

COOPER ORNITHOLOGICAL CLUB
OF CALIFORNIA.

Pacific Coast Avifauna

No. 1

Birds of the Kotzebue Sound Region,
ALASKA

— BY —

JOSEPH GRINNELL.



SANTA CLARA, CALIFORNIA

PUBLISHED BY THE CLUB

NOVEMBER 14, 1900

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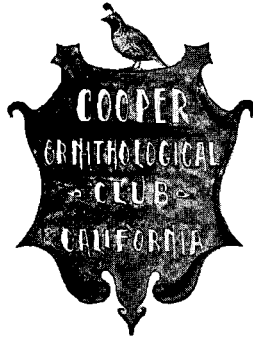
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... NOTE ...

PACIFIC COAST AVIFAUNA NO. 1 is the first of a series of publications issued by the Cooper Ornithological Club of California for the accommodation of papers meriting special consideration, or whose length prohibits their appearance in the official organ.

The publications of the Cooper Ornithological Club consist of two series—THE CONDOR, which is the bi-monthly official organ, and the PACIFIC COAST AVIFAUNA.

Both sets of publications are sent free to honorary members, and to active members in good standing.

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INTRODUCTION.

The Kotzebue Sound Region, as here understood, includes the district coastwise between Cape Prince of Wales and Point Hope, and thence eastward to the headwaters of the streams flowing into Kotzebue Sound. This hydrographic basin, as indicated in the accompanying map, thus consists of the valleys of the Noatak, Kowak, Selawik and Buckland Rivers, as well as several smaller streams, all of which empty into Kotzebue Sound.

In the spring of 1898 the writer joined a company of prospectors who intended to explore the Kowak Valley for gold or any other valuable resource this little-known country might afford. We were thoroughly outfitted for such a venture, owning our own schooner-yacht, the "Penelope," and taking with us lumber and machinery for a stern-wheel river steamer to be used on the larger streams of the region. The expedition proved a disappointment in the matter of the hoped-for gold, but this fact was rather fortunate for the writer and his ornithological pursuits, for he was enabled to devote almost his entire time during the year spent in the Kotzebue Region to collecting specimens and notes on its avifauna. The results constitute a part of the present paper.

Our expedition left San Francisco on May 19, 1898, and on the 27th of June we entered the Arctic Ocean through Bering Straits. On the 27th and 28th of June landings were made a few miles northeast of Cape Prince of Wales; and on July 1st, near Cape Lowenstern. We arrived in the vicinity of Cape Blossom on the 9th of July, and remained there until the 12th of August, when we left on our river-steamer for the Kowak. The site of our winter quarters on the Kowak River was reached on the 20th of August, and here a part of our company, including myself, built a large cabin and remained through the winter. Our camp was situated in a stretch of spruce woods on the south side of the Kowak opposite the mouth of the Hunt River, which heads in the Jade Mountains on the north side of the Kowak Valley. Several short trips were made during the fall and spring into the surrounding country, so that a fair knowledge of the local geography was acquired. On the 7th of June, 1899, we broke camp and steamed down the Kowak to the Delta where we camped until June 27, when the ice opened enough to allow us to cross Hotham Inlet to Cape Blossom. The "Penelope" had wintered in Escholtz Bay, and she arrived off Cape Blossom on the 3rd of July. We took final leave of Cape Blossom on the 8th, put in at Chamisso Island for a part of the 9th, and rounded Cape Espenberg through the scattering ice-pack on our way out of Kotzebue Sound on the 10th of July, 1899.

At all the points visited I made collections whenever opportunity afforded, and about seven hundred bird skins and as many eggs were preserved. The greater part of these specimens were obtained in May and June, in the Kowak Valley and Delta, those months being the most favorable for such work.

The immediate coast district bordering Kotzebue Sound is chiefly level or

rolling tundra. The peninsula at Cape Blossom separating Hotham Inlet from the Sound proper is quite hilly, the greatest elevation being perhaps three hundred feet above sea-level. Throughout the tundra lands and hilly country are numerous ponds and lakes, some of considerable extent. These, in the lowest tundras bordering the rivers and coast, are often connected in long series by deep channels or sloughs, thus rendering travel across such districts in summer very difficult. The land is mostly covered with a deep layer of moss and lichens. But in depressions, and bordering the lakes and sloughs, are stretches of grass, in some places growing quite tall, and in others forming smooth lawn-like meadows. In the ravines and on the hillsides at Cape Blossom are considerable growths of willow and dwarf alder averaging about three feet in height. In the interior river valleys are extensive tracts of spruce, birch and cottonwood. The timber does not reach the coast at any point, but at the mouths of the Noatak and Kowak rivers dwarfed spruces extend to within ten miles of Hotham Inlet. In the Kowak Valley the timber becomes larger and thicker towards its upper part, and the spruces attain a height of fifty feet and a diameter of twenty inches or more. Bordering the rivers and creeks are broad areas covered with alder and willow brush. The numerous channels of the Kowak Delta are densely margined with such thickets, and along the upper Kowak considerable areas are almost impenetrable on this account.

