it often breeds, and it frequently perches in the top of the loftiest trees.

In migration-time, large flocks frequent the inland extremity of the Christianiafjord; here they roam about among the shallows and collect crustacæans, (the different species of *Hippolyte* and *Palæmon*, and other shrimps), swimming about from place to place, and in fine weather diving and sporting like young ducklings. In the dark nights of autumn their peculiar cry is often heard as they wing their southward passage.

Totanus fuscus, Briss.

Occurred sparingly at Bosekop, in Alten, July 15th 1872. In East Finmark, is common even in some localities, and breeds as far north as Vadsø. A young male, shot by Professor Esmark, near that town, July 30th 1866, measured as follows; — Tarsus 55 mm, culmen 55, middle toe 33 + 4, wing 160, tail 68 mm. Throat white, the entire neck, belly, and abdomen thickly dotted with white and greyish brown, each feather being crossed by alternate bars of white and greyish brown.

Totanus calidris, Lin.

Common everywhere on the coast, this species and *Haematopus* being the most abundant of the *Grallæ*.

A nest found on Tromsøen, June 17th, contained 4 eggs, which had been sat upon for about 5 days. In Alten the young birds were half fledged 15th July; their stomachs contained *Lumbrici*, insects, and *Araneidæ*. In the breeding-season, flocks of this species, consisting of individuals that do not pair (immature) are met with in most localities. These flocks will roam from shore to shore, performing sometimes a long series of evolutions before they pitch.

Totanus glarcola, Lin.

In West Finmark, common in Alten, and also throughout East Finmark, up to the Russian frontier. It is not so wild as the other species of the genus, and will frequently perch in the tops of trees.

The individuals shot were all distinguished by a peculiar musky smell, which would seem to originate in the glands about the anus, whence it is diffused over the whole body.

Actitis hypoleucos, Lin.

Occurs in Nordland and Finmark less abundantly than south of the Polar Circle, and no doubt always in the neighbourhood of fresh water. In the valley of the Maalselv and in Alten, however, they were more numerous in some localities, and I found the species at Kistrand (70° 25'), on the Porsangerfjord, in July 1872.

Limosa lapponica, Lin.

On Tamsø and at Kistrand, both in Porsanger, flocks of this species were repeatedly observed in the month of July 1872, the shores of the fjord being their favourite haunt. They would keep on the wing for hours together, but never approached within gunshot. These must have been immature individuals, probably last year's birds. A female procured by Professor Esmark, in Varranger, July 20th 1866, measured as follows:—Culmen 85 mm, wing 201, tail 73, middle toe 28 + 7, tarsus 57 mm.

Limosa aegocephala, Lin.

Observed only by Sommerfelt junior, in East Finmark, in the fall of the year (Öfv. Kgl. Vet. Akad. Förh. 1861, p. 83).

Numenius arcuata, Lin.

This species is exceedingly numerous in the coastal region of Trondhjem Stift, and throughout Nordland. North of the Polar Circle it is not common; it is, however, found breeding up to the Russian frontier. In Alten, and on Tamsø in the Porsangerfjord, I found it in July 1872; young in down (about 6 days old) were procured from the latter locality 3rd July.

As with *Limosa lapponica*,¹ birds of the year of this species do not attain their full size till late in autumn. On the 21st August, 1872, I procured an individual from Øieren, near Christiania, in which the culmen measured only 94 mm, whereas the culmen in an old female, shot in Nordland, July 15th 1871, was 123½ mm.

¹ Vide Nyt Mag. f. Naturv. Vol. 18, p. 207.

A number of individuals are found wintering on the western coast of Norway. Large flocks were met with on the outermost holms on the coast of Romsdal during the winter 1872—73 (recorded by Mr. Kaurin). Individuals have been also found in winter at Jæderen, by Mr. Bahr.

Numenius phaeopus, Lin.

Met with everywhere on the coast and islands of Finmark, and in greater numbers than the foregoing species. Varies considerably in size. A male, shot in July out of a flock of immature individuals, measured: — Total length 423 mm; wing 243, tail 98, tarsus 59, middle-toe $33\frac{1}{2} + 6\frac{1}{2}$ mm, whereas the total length of an old female shot on Tamsø, was 468 mm; wing 265, tail 105, tarsus 70, middle-toe $36 + 7$ mm.

The stomachs contained insects, *Litorinæ*, (dismembered and entire), and numerous small crustacæans, which they pick up on the beach after receding tide. In rainy weather I frequently observed them on ploughed land and in corn-fields (searching for *Lumbrici*?).

The nest is simply a depression on the top of a knoll, and is sometimes located in a comparatively dry spot among the marshes. It is generally lined with a few straws, or the leaves of *Rubus chamaemorus*. In the neighbourhood of Namsos (1871), the young birds had left the nest by the 19th June, and near Tromsø by the 17th (1872).

Ibis falcinellus, Lin.

An individual shot near Bodø ($64\frac{1}{2}^{\circ}$), in Nordland, 1835, was transmitted to the University Museum by Dr. Nissen.

Ciconia alba, Briss.

In the south of Norway, this species is annually met with either singly or in small detachments, consisting of as many as 30 individuals. On the 24th April 1871, an individual was observed flying about in all directions the whole day long over a frozen lake, at Odalen, near Kongsvinger. In 1872, five individuals were observed at Krogstad, in Smaalehnene, on the 21st of May. It has been found as far north as Bergen.

Ardea cinerea, Lin.

Not yet observed north of Lofoten (68°). It occurs most

abundantly on the sea-coast, from the Trondhjemsfjord to Stavanger. A few are found wintering as far north as the Trondhjemsfjord.

A pair were hatched in the summer of 1872 at Sjødalen, on the Gudbrandsdal fells, 2—3000 feet above the sea-level, and distant about 30 Norwegian miles from the West Coast (recorded by Mr. Barth).

Rallus aquaticus, Lin.

An individual belonging to this species, which till then had not been met with north of the Trondhjemsfjord, was caught alive on the shore of the Ranenfjord (66° 10'), in Nordland, by Heltzen, who has described it in his MS. for 1842.

Some years the species occurs not infrequently along the south-west coast. Near Bergen, for instance, it was abundant even in 1869, and several individuals were shot in the course of the winter. Indeed, this bird is observed as often in winter as in summer, which arises from its shy habits.

Ortygometra crex, Lin.

In 1871 I observed this species in considerable numbers on the borders of Helgeland; it is however found up to the Polar Circle, in Saltdalen for instance, though it does not occur annually (recorded by Mr. Berbm). Docent Holmgren, who met with it near Tromsø (69° 40') in the summer of 1868,¹ is the only person known to have observed the species north of Lofoten; the inhabitants themselves know nothing of the bird.

In 1870, as late as the beginning of September, a nest of 12 eggs was found on Jæderen, near Stavanger (Friele).

On the fell-sides, this species is not found breeding even in the sub-alpine region; but in the autumn months, single pairs appear to undertake peregrinations to some of the loftiest fells. Last summer (1872), for instance, this bird was shot in the willow-belt on the fells of Gudbrandsdalen and Østerdalen (3—4000 feet above the level of the sea).

¹ Vide „Handbok i Zoologie,” II. p. 894.

Gallinula chloropus, Lin.

Breeds annually in certain localities on the coast as far north as the Trondhjemsfjord, most frequently found in the vallies of Søndre Trondhjems Amt and round Stavanger.

In the latter locality, it breeds every year in the immediate neighbourhood of the town, on the Bredevand, the banks of which are overgrown with reeds and bullrushes. Eggs taken from nests found here are preserved in several private collections. On the 4th June 1872, the spot was carefully examined by my friend Mr. Landmark, who discovered 2 nests, one of which had been newly built, but did not contain eggs. Both were fastened between the long stems of *Iris* and *Equisetum*; the new one was composed of the green stems and leaves of the said plants, the adjacent reeds having been snapped at a convenient distance and interwoven with the sides of the nest. Two or three individuals were observed, fitting along the banks or perched on the leaves of *Nymphæa*, now and again uttering a peculiar cry. A few days after this nest was found to have been taken.

Fulica atra, Lin.

This species is found singly in almost all parts of the country, and breeds in certain localities, in the lower tracts bordering on the Christianiafjord for instance, where it is observed every year. On several occasions individuals have been observed in the middle of the winter; an example (swimming in the Trondhjemsfjord) was killed early in January 1871.

One or two individuals were once observed in Finmark, near Vardø (70° 20'), in the autumn of 1857 (Smf. Nordvi).

C. Natatores, III. Sundv.8. **Lamellirostres**, Cuv.*Cygnus musicus*, Bechst.

Its occurrence as a breeding species south of the Polar Circle not authenticated, though it ranges down to the latitude 67°, occurring, for instance, in summer at Balvatn, in Saltdalen (recorded by Mr. Berbom). In West Finmark, where it breeds at Karasjok and

along the shores of the Pasvigelv, and in other places, it is often observed on the coast in winter-time. Some winters it is seen in Lofoten in large flocks.¹

Cygnus olor, Gmel.

Two young birds of this species, neither of which had fully attained the adult plumage, were killed in the south of the country, both in winter. One was shot on the ice, at the inland extremity of the Christianiafjord, on the 31st December 1869, and is now preserved in the University Museum;² the other was killed near Tvedestrand, in December 1870, and transmitted to the Museum by Mr. Aall, proprietor of the Næs Ironworks.

This species has not before been included in the fauna of Norway.

Anser cinereus, Mey.

This species is more widely distributed in Norway, by several parallels of latitude, than any one of its congeners. It begins to breed as far south as Stavanger. Exceedingly abundant on the islands off the coast of Trondhjems Stift, — Hitteren, Frøjen, Smølen,³ and common in the coastal region of Nordre Trondhjems Amt, particularly on the islands of Vigten and Gjeslinger. Along the shores of Nordland found in all favourable localities, also in Lofoten and Vesteraalen. It breeds regularly in the neighbourhood of Tromsø and on the islands adjacent, specimens procured from thence are to be seen in the local Museum.

In West Finmark, I observed it everywhere in the summer of 1872, up to the North Cape, one of its haunts being the Stappen „Fuglevær“ in the extreme north of the country. Along the Porsangerfjord it was common in most shore-localities, being particularly numerous on Store Tamsø, where the abundance of its eggs

¹ A species of *Cygnus* must also breed in Spitsbergen, for in 1870 Mr. Pedersen of Tromsø found a newly laid egg in a nest of *Somateria mollissima*, near Prince Charles' Foreland.

² Recorded under the name of *Cygnus musicus* jun. in „Nyt Mag. f. Naturv.“ Vol. 18, p. 210.

³ Nyt Mag. f. Naturv. Vol. 18, p. 211.

materially increases the value of the Fuglevær on that remarkable island. In East Finmark, it has hitherto been observed in spring only, but there, too, it is no doubt to be met with breeding.

In most places on the coast these birds and its congeners are regarded in anything but a favourable light by the inhabitants, owing to the damage they are said to occasion to the sprouting corn. On Tamsø, an island where tillage is unknown, and which is strictly preserved, *A. cinereus* has well-nigh assumed the character of a domestic bird, feeding boldly in the immediate neighbourhood of the only house on the island. The stomach of a male shot here on the 3rd July (total length 815 mm) contained grass only; later in the season they are said to be very destructive to the cloud-berries, with which this island abounds.

About 150 eggs are annually collected on the island, a few however belonging to another species somewhat smaller, which unfortunately I not did observe.

About the 14th April, sometimes at the end of March (1871), the geese begin to arrive, and towards the latter end of the month the first of the eggs may be found. Farther south they breed perhaps a trifle earlier; in 1871 and 1872, I discovered young in down as early as 13th June, off the coast of Nordland; on Tamsø such were not observed before the end of the month.

Young in down, about 4 days old (Tamsø 2th July): Back yellowish green, crown of the head greyish green, vent pale citron, feet grey blended with green. Neck pale yellowish grey; cheeks same as vent. Nail whitish.

Sometimes the female will remove her eggs if discovered, to some other spot. So soon as the young birds are hatched, the female starts off with her brood, the male keeping near to warn his mate of impending danger. If you attempt to approach, the whole family will scud off into the water, the young ones ducking and diving with great dexterity.

Anser segetum, Gmel.

In Finmark, this species would appear to breed less abundantly than the foregoing, and probably in the interior only. Its range,

however, cannot yet be defined with accuracy. Both this species and the form *A. arvensis* are recorded by Sommerfelt and Nordvi as breeding abundantly in East Finmark. Barth has observed it breeding in West Finmark, at Karasjok, where he came across a whole brood July 28th 1857, four of which, of the size of a teal, were bagged. The young birds were splendid divers.

On Store Tamsø, in the Porsangerfjord, there is a congenerous species somewhat less in size than *A. cinereus*; but whether it is identical with this bird, or is possibly *erythropus*, is at present unknown.

Anser brachyrhynchus, Baillon.

At the present time it is not proved to a certainty that this species breeds in Norway. The individuals observed by Nordvi in East Finmark, in June 1867,¹ one of which was killed, are supposed by Professor Malmgren,² and with good reason, to have been retarded on their annual passage to Spitsbergen or Novaja Zemlia. None of these individuals were preserved. Exclusive of the individual shot near Christiania in the autumn of 1865,³ two individuals only have been examined of late years; both were killed in the neighbourhood of Trondhjem, in 1871, on the autumn passage.

Young bird in autumn dress (Christiania September 20th 1865). Bill measured from nostrils, 16 mm, culmen 38, distance from upper mandible to frontal angle 20, middle toe with claw 60 + 9, wing 413, longest feather in tail 106 mm.

Head brownish grey; neck same colour, becoming gradually paler towards the breast, and is not furrowed; nail of the bill black. Dorsal plumes dark greyish brown with a tinge of blue, and faintly edged with greyish. Belly light greyish brown without the pale edges; each feather, however, being a trifle darker in the centre, a series of faint longitudinal spots appear upon the

¹ „Norges Fugle“ (Forh. i Vid. Selsk. 1868, p. 175).

² Anteckn. om Finl. och Skand. halföns *Anseridæ* (Notiser ur Sällsk. pro F. & Fl. Fenn. Förh., X, 1869, p. 392, in the note appended).

³ Forh. Vid. Selsk. 1871, p. 58.

surface. Flanks dark greyish brown with hardly a trace of paler edges. Feathers of tibiæ greyish brown. Vent behind white.

Adult in autumn dress (Strinden near Trondhjem October 1871). Bill from nostrils 23 mm, culmen 44, distance from upper mandible to frontal angle 19, tarsus 57, middle toe with claw 58 + 11, wing 414 mm,

Thus there is little or no difference in the dimensions, with the exception of the bill, which in this adult is a trifle longer. The dress is distinguished by the number of light edgings, particularly conspicuous on the back, belly, and flanks. The head is bordered by a faint white line running through the four angles of the bill. Neck longitudinally furrowed.

Anser albifrons, Bechst.

In his highly valuable paper on the Scandinavian *Anseridæ*,¹ Prof. Malmgren maintains, that all statements, intending to vindicate the above mentioned species as breeding in Scandinavia, must be referred to the following, the true *A. albifrons* occurring but sparingly during migration time.

Even in the earliest works on the avifauna of Finmark, a white-fronted goose under the above name is recorded as breeding in the inner parts of that district. It is, however, doubtless, that these statements — the greater part, at least — relates to *A. erythropus*, and it is not yet stated with certainty, that *A. albifrons* is found in the summer or during the breeding season in these districts. In Varanger, Mr. Nordvi has found and prepared individuals as late as June (recorded in letters).

It not rarely occurs in flocks or singly along the coast in the south of the country during migration time or in winter.

Anser erythropus, Lin.

The distribution of this species in Finmark is confined chiefly to the interior, as it breeds but exceptionally on the sea-coast. Nordvi has frequently obtained the small sized eggs of an *Anser* from Tamsø, in the Porsangerfjord, and believes them to be those of this species. At Karasjok, in West Finmark, it is very abundant,

¹ Salsk. pro F. et Fl. Fenn. Förh. 1869, p. 393.

being killed by the Finns in large numbers when they have moulted their beam-feathers. This species is said to be the first to arrive in the spring.

The line of passage would appear to be easterly, stray individuals only having been observed south of the Polar Circle in the migratory period.

Branta leucopsis, Bechst.

On the 3rd July 1872, I observed an individual on Store Tamsø, in the Porsangerfjord, swimming about in company with a number of *Somateria mollissima* close to the shore of the island; but it took wing before I could get within gunshot. A day or two after an individual of the same species, which had just moulted the beam-feathers, was caught alive on the island. This specimen I took with me to Christiania, but it died soon after, and is now preserved in the University Museum. It was a male: total length 694 mm; tail 130, tarsus 65, middle toe 56 + 11, culmen 40, from nasal openings 19 mm. Normal summer dress.

Whether this individual and the one I saw was the same bird, I cannot pretend to say. Indeed there is still no proof of the species having ever bred in Finmark, where, as far as I know, one or two individuals only had hitherto been observed; but, on the other hand, it is very seldom that a goose from that part of the country, even one of the commonest species, is submitted to a careful examination. The occurrence of this species, almost sporadic as it is in the arctic regions of Greenland, Iceland, Spitsbergen, and Novaja Zemlia, render it not improbable that single pairs, retarded perhaps at first on their passage, remain behind and breed on the outermost islands lying off the northern coast of the continent. And this opinion derives additional support from the following observation.

In 1870 I procured from Borgevær — a well known „Fuglevær“ and „Fiskevær“, facing the Arctic Ocean, on one of the most northern of the Lofoten Islands (68° 15'), — through the kindness of Mr. Irgens, the proprietor, two eggs — taken that summer —

of a species of goose, smaller in size than any of the genus that I had previously examined. In both, the length was 67 mm, the breadth being 45 and 46½ mm respectively. The shape was cylindrical, much rounded at the ends, shell hard with large pores, colour shining white, with an almost imperceptible tinge of yellowish. The size of these eggs — they were scarcely bigger than the normal eggs of *Mergus serrator* — induced me to record them as those of *A. erythropus*,¹ albeit the Borgevær preserve, owing to its westerly position and diverse local reasons, apparently did not fulfil the conditions of the occurrence of this species in the Scandinavian peninsula.

Since then, several important circumstances have led me to doubt the correctness of this assumption; presuming that any particulars connected with the distribution of the *Anser* species in this country will prove of interest, I have recorded the case, though as yet unexplained.

Mr. Irgens has kindly supplied me with the following data bearing on this question: —

„A pair of geese, with white cheeks, but having the rest of the plumage and the feet dark, arrive regularly every season at Borgevær, about 1st May, a fortnight later than the common grey-goose.² This strange bird, which is also to be distinguished by its cry, we call by the name of „Fjeldskarv“ — it has a slight resemblance to a Skarv³ — or „Finmark-goose“. It is exceedingly shy in its habits and difficult to approach. This year (1872) it had deposited its first egg (which was taken) by the 9th May, whereupon it moved off to a neighbouring islet. It builds a nest composed of moss and straws, sometimes on the narrow ledges of the rocks, and sometimes in a sheltered locality, under stones or isolated rocky masses. The full complement of eggs is 5. This is the only pair that breeds at Borgevær, and they have been regular visitants for some years past, though never allowed to hatch their first brood.“

¹ Vid. Selsk. Forh. 1871, p. 59.

² *A. cinereus*, Meyer.

³ Cormorant.

At the present moment it is hardly possible to tell whether the observations here reported actually refer to this species or to *A. erythropus*, with which it has possibly been confounded, but I hope, with the assistance of Mr. Irgens, ere long to settle the question.

As to the occurrence of this species in the south of the country, stray individuals only have been observed.

An individual shot in Helgeland has been described by Heltzen, in his MS. for 1842, under the name of Finmark goose, the species being there stated to appear in migration-time on the shores of Nordland, where, perhaps, its occurrence at that season is more frequent than is generally imagined. In the southern parts of the country most of the specimens procured were shot on the vernal passage; an individual was killed near Christiansand in 1867, and another near Egersund in May 1870; the latter is preserved in the University Museum.

Branta bernicla, Lin.

Occurs everywhere along the Finmark coast in migration-time.

On 17th June 1872, I examined, at Tromsø, an individual that had just been shot. It was a male bird with large and swelling testes; in the stomach I found grass and gravel only. This bird had very probably been delayed on its passage to Spitsbergen, though single individuals, which there is no reason to suppose can have bred, have been known to pass the entire summer on the Norwegian coast. In July 1868, an example was killed near Egersund (west of the Naze), and subsequently transmitted to the University Museum. This specimen is unusually small in size, and the bird may, perhaps, from sickness, have been compelled to remain behind. Wing 305 mm, length from nostrils 17½, tail 84, culmen 32, tarsus 51, middle toe 43 + 6 mm. This is an old bird; head and breast much mixed with brown.

Every year this species is found wintering on the south-western coast, as a rule singly, or at least in small numbers. In the winter of 1870, according to Mr. Bahr, vast flocks were observed on Jæderen and the shores of the Bukkefjord, near Stavanger. The

birds being anything but shy, considerable numbers were killed by the inhabitants. At the expiration of March they had all left.

Tadorna vulpanser, Flem.

Found breeding as far north as the Skjærgaard between Tromsø and Hammerfest, its northern range being about 70°. A young male, shot at Lyngen in May 1872, is preserved in the Tromsø Museum. Occurs sporadically in Finmark up to the Russian frontier, and has been frequently observed in the Varangerfjord.

Breeds most abundantly in the coastal region south of the Trondhjemsfjord. On Jæderen, a locality in which it occurs in great numbers, it has sometimes been found nesting in stone fences, at a distance of several miles from the sea-shore. On the 6th June 1872, Mr. Landmark discovered a nest here, built beneath the flooring of a barn; several of the eggs were taken successively, and the female continued laying till the number had reached 19. Mr. Irgens, however, tells me that at Borgevær he has often taken as many as 20 eggs from one nest, and once 28, all laid by the same bird.

In the stomachs of males, shot on Jæderen, I found: — in one almost exclusively the fragments of plants (stems of *Gramineæ*), and a quantity of gravel; in another seeds and vegetable matter, fragments of a *Carabus nitens*, and the larvæ of *Eristalis*.

Mareca penelope, Lin.

Common on the shores of freshwater lakes in Lofoten and Alten, and found breeding up to the Russian frontier.

In the stomach of an individual shot near Christiania, in September 1871, I found gravel and fragments of *Ranunculus flammula*.

Chaulelasmus strepera, Lin.

In November 1872, a male in normal winter dress was found in the neighbourhood of Bergen, and presented to the museum by Mr. Friele.

This species is included for the first time here among the Norwegian avifauna.

Quercuedula crecca, Lin.

Found breeding everywhere along the coast-line and in the birch-belt on the southern fells. In Finmark, it occurs principally in the interior districts. Resident north of the Polar Circle (Salt-dalen, Berbom).

Each of the last summers I have found nests on the Dovre; one contained 7 newly laid eggs, June 6th 1871. They were located in a very marshy spot, some of them a few inches only from the water's edge. The sides of the nest were thickly lined with down, but in the bottom there was scarcely any.

The stomachs of the individuals examined here, were found to contain seeds of *Carices* and *Polygonum*, also the larvæ of *Phryganeæ*, fragments of other insects, and gravel.

Anas boschas, Lin.

Found breeding up to Bosekop in Alten (70°) where I observed it in July 1872; at Tromsø, I saw newly laid eggs (and down from the nest¹) in the month of June. Eastward of the North Cape no doubt it occurs more sparingly. Sommerfelt records it as rare in East Finmark.

Resident as far north as Tromsø.

Rhynchaspis clypeata, Lin.

Of late years this species has been found breeding in several places along the south-western coast of Norway. In August 1872, a male was shot in Søndmør (62°), the most northern locality at which it has been observed.

Dafila acuta, Lin.

Found breeding in all parts of Finmark up to the Russian frontier. In the southern districts it is met with chiefly in the seasons of migration, and in winter-time is common along the south coast.

Aythya ferina, Lin.

Has been found of late years resident on the south-western coast, where it appears to be common enough. Several indi-

¹ The best mode of authenticating the eggs of *Anatidæ*.

viduals — inclusive of the example previously recorded¹ — were shot on Jæderen and in the neighbourhood of Stavanger, in 1871.

Fuligula cristata, Ray.

Breeds scattered along the banks of rivers and lakes in the north of the country, more particularly the interior of East Finmark; but is nowhere abundant.

A female, in plumage almost exactly resembling the male, was shot in the Christianiafjord in February 1871, and is now preserved in the University Museum. Probably it was an old bird that had ceased breeding: the ovary contained a cluster of eggs, each of the size of a pin's head.

Old female (possibly sterile) *in winter dress*. — Total length 413 mm. Head and upper part of neck entirely black with strong reflections, base of bill encircled with a pure white band, about 8 mm in breadth, studded at the gape and beneath the lower mandible with a number of black plumlets. Breast and lower part of neck and breast brown, the feathers above fringed with red, and below with whitish. Belly silken-white, back entirely brown. Crown of the head adorned with a tall crest, in which the longest feathers attain a length of 43 mm.

Fuligula marila, Lin.

North of the Polar Circle not so common as on the southern fells, in Gudbrandsdal — for instance; it occurs, however, on rivers and lakes, up to the Russian frontier. Like most of the *Fuligulinae* it lays its eggs somewhat later in the season than the *Anatinae*, and seldom before the end of June.

Glaucion clangula, Lin.

Young birds of the preceding year do not, like the old ones, frequent the mountain-lakes in summer time, but resort to the inland extremities of the fjords, roaming about from creek to creek. A detachment which I observed at Namsos, June 19th 1871, consisted of not less than 40 individuals of both sexes, the males apparently in adult plumage.

¹ Forh. i Vid.-Selsk. 1871, p. 59.

Common throughout Finmark on the wooded banks of rivers and freshwater lakes, especially in the inland districts towards the Russian frontier. It is this species which the Lapps induce to build in the hollowed trunks of trees, conveniently placed along the river-banks. Like most other species of northern ducks it is also abundant in favourable localities on the southern fells.

Resident up to Lofoten, and probably still further north.

Glaucion islandicum, Gmel.

Two specimens of this arctic bird have been procured in Norway, both by Mr. Schrader, in the Varangerfjord, in 1848 and 1851;¹ the last was found in company with some of the foregoing species.

Harelda glacialis, Lin.

In Finmark, this species is found breeding in large numbers on the shores of the freshwater lakes, at the northern extremity of Magerø even; on the coast, it is a resident everywhere up to the Varangerfjord.

It breeds also, though less abundantly, on the banks of the meres on the Dovre and Langfjelde with their ramifications, as far south as 60° 30'; a nest or two are found every year in these localities. On the 3rd July 1872, one was discovered, containing 7 eggs slightly incubated, on the banks of the Syndinvand, in Valdres, and individuals were killed in the same spot by Messrs. Brown and Alston, in July 1871 (recorded in letters).

Oedemia fusca, Lin.

Resident as far north as Tromsø, and breeds abundantly in the inland districts of Finmark.

Detachments of this species, consisting of immature individuals, are met with the summer through in most of the western and northern fjords. I have often observed such individuals on the outermost Skjærgaarde, distant several miles from the mainland.

¹ Journ. f. Ornith. 1853, p. 319.

Oedemia nigra, Lin.

Like the foregoing, it has been shown to be a resident up to Tromsø, possibly it ranges still further north; in Finmark, no doubt it breeds somewhat less abundantly than the former species. Both are most widely distributed on the Dovre and the fells of the south, where they are found breeding on the shores of the lakes in the birch-region.

The nests are located on holms and islets in the mountain-lakes. In June 1871, Mr. Lysne discovered 3 nests, about 20 paces apart, on a small island in the Syndinvand, in Valdres. Fresh eggs are found as late as the beginning of July.

Polysticte dispar, Lin.

The western range of this species would seem to be the Varangerfjord, where it has been found breeding of late years on *Norwegian* ground, according to Professor Newton, to whom eggs have been transmitted for examination.

In winter-time, it not infrequently ranges far south, but does not appear to approach the *West Coast* on these peregrinations. South of Finmark, a solitary individual only is known to have been observed, — on Tjøttø, in Nordland, — a male having been shot there late in autumn; it was given to Mr. Heltzen, who has described and figured it in his MS. for 1842.

Somateria mollissima, Lin.

Sufficiently abundant along the whole coast-line, but occurs perhaps in greatest numbers on the coasts of Nordland and Nordre Trondhjems Amt. In Finmark, the colonies are more scattered, being there confined to particular localities; in Porsanger Fjord, for instance, the favourite haunts are on Store Tamsø, the shores of the Fjord being comparatively little frequented.

A few pairs are found breeding on the shores of freshwater lakes, at a short distance from the sea. This is the case along the whole coast-line almost, from Jæderen up to the North Cape and Varanger. They are everywhere resident.

In northerly localities, young in down are seen on the water shortly after the middle of June. Some nests, it is true,

contain eggs as late as July, but that is because they have been robbed of the first sets. The young do not remain upwards of a day in the nest; they are no sooner dry than the female conducts them to the water. The distance, however, is sometimes considerable, and they are often snapped up by some of the larger gulls, *Lestrises*, and other species partaking more or less of the nature of birds of prey. On the water, they will often escape by diving; but large numbers of newly hatched young are annually destroyed by their rapacious enemies, and the ravenous crows and ravens devour thousands of eggs.

The young are first-rate divers in the earliest stage of their existence, and may be often seen ducking and diving amid the boiling surf. The first few days the young subsist on *Litorinæ* (in particular *L. obtusata* and *groenlandica*), which are swallowed whole, subsequently on the young of *Mytilus edulis*; small stones of the size of the a bean are also found in their stomachs. The young do not invariably follow their true mother, but will often attach themselves to some other female they may chance to meet with. At Kistrand, I saw for several days in succession a female with a string of five and twenty ducklings, scarcely a week old, following in her wake.

Young in down, just hatched, and still in the nest, measure as follows: — Total length from 170 to 175 mm, culmen $16\frac{1}{2}$, tarsus $24\frac{1}{2}$ —26, middle toe $28 + 5$ mm. The down is brownish black, a trifle lighter on the belly.

When the number of eggs in one nest exceeds 6 — and as many as 8 are not infrequently found, in one instance 14 were taken — all have not been laid by the same female.

So soon as the young birds are hatched, or about the middle of June, the adult males, it is said, quit the inner „Skjærgaard“ and clear off to sea, passing the remainder of the summer, in large flocks, on the outermost holms and islets.

This statement, which is found in almost every account of the habits of the Eider Duck, is perhaps not strictly correct. Throughout the breeding-season the males are arrayed in their magnificent

winter dress; but with them, moulting commences as soon as the females have begun to sit, and then they don their sombrous summer garb, so like that of the hen bird. The exact period of this change, however, is not the same for all individuals; they gradually disappear, and a few males still in full winter-dress may not infrequently be observed as late as the end of July among the breeding females. The summer dress of the male resembles so closely that of the female and the young birds, that it is not easy to tell them apart at a little distance; the former may however be distinguished, with some practise, by the colour of the head, which is perceptibly darker, and by the smaller number of spots on the body. The Eider Duck being strictly preserved during the summer, — in some districts, Finmark, for instance, the whole year through — it has very rarely been shot at that season of the year. That many of the adult males frequent the outermost holms and islands in summer time is affirmed, but I certainly think that a great number remain where they are and pass the season on the Fjords, either singly by themselves or in company with young immature individuals, which roam about in flocks from shore to shore, till, as autumn advances, they are joined by the females with their broods. Then it is the males again put on their conspicuous winter dress, and hence they are supposed to have returned.

These wandering flocks, mainly consisting of last years birds, affect the neighbourhood of the fishing-grounds, where they feast on the guts and other refuse of the fish.

Somateria spectabilis, Lin.

During the winter flocks of this species are met with along the whole of the Finmark coast; but it has not yet been shown to breed in Norway. Not so common in the innermost creeks; they occur, however, abundantly most winters in the neighbourhood of Tromsø. From this place in January and February 1871 several individuals, in full plumage, were transmitted to the University Museum. Shortly after death the naked protuberance on the upper mandible in the adult male is a bright orange, presenting an exact resemblance to the rind of the fruit; the bill itself is light reddish;

feet dull orange with black webs. The black spot on the throat in these individuals was shaped like the letter V, the blue patch on the crown terminated at the nape, and was not crossed by a black bar. Sides of the head almost white, with hardly a trace of green; tail and wing-feathers black.

In the *female*, the protuberance on the bill is comparatively small, and, shortly after death, greyish-black in colour, with a white margin in front of the nail.

South of the Polar Circle the occurrence of this species can hardly be regular; a few individuals, however, have occasionally been observed as far south as the Christiania Fjord. In 1872 an individual was killed near Bergen.

Mergus castor, Lin.

Common along the whole coast-line and the water-courses of the interior, as far north as the Varanger Fjord. It is a resident certainly up to the Polar Circle.

In the stomachs of individuals shot near Christiania I have found the remains of fish only; one, for instance, contained a *Muræna acutirostris*, about an inch in diameter; several of the vertebræ had passed in an undigested state through the stomach into the intestinal passage. In the stomach of an individual shot in Surendal (May 1870) were found the remains of a frog.

Mergus serrator, Lin.

Resident along the whole coast-line, and is found breeding both on the sea-shore and the banks of freshwater-lakes up to the North Cape and the Russian frontier. This species and the foregoing breed in the hollowed trunks of trees, which the Finns place at intervals along the river-banks.

9. **Steganopodes**, Illig.

Sula bassana, Lin.

Occurs sparingly north of Lofoten, but is found however in winter up to the Russian coast. Last winter (1872—73) they were so abundant along the coast of Bergen Stift, that my friend

Mr. Friele on several occasions found 6--8 individuals at a time in the fishing market of Bergen.

Rare in summer; yet occasionally observed at that season. Does not breed on the shores of Scandinavia.

Graculus carbo, Lin.

A resident everywhere up to the Russian frontier. I observed several individuals with the belly white, or with white spots on the tibiæ, off Tromsø, in 1872. A perfect albino from East Finmark was presented to the University Museum in 1857, by Nordvi.

Graculus cristatus, Lin.

In addition to the normal colonies, a few odd pairs are found breeding along the whole coast-line on holms, in company with other sea-fowl (which is rarely if ever the case with the foregoing species which will hardly breed out of the colonies).

On the 26th June 1872, nests were found at the North Cape, some of which contained eggs, and others half-fledged young. A similar disparity is observed in the broods, the young being of different sizes in the same nest. The old birds keep their offspring gorged with fish.

A pair shot near North Cape measured as follows: - Total length 730 male mm, 664 mm female.

10. Longipennes, Dumér.

Sterna hirundo, Lin. (*arctica*, Temm.)

Probably nowhere more abundant than in the „Skjærgaard“ between the Trondhjemsfjord and Lofoten. North of Tromsø, the colonies are somewhat smaller and less numerous, but the species occurs everywhere in the Finmark Fjords up to the Russian frontier.

Prefers to breed in colonies, on the holms and islets of the outermost Skjærgaard, sometimes, though rarely, on holms in fresh-water-lakes, in the immediate neighbourhood of the coast, or on a jutting promontary of the mainland. When the eggs are fresh, or but slightly incubated, the parent birds display much cautiousness in their habits; at such times, they will mount swiftly into the air, taking care to keep out of gunshot; but after the eggs have

been hatched, their boldness is perhaps greater than that of any other sea-bird; they have not infrequently touched my head with the tips of their wings in flying past.

A colony of this species usually selects as its breeding-haunt some outlying islet, whose surface is scored with fissures. Here they deposit their eggs in the cracks or crannies, and on the rock itself, without the slightest trace of a nest. Early in July 1871 I visited several holms and islets in the Folden Fjord, south of Helgeland; the number of eggs laid here by each bird was 1 or 2, rarely as many as 3. In East Finmark it breeds even on the freshwater-lakes in the interior up to Karasjok and the Altenfells, at a distance of about 140 English miles from the sea.

During the breeding-season this species is often exposed to the predatory attacks of *Lestris parasitica*; whenever one of these hungry prowlers ventures to approach the haunts of a colony, it is boldly encountered by the enraged inhabitants, who generally succeed in driving it off.

Sterna fluviatilis, Naum.

The occurrence of this species north of the Polar Circle has not yet been sufficiently authenticated.

In Lærdal a few pair are found breeding on holms in the river, a few miles up the valley; on the lakes of the interior they are often met with, but never breeding.

Larus canus, Lin.

Resident everywhere along the coast, and in greater numbers than any other species of the genus.

Single individuals occur on most of the freshwater-lakes; on Lake Mjøsen, I have seen it for several summers past. It is found breeding on the mountain-lakes, at an altitude of 3000' above the sea-level, and a very considerable distance from the coast, in Bygdin in the Valdels-fells, for instance, and on the banks of most of the tarns and mountain lakes of that district.

In June 1872 Mr. Landmark found it nesting about Jæderen, not only on the banks of the freshwater-lakes, but in the marshes some distance from the sea. In the summer of 1868 a pair of these birds were

observed on a freshwater-lake near Trondhjem; they had taken possession of an old nest of *C. cornix*, located in the top of a fir-tree. The eggs being taken, another set was deposited in the same nest (recorded by Mr. Lundgren).

Young in down, (Total length 146 mm, culmen tarsus 25, middle toe 33 + 4 mm) are distinguished from those of other species of *Larus* by a large black spot above the base of the upper mandible, *which it touches*. This spot, though never absent, varies considerably in size, sometimes extending over the entire feathered portions of the upper mandible. In young almost full-grown it is plainly visible. Plumage of body slightly tinged with yellowish, bill lightish horn-brown, somewhat paler at the tip. There is also a black spot at the base of the lower mandible, on either side. A more detailed description as regards dress would closely resemble that of young in down of *L. marinus*, *fuscus*, or *argentatus*.

The stomachs of young in down have been found to contain widely different substances. One brood (Folden Fjord July 1st 1871) were all gorged to the mouth with a species of an amphipodous crustacæan (*Hyale Nilssonii*, Rathke); the stomach of another contained insects only (larvæ of *Noctuæ* and *Tipulidæ*); a third, just hatched, had been fed exclusively on fish.

At Bindalen, in Nordland, in the month of July 1871, when observing a colony of this species, which had selected a wooded promontory of the mainland for their breeding-haunt, I repeatedly saw the old birds perch in the tops of trees. In rainy weather dense flocks frequent the fields of the shore, to feed on *Lumbrici*.

Larus argentatus, Lin.

Like the foregoing species, resident and abundant up to the Russian frontier, but is less frequently found nesting on the shores of freshwater-lakes.

The nests are often located so low down among the rocks as to be sprinkled with the driving spray. In some sets, all the eggs are tinged with a peculiar shade of reddish, the spots, too, being lighter than common. The flesh of the young of this and other species of gulls is flaccid, watery, and stinks of fish. They

are fed in the nest for several days; subsequently they run about among the heather, hiding with great dexterity on the approach of danger. When discovered they will scurry off with bill agape, filling the air with their shrill screams, a sight which never fails to exasperate the whole colony wheeling overhead against the pursuer.

It is almost impossible to distinguish the young of this species from those of *L. fuscus* and *marinus* at the same stage of growth, the spots on the head and body being distributed in precisely the same manner in each.

Larus leucopterus, Fab.

Occurs annually in the winter months on the fjords of West Finmark down to Tromsø. Two individuals (*male* and *female*), shot out of a flock which visited Tromsø Sound in December 1870, were transmitted to the University Museum by Pastor Kaurin.

These two individuals differ very considerably in the measurements.

	Wing.	Tail.	Tarsus.	Middeltoe and Claw.	Culmen.	Height of Bill.
♂	415	175	55	48 + 10	55	16½
♀	385	161	51	42 + 9½	52	15

In the male, the first feather of the primaries is 4 mm longer, and in the female, 4 mm shorter, than the second.

Male and *female* in *winter dress*. Head and breast a good deal mixed with greyish-brown, each feather of these parts having a greyish-brown margin, fainter spots of the same colour appearing on the pectoral plumes near to the shafts. The nape is darkest, being most thickly feathered. Vent and abdomen white, marked with almost obsolete transverse lines, tail white, back and wings light ashy-blue, the tips of the latter being of a somewhat paler shade. The outer web of the first secondaries in the male is faintly sprinkled with greyish-brown, indicating possibly a younger stage. Bill dark horn-brown, excepting the upper edge of the lower

mandible and the portion of the upper mandible immediately in front of the nostrils, which are yellow. The female is somewhat lighter in colour than the male.

Larus glaucus, Brünn.

In West Finmark, no large colony of this species has been found. It breeds sparingly in several localities, on Tamsø, in the Porsanger Fjord, for instance. Visits Tromsø, — and indeed most places at which it occurs, — chiefly in winter-time.

In September 1871, a gull, *pure white, but of the size of L. glaucus*, was shot at the mouth of the Trondhjemsfjord (64°). At my instigation this specimen was procured from the Trondhjem Academy of Science for the University Museum.

This individual (a male bird) had been frequenting the neighbourhood for several days in close companionship with *L. canus* and *fuscus*, and being exceedingly bold was shot without difficulty.

Probably this example belongs to the variety of *L. glaucus*, which, under various names, has been established as a distinct species, and whose true rank among the gull genus possibly still remains to be fixed.

Several specimens of this form, which as early as 1831 was recorded by the name of *L. Hutchinsii*, have been procured from the arctic regions of America, and are preserved in the Museums of the United States. The following are its synonyms: —

Larus Hutchinsii, Richardson, Fauna Boreali-Americana, Vol. II, p. 419, (1831).

Hirco nappi hirt,
de de bala av
us et bla muelhi { *Glaucus glacialis*, Bruch, Journ. f. Ornith. 1853, p. 96, (1853).
Laroides glacialis, Bruch, Journ. f. Ornith. 1855, p. 273, (1855).
Larus arcticus, Bonap. Consp. gen. avium, Vol. II, p. 216, (1856).

Larus Hutchinsii, Coues, Proc. Acad. Philad. 1862, p. 294, (1862).

Larus Hutchinsii, Cassin, Proc. Acad. Nat. Sci. 1862, p. 325, (1862)

Larus glaucus, Malmgren, Öfv. Kgl. Vet. Akad. Förh. 1864, p. 390¹ (1864). *kan se till Romne ho i beträffning, de skälningarna*
citras Bruch's glacialis or Macg.'s arcticus, vilka af Coues
¹ Translated in Journ. f. Ornith. 1865, p. 204.
i.e. kan se för sin synonyme mid et? —

Larus Hutchinsii, Lawrence, Ann. Lyc. Nat. Hist. New-York, 1866, p. 299, (1866).

Larus Hutchinsii, Coues, Proc. Essex Instit. Vol. V, p. 306, (1867).

Larus Hutchinsii, Elliott, Birds of North Am. Part. XII, pl. 53, 2, (1868).

Larus Hutchinsii, Coues, American Naturalist, Vol. II, p. 162, (1869).

Larus Hutchinsii, G. R. Gray, Handlist of Gen. and Spec. of Birds, Vol. III, p. 113, (1871).

Total length about 675 mm (measurement taken from the moistened skin), wing 464—465, tail 180, middle toe 61 + 11, hind toe 10, tarsus 71; from nostrils 29, gape 83, height of lower mandible from the angle $10\frac{1}{4}$, height of closed bill above the angle $18\frac{1}{2}$, length from front edge of orbita to tip of bill 97 mm.

Colour entirely white with a faint yellowish tinge, in particular on the wing-shafts, which are yellowish white. Bill pale horn-brown; feet lightish. When shot the feet were stated to be light-red or flesh-coloured, the iris light-grey, almost white. Compared with the normal *L. glaucus*, the dimensions are smaller even than those of young of the year not yet in full plumage, particularly the hind toe (10, adult 13) and the wing (464, ad. 475); besides, the bill in this bird is much more slender than in any of the other specimens of *L. glaucus* preserved in the University Museum.

But these distinctive characteristics would seem merely to indicate a further tendency to variation, both as regards size and colour, in this highly varying species.

Most of the European naturalists regard *L. Hutchinsii* as a variety of *L. glaucus*; Elliott Coues, on the other hand, who has had opportunities of examining a series of specimens in the Museums of the United States, has come forward on more than one occasion to maintain the right of this *Larus* to rank as a distinct species. It seems this distinguished ornithologist would recognise the existence of „a large white gull, somewhat less in size than *L. glaucus*, entirely white, with the shafts of the remiges pale yellow, and

with light flesh-coloured feet, younger individuals having the head, nape, and back thickly strewn with light reddish-brown spots, and the vent and abdomen almost entirely grey-brown."

If not a distinct species, *L. Hutchinsii* must either be an albino or represent a particular stage of some gull species, which, in the latter case, cannot but be *L. glaucus*. This bird, I presume, can hardly be a true albino, in the same sense as is a white crow, starling, or sparrow; for it is difficult to conceive why this species, rather than others of the genus, should display so singular a tendency to that variation. Probably the truth is, that *L. Hutchinsii* represents a particular, if not a regular stage in *L. glaucus*. Indeed the comparatively small number of such individuals observed in a species so abundant, plainly indicates the exceptional character of the dress; transitions, on the other hand, are sufficiently numerous; but the conditions under which a pure white plumage may occur have not yet been pointed out. If this bird be actually *L. glaucus* in an earlier stage,¹ the singular phenomenon would be at variance with analogy as regards the gradual development of plumage in the other northern *Lari*. Is it not more probable rather that such individuals are old birds, in which the light-blue mantle from some unknown cause has gradually faded, fading at last into pure white, a change of coloration also observed in the feet and irides.

Larus fuscus, Lin.

Breeds in colonies, on the outermost rocks, along the whole coast-line, and in greater numbers here than any other species, but almost invariably by itself. A few pair, however, are always to be found nesting in company with their congeners on the inner holms and islets, and even on the shores of freshwater-lakes near to the sea.

The eggs of this species differ but little in size and colour, and are best distinguished from those of *L. argentatus* by their peculiar lengthened shape.

¹ Blasius, „Kritische Bemerkungen über die Lariden,“ Journ. f. Ornith. 1865.

Sp. br. Def.
 & G. bel. p. 411.
 sous arms
 me chez M.
 Hardy en
 France, et
 à plume
 entièrement
 blanc, excepté
 aux yeux, au
 bec, et aux
 tarsi, qui
 conservent
 des bandes
 brunes, et
 d'un ton
 clair, caracté-
 ré du jeune âge.

Its common name of „Silde-maage“ (herring-gull) was explained in several parts of Finmark as „Siil-maage“ (*Ammodytes*, the launce).

Larus marinus, Lin.

Common everywhere along the coast, breeding singly here and there on the shores of freshwater-lakes adjacent to the sea. In winter-time most of these birds leave the Finmark coast.

Pagophila eburnea, Lin.

Young individuals of this species occur every winter off the coast of Finmark down to Tromsø, and are well known by the name of „Hav-rype“ (sea-ptarmigan). Individuals in full plumage are rarely observed.

South of the Polar Circle stray individuals only are met with, the last example procured having been shot near Christiansund, in 1872; it is now preserved in the Trondhjem Museum.

Rissa tridactyla, Lin.

The most northern colonies in Finmark are found on the Stapen „Fuglevær“, close to the North Cape, and on Sværholtklubben. When I visited the former locality, June 26th 1872, the nests contained eggs, slightly incubated however, and half-fledged young. The nests, composed of clay and stalks of grass, are built on the very walls of the perpendicular rocks, or on narrow ledges sparsely covered with herbage; the sides of the nests were quite saturated with the droppings of the birds. Attached to the toppling crags, they project like the nests of swallows over the skerries beneath; some however are located so low as to be frequently wetted by the spray. The approach to this interesting breeding-haunt was in a high degree unsavoury from the vast accumulation of guano, and from the number of rotten eggs and half decomposed bodies of young birds with which the rocks are thickly covered at this season of the year. The cliffs adjacent, on which the birds are thick as snowflakes in winter, while the air is darkened with their masses, and rings with screams from innumerable throats, presented an imposing sight.

Of these countless millions, a small fraction only have nests, most of the birds, though in full plumage, being immature individuals, which do not breed before the third year, perhaps even later.

Young in down of this species are easily distinguished from those of other *Lari* by their light and almost unspotted dress. Head and belly white with a pale yellowish tinge, back and scapulars light greyish-brown with darker shades, from the fringes of the down being light at tips and black towards the centre. Wings whitish. The stomachs contained amphipodous crustacæans and remains of fishes.

Resident everywhere on the coast. In winter-time it visits the southern fjords in large numbers.

Lestris catarrhactes, Lin.

This species would appear to occur very sparingly on the coast of Scandinavia, and no authentic specimen from this country is to be found in any of the Norwegian Museums.¹ In West Finmark, where perhaps it is not so rare, a solitary individual was killed at Sværholt (Smf.), where it had been preying on eggs and young birds for several days. In 1855 Professor Newton observed an individual on the Vest Fjord (communicated personally); and an individual is also known to have occurred at Helgeland, in 1816.

Lestris pomarinus, Temm.

I did not observe this species satisfactorily in Finmark last summer, but it is said to breed in the mountain marshes of the interior, both in West and East Finmark (recorded in letters, by Mr. Nordvi).

Individuals range far south in the autumn months, and have been observed singly or in small detachments, and also shot, in most localities on the coast.

Lestris parasiticus, Lin.

Common everywhere along the coast, but does not penetrate far inland on the southern fjords. Abundant in Finmark

¹ In the Bergen Museum there is indeed a specimen of the species marked „Norway“; but no particular locality is assigned.

among the outermost holms and islets, and also far down in the fjords.

With this species, the plumage does not appear to be regulated by age or sex.

Birds of both sexes shot in June and July the last two summers, display the following diversity of coloration: —

Male. Under plumage white, and also nape.

— Entirely black.

Female. Under plumage white, nape grey.

— Under plumage somewhat lighter than back, nape whitish-grey.

— Under plumage white.

— Entirely black.

— Under plumage white.

In some pairs the plumage of both sexes is alike, in others it is different. Individuals vary no less in size, which in the females, for instance, ranges from 479 to 525, the length of the elongated rectrices in the same birds also varying from 177 to 220 mm.

An uncommon variety of this species, procured at Varanger, was transmitted to the University Museum by Nordvi. The plumage of this individual (a male) is a dark brownish black, the tips of the secondaries and of the upper wing-coverts only being white.

On most of the numberless islets scattered along the coast, wherever a colony of gulls, *Somateria*, and a few *Grallæ* have congregated to breed, some pairs of this species will be generally observed. They are also found breeding on rocky promontaries of the mainland. The eggs are deposited on the top, or at the side, of an isolated knoll, in a level spot, where the heather is short; sometimes, though rarely, in more humid localities among cloud-berry plants. During the period of incubation the birds takes up their post in the neighbourhood of the nest on some elevated mound. If you approach, the old birds do not readily leave the spot, but keep alighting on and flying off the surrounding knolls,

and will let you come within a few paces of them. Sometimes they feign to be wounded, fluttering with drooping wings along the ground to divert attention from their brood. After the young are hatched they grow exceedingly bold, and, like the terns, when flying past will strike at your head with their wings, though seldom venturing to touch it.

Being brown in colour, with darkish spots, the eggs are with difficulty distinguished among the heather in which they are deposited, the nest, if such it can be called, consisting of a few straws only. Probably a set of eggs does not exceed 2, and I have often found only 1 incubated. The shell, pyriform in shape, is exceedingly thin and porous, and without gloss; colour light-brown, marked all over with spots of a darker tinge, and a few black wavy lines, especially at the bigger end, where they sometimes collect into the form of a zone. Measurement 56 by 40 mm.

The female generally begins laying about the middle of June; fresh eggs have however been found as late as the 3rd July, and young birds the 2nd July (1872).

Young in down, about 2 days old (Tamsøen, in the Porsanger Fjord, July 2nd). The entire body brownish black, bill black and feet bluish-grey. (From nostrils to tip of bill 8 mm, tarsus 18, middle toe 20 + 3½ mm).

The food of this species varies considerably with the season of the year. In spring and autumn, it probably consists to a great extent of fishes, the possession of which it can successively dispute with the terns and gulls; in summer, they would appear to subsist mainly on insects and the eggs of divers sea-fowl. In the stomachs of individuals shot in Nordland and Finmark in the months of June and July, I have found *Coleoptera*, particularly *Elateres* and *Harpali*, and also *Tipulidæ*; those of others contained in addition to insects fragments of egg-shells. Remains of fishes were seldom found. The eggs of the Eider Duck in particular are the object of their depredations, and hence they are everywhere regarded as a noxious bird, the sworn enemy of every

„Ægvær“-proprietor. This hungry marauder wages endless war with all other sea-fowl. The Terns, however, (*Sterna fluviatilis* and *hirundo*), and *Larus camus* fiercely repel its predatory attacks, and even *Streptilas interpres* will muster up courage for a fight, should it venture to encroach upon its territory.

When three or four individuals of this species encounter one another in the breeding-season, they will often perform a series of graceful evolutions, one bird swiftly circling round the other, and uttering as they descend with pendent unmoved wings, their harsh, stridulous, and snuffing cry: ēau, ēau.

Lestris cepphus, Brünn. (*Buffonii*, Boie).

In the province of Finmark, this species is most common in the interior tracts of East Finmark. It has been found breeding up to Karasjok and Kautokeino, and probably frequents each of the extensive marshes in that locality.

A small colony is resident in the mosses of the Dovre, (Opdal), preying principally on *Myodes lemmus*.

Fulmarus glacialis, Lin.

Frequents even in summer almost every locality on the coast, and the islands forming the outermost „Skjærgaard“, and is regularly observed off Fuglø by vessels leaving the port of Tromsø. On some of the fishing-grounds, at Storeggen for instance, off Aalesund, they sometimes occur in dense flocks, large numbers being occasionally caught from the decks of vessels with baited fish-hooks. These summer individuals are probably all immature birds.

This species is not common on the shores of the south, visiting only the extremities of the fjords: but two individuals have been shot in the Christiania Fjord, the last early in January 1872.

Procellaria pelagica, Lin.

Its occurrence north of Lofoten (69°) has not been sufficiently authenticated. Mr. Barth thinks he observed a small flock off the coast of East Finmark, but the species has not been found there by other naturalists.

II. Pygopodes, III.

Colymbus cristatus, Lin.

In Nov. 1871 an individual was caught in a fishing-net at Gulosen near Trondhjem (63°), the most northerly point at which it is actually known to have been observed.

Occurs sporadically, a long interval of years having elapsed between each observation.

In June 1872 I observed a grebe (one of the larger species) swimming about close to the shore, but not within gunshot.

Colymbus cornutus, Gmel.

Occurs as a breeding species more regularly than any of its congeners, its distribution being also wider. Its habitat, however, would seem to be confined almost exclusively to the sea-coast, in particular the northern shores, and it has repeatedly been found breeding north of the Polar Circle. In Finmark it has been observed particularly in autumn and is believed to breed in Næsby and Tanen, in the Varanger district.

Eudytes glacialis, Lin.

Seen on the fjords from autumn to spring at all points of the coast, in greatest numbers north of the Trondhjem Fjord.

Odd birds of this species, possibly immature individuals, are observed in summer. A few pair, too, would appear to breed on the shores of freshwater-lakes on the holms and islets, Lilljeborg having found a young bird, fully fledged, on the island of Vanø, near Tromsø, Aug. 26th 1849.

Eudytes arcticus, Lin.

In the coastal region this species is far less abundant than the following, being distributed chiefly along the mountain-lakes of the interior; it occurs however up to the Russian frontier; I observed a few individuals at Gjæsvær, close to the North Cape, in June 1872. Is resident everywhere on the coast.

Like most other sea-birds, *C. arcticus* remains immature till after the second year of its existence. The 21st July 1871 I saw

among the islands off Namsos, Nordre Trondhjems Amt, upwards of 20 individuals in one spot, most of them no doubt immature. A nest found in a neighbouring lake, July 9th, contained only 1 egg, but slightly incubated.

From the stomach of an individual, in winter plumage, shot near Christiania Feb. 5th 1872, were taken the remains of *Palæmon squilla* and a *Gobius*.

Eudytes septentrionalis, Lin.

Distributed in great numbers along the entire coast-line; north of the Polar Circle indeed, it occurs on almost every holm and islet where a sheet of water is to be found, though but a few square yards in extent. In the mountain districts of the interior it is met with less numerously in the sub-alpine region. Resident along the coast, but is not known to have been observed in East Finmark during the winter-season.

The lakes on the shores of which the young are hatched, need not contain fish, the old birds fetching from the sea — never far distant — a sufficiency of food. It is rare for more than a single pair to breed on the shores of the same lake; but a small tarn on the island of Tamsø in the Porsanger Fjord, West Finmark, is a remarkable exception to the rule, being indeed, in that respect, probably unique in Scandinavia. Here, on the 3rd July 1872, I discovered along the banks, in the space of half an hour, no less than 15 nests, containing each 2 eggs; most of the eggs were in an advanced stage of incubation. This species being a noxious bird, I took nine sets, which lay within easy reach. They were located not more than two feet from the water's edge, and several lay on the bare turf without the vestige of a nest. The tarn itself, in which there was no fish of any kind, was literally covered with these birds, and gulls, eiders, and geese.

Both sexes share the labours of incubation. A male sitting on the eggs of his mate was shot on the 30th June 1871. (Total length 665 mm, wing 305, culmen 58¹/₂, tarsus 78, tail 52 mm). The stomach contained fragments of muscles and fish.

On 28th June and 1st July 1871 the eggs on several islands in the Skjærgaard off Folden Fjord were found to be hatched.

Young in down, from 3 to 4 days old. Total length from 215 to 225 mm; culmen $13\frac{1}{2}$ — $15\frac{1}{4}$, tarsus $30\frac{1}{2}$ — 35, middle toe $28\frac{1}{2}$ + $3\frac{1}{2}$, — 32 + 4 mm. The entire body was envelopped in a thick covering of brownish-black velvety down, the belly only, particularly in the smallest example, being of a somewhat lighter shade, which is also the case with the front edges of the eye-lids.

The young just out of the shell were expert divers. On *terra firma* they could just manage to shuffle along, in a clumsy manner, pressing on both *tarsi* at the same time. They appeared to be of an irritable temperament, snapping angrily at whatever was held out to them.

Uria troile, Lin.

The most northern colony of this species in Norway breeds on the Stappen „Fuglevær“, near the North Cape. Every one of the individuals I was enabled to examine here towards the end of June 1872 belonged to the *original* type.

Comparatively few individuals winter in Finmark, most of the birds migrating south, in company with the Spitsbergen forms, and passing the winter in great numbers in the western and southern fjords.

Uria Brünnichii, Sab.

Visits the coast in winter-time, sometimes in considerable numbers. Sommerfelt records it as breeding commonly in East Finmark; I did not meet with it in West Finmark the last summer.

Uria grylle, Lin.

The individuals I examined in Finmark all belonged to the normal Scandinavian form; *U. Mandtii* was not observed.

The full complement of eggs is more frequently two than one. The female deposits her eggs on the sea-shore, in crannies of the rocks, or beneath projecting stones, and becomes so absorbed in the duties of incubation as to be not infrequently taken with the hand.

Young in down (Folden Fjord, July 1st 1871): Entirely covered with coal-black down; the bill and feet are also black. A young bird, which I kept alive for a few days, feeding it on fish, would run about with great facility, uttering the while a loud piping cry.

As adults, they are equally expert in the use of their legs, and will speed along the rocks of the shore for a considerable distance. In the water, they will chase each other with uplifted head and half-expanded wings, dive for a moment, and with bill wide agape utter their whistling cry, not unlike that of an *Anthus*.

Fratercula arctica, Lin.

Young in down were found at Stappen near the North Cape on the 26th June 1872, most of the eggs, however, being still fresh or but slightly incubated.

Young in down, just out of the shell, with empty stomach, (one of them had swallowed a long root of grass). Total length 155—160 mm, height of bill 12 mm, from nostrils to tip 10, tarsus 17, middle toe 18 + 6 mm. Colour above sooty black, breast, wings, rump, and inferior portion of neck greyish-black. Vent and abdomen white. In the smallest example, a whitish streak only extends along the *sternum*. The down being exceedingly thick, long, and puffy, the young at this stage have all the appearance of downy balls.

Mergulus alle, Lin.

Occurs in Finmark from autumn to spring, frequenting the fjords up to March and April.

Alca torda, Lin.

As is no doubt the case with all other species of *Alcidae*, this bird does not reach maturity till the 2nd, possibly the 3rd year of its existence. At Stappen, near the North Cape, every spot beetling on the cliffs available for breeding purposes had been taken in possession, and yet myriads of the same species, consisting almost exclusively of immature individuals, were scattered, like dust upon the surface of the water. The eggs are frequently deposited at so great a distance under stones as to be all but inaccessible. Where the space is confined, they are often laid so close, that

the birds, when sitting, almost touch one another. On Renø near Vardø, for instance, upwards of 20 eggs of this and *Uria troile* were discovered under one fragment of rock. Under such circumstances there is little probability of each bird being able to single out and keep to its own egg.

Large numbers of this bird and other species breeding on the „Fuglevær“ are caught in the spring in nets. Most of the individuals leave Finmark at the approach of winter and repair in dense flocks to the southern shores.

Alca impennis, Lin.

As yet — I make bold to say — there is no *conclusive* evidence of a single example of this species having occurred within the confines of the country. That it *may*, in exceptional cases have strayed to our shores, is a possibility that no one, I presume, will pretend to doubt; but when I have passed in review the various facts, advanced with the express purpose of giving it an acknowledged place in our fauna, I shall endeavour to show that not one of them affords *satisfactory* proof in that direction.

In the year 1762, *Strøm*¹ records this species in his „Beskrivelse over Søndmør“ as abundant in the spring of the year both on the fjords and off the coast of Søndmøre, in Bergen Stift, where it occurs in large flocks; he also gives a description, defective indeed, but still sufficiently plain to recognise the bird of its general appearance, and states emphatically that no Norwegian author had previously recorded the species.

The correctness of *Strøm*'s observation has long been doubted. It is true, that *Nilsson* and *Steenstrup* are both agreed in supposing that his description may possibly be *to some extent* in accordance with fact, „for he must indeed have had one or more of these birds before him;“ but the large numbers in which he alleges they appear must necessarily refer to some other species, in all probability to *Harelda glacialis*.

I will now endeavour to show, that *Strøm* most likely never saw a specimen of *Alca impennis* in his life, and that the descrip-

¹ „Physisk og Œecon. Beskr. over Fogderiet Søndmør, Sorø 1762,“ p. 221.

tion he gives is founded partly on what he may have read of the species,¹ and partly on his own observations and what he had gathered from others concerning *H. glacialis*.

In the library of the Christiania University there is the MS. of a Journal kept by Strøm from 1756 to 1780,² and containing the subject matter from which he worked up the chapters treating of the natural history of Søndmøre. In the said Journal, which is not paged, the species in question is found recorded in the following passages, under the name of „Anglemage“, but without mention of time or place. Much, too, has been crossed out, which plainly evinces the author's uncertainty with the subject.

a. „*Anglemager er som en Teiste, sort med en hvid Ring om Øynene, floker sig sammen og raaber ligesom Angla (Havælde, vide Klein p. 133).*“ The parenthetical clause has been struck out.

This is plainly *Harelda glacialis* in summer plumage, a belief which Strøm himself originally entertained.

b. *Anglemagen ligner den saa kaldte Penguin, macula alba ante oculum, dersom den ikke blev beskrevet med en hvid Ring om Halsen og dobbelt saa stor som en Alke.* This has all been struck through.

This, it appears, is not an original observation. The meaning of the pronoun „den“ in the phrase „dersom den ikke“ is not clear.

c. *Anglemagen, sort og hvid med en hvid Streg over Øynene, . . . er liig Alken i Næbbet, som er langt og krumt, og meget hastig at duke under og komme op igjen, liden Top.*

d. *Anglemagen er uden all tvivl Colymbus minor s. Ducher, beskrives af Linnæo som cristatus.* (This too has been struck out).

These remarks, too, collated, as it appears, with the description of a grebe, originate in information obtained from others.

e. *Anglemagen, større og længere af Krop end Alken, og mere hvid, især Hunnen, de har en hvid Plet over Øyet, langt krumt Næb,*

¹ For instance: Debes, *Færoæ & Færoa reserata*, Kbhvn. 1673.

² Annotations-Boog over Mærkværdigheder (i Natur-Historien) paa Syndmøer, 1756—1780.

Hannen en hvid Ring om Halsen, eller næsten overalt hvid Hals og hvide Vingefjære yderst i Vingen. Plautus Pingvinus Kleinii, s. Alca mac. alba ante oculum, Linn.

It is hardly possible that Strøm can have penned the above notices from ocular inspection of the bird. The coloration of plumage is represented to vary in the different individuals; no mention whatever is made of the wings, which in a description of the true bird, could not be passed by unnoticed. Besides, the white spot would not have been located *above* the eye, had Strøm been describing from autopsy. Indeed the entire account bears the impress of being worked up from books.

With the exception of what has been here transcribed, there is no further account of the species in Strøm's voluminous Journal, though it certainly contains the sum of his observations on Natural History; and hence *the account of Alca impennis and of its occurrence on the Norwegian coast given by that author in his „Søndmøres Beskrivelse“, cannot possibly refer to the true species, which indeed he had never had an opportunity of examining.*

2. In the year 1764, Bränniche in his „*Ornithologia borealis*“, p. 26, notices, that a specimen of this species, marked „*ex Norvegia*“, was preserved in the Museum at Copenhagen. Whether this specimen actually came from Norway, is of course impossible to decide, but several species, which hardly had occurred within the confines of the country, are the subject of a similar designation.

3. In Krogh's „*Efterretninger om Provstiet Nordfjord*“, written in 1766—80¹, there is the following passage: —

Anglemager (Alca impennis) kaldes her almindeligst Anglefile, findes i Mængde om Vinteren ved Havkysten, men kommer kun sjældent ind i Fjordene.

This statement is obviously based on Strøm's remarks, mentioned above.

4. In 1850, Lilljeborg in his „*Bidrag till Norra Rysslands och Norrignes Fauna*“ etc.² records that „*Alca impennis skulle för*

¹ Topogr. Statist. Saml. Part 2, Vol. 1.

² Kgl. Vet. Akad. Handl. f. 1850, p. 331.

längere Tid sedan hafva blifvit skjuten i Trakten och var känd under benämningen den store Ömmer.“

The individual here referred to not having been preserved, or seen in the flesh by Lilljeborg, this record is hardly sufficiently authenticated.

5. In the year 1838, *Rasch*, in his „*Fortegnelse og Bemærkninger over de i Norge forekommende Fugle*“¹ writes as follows:— *Gjennem Stud. med. Schübeler er jeg bleven underrettet om, at den (Alca impennis) i Vinter (1838) er bleven dræbt i Nærheden af Frederiksstad.*“

On my applying to Mr. Schübeler, now Professor of Botany at the University of Christiania, for further information on the subject, he frankly admitted that the individual in question, which was not preserved, and which he did not see, could hardly have been examined with sufficient care.

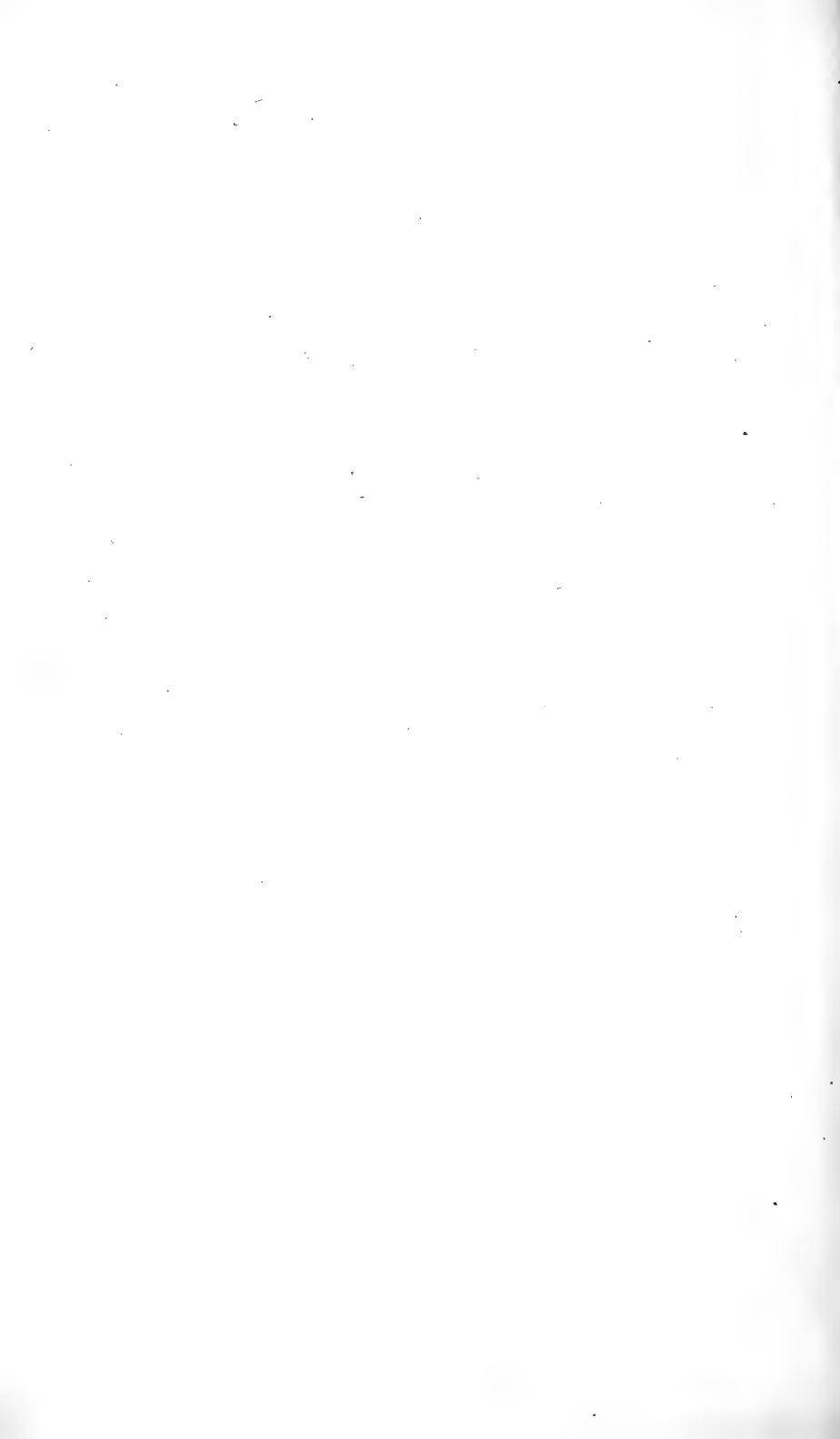
6. In the year 1858, *Nilsson*, in his *Skandinavisk Fauna*,² produces a letter from Nordvi, dated Mortensnæs, in East Finmark, May 11th 1856, containing a statement to the effect that about the year 1848, in the beginning of April, an individual was most likely shot (*ganske vist er skudt*) at Vardø, but not preserved. This however, like the rest, is hearsay evidence, Nordvi not having examined the individual himself.

¹ *Nyt Mag. f. Naturv.* 1 B. p. 386.

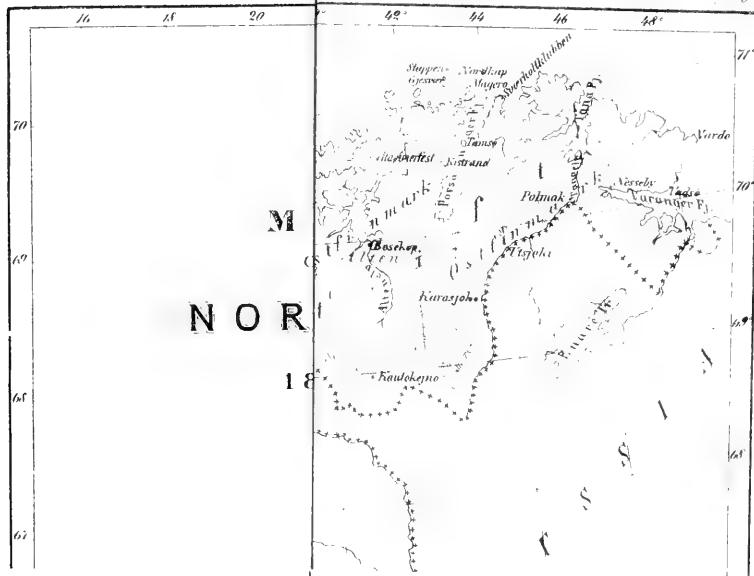
² *Foglarne*, 3rd Ed. Vol. 2, p. 571.

Erratum.

Page 234, Line 18: „In dress, but not in size.“

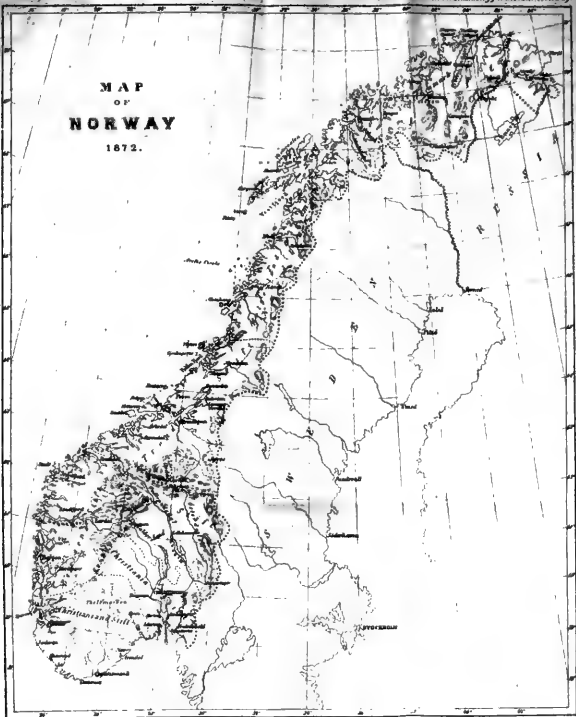


Remarks on the Ornithology of Northern Norway.



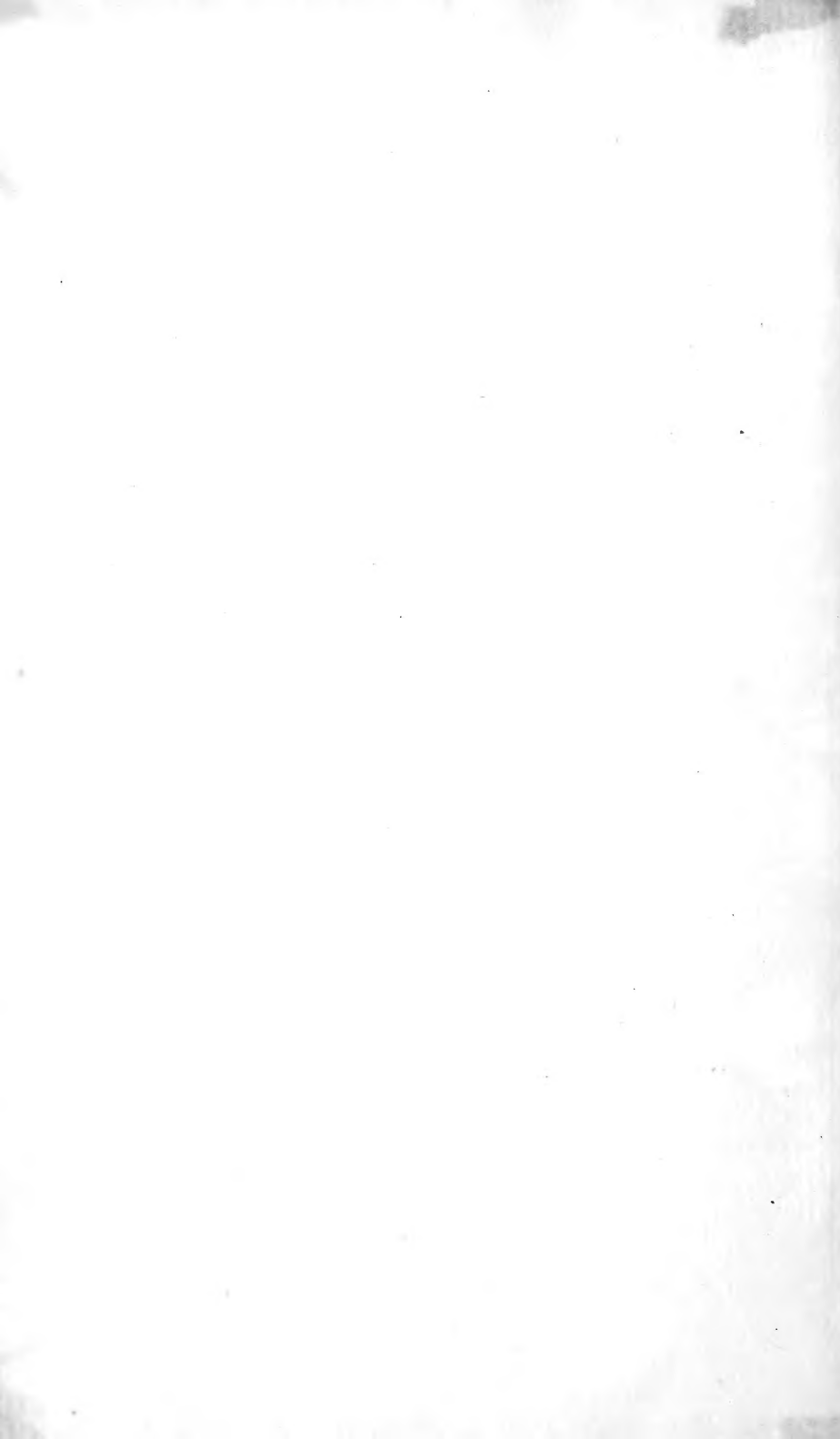
**MAP
OF
NORWAY**

1872.











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