The Kowak Valley averages about fifteen miles wide, the north side being formed by a range of mountains rising as high as four thousand feet, while on the south a lower range forms the divide between the Kowak and Selawik. The map accompanying this paper is intended to show all of the localities referred to in the Field Notes and Checklist.

We found the climate in the Kowak Valley not at all disagreeable. It is much dryer than the coast region, and, although no tests were made, I should judge the amount of precipitation during the interval from August, '98, to June, '99, to have been not more than fifteen inches. During the winter the snow-fall hardly amounted to three feet on a level all put together. Most of this fell in March, and up to January but a few inches had fallen. The natives, however, informed us that this was an unusually dry year and that ordinarily there is four feet or more of snow. During the early part of the winter we experienced frequent north winds, lasting for a week at a time. But the temperature at these times was usually close to zero, seldom below 10 degrees minus. The warm south-east winds, temperature $10^{\circ}+$ to $30^{\circ}+$, brought snow. Calm weather was invariably the coldest and the mercury froze. The accompanying table of temperatures was recorded during the eight months of our stay at our winter camp. There was no thawing weather until May 12th, and then the snow and ice began disappearing in a hurry. By the 18th most of the snow in the valley had gone, and on the 21st the ice broke up in the river and started floating down. The month of June in the Kowak Delta was cold and stormy, snow falling on the 28th, and ice forming on clear nights. The interior is certainly much warmer on an average in summer than the coast district; and also much colder in winter, for at Escholtz Bay the coldest recorded at the winter quarters of the "Penelope" was 45° -. At our winter camp on the Kowak the coldest our spirit thermometer registered was 56° -. But much colder weather, even down to 72° -, was reported by prospectors further up the river and at greater elevations.

	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Highest	55° + (12)	42° + (6)	10° + (23)	27° + (14)	14° + (30)	20° + (4)	42° + (31)	49° + (8)	65° + (21)
Lowest	25° + (30)	15° - (30)	29° - (28)	56° - (22)	47° - (25)	51° - (18)	49° - (1)	20° - (15)	8° + (4)
Average	39 $\frac{7}{8}$ ° +	20 $\frac{2}{3}$ ° +	9 1-10° -	15 $\frac{2}{3}$ ° -	14 $\frac{2}{3}$ ° -	19 4-7° -	5 2-5° +	19 $\frac{1}{3}$ ° +	38 $\frac{1}{3}$ ° +
Range	30°	57°	39°	83°	61°	71°	91°	69°	57°

Several of our company were especially kind to the "bird-fiend," and assisted him whenever they could. I have to thank in particular Dr. Wm. V. Coffin, Mr. C. H. Miller and Mr. Thad. Rivers for assistance in collecting and preparing specimens.

In working up the status of various birds since my return home, I have had to call on several persons for help. I must acknowledge indebtedness for the loan of specimens or for information to Mr. Robert Ridgway of the National Museum, to Mr. Outram Bangs, and to Mr. L. M. Loomis of the California Academy of Sciences.

JOSEPH GRINNELL.

Stanford University, California.

September 25, 1900.

FIELD-NOTES.

Colymbus holbaëllii (Reinh.).

HOLBÆLL'S GREBE.

I found Holbæll's Grebes to be quite common in the Kowak Delta. I first became aware of their presence on the eleventh of June, '99. We had just moored our steamer to the river bank and I was pushing my way among the willows back toward a strip of spruces, when I was startled by a series of most lugubrious cries from directly in front of me. After a moment's hesitation I concluded it must be some species of loon, although I had never heard such a note before. Advancing as quietly as possible I came upon a small lake which was almost surrounded by spruces and margined on my side with willows. I could see nothing on the surface for some minutes. A loon would surely have shown himself during that time. Suddenly the curious cries broke forth again, and there within twenty yards of me in a thin patch of grass growing near the shore were two grebes resting on the water. They both took part in the "song," though the voice of one was notably weaker than that of the other. One of the birds would start with a long wail, and then the other would chime in with a similar note, both winding up with a series of quavering cries very much like the repeated whinnies of a horse. During these vocal demonstrations the neck would be thrown forward and the head and bill tilted upward at an angle of 45 degrees. During the performance the birds were nearly facing each other, but at the conclusion one, presumably the male, would slowly swim around the other. A slight movement on my part spoiled this interesting scene, for both birds instantly disappeared beneath the water, leaving scarcely a ripple. Finally I barely discerned the head and neck of one near a snag in the dark reflection of the opposite shore. In the patch of grass where the grebes were, I noticed a slight collection of floating hay which I took to be the beginning of a nest. During the succeeding two weeks I found that nearly every pond and lake was the home of a pair of Holbæll's Grebes, but I never observed more than one pair in a single lake. On the 16th of June I secured a set of four eggs, incubated but slightly. The bird was sitting on the nest when discovered, but promptly dove and did not appear again in the vicinity while I was present. However I once heard its cry from the other end of the lake. The nest consisted of a floating mass of sodden marsh grass, a foot in diameter. It was anchored among standing grass in about two feet of water. It was twenty feet from the shore on one side and about the same distance from the edge of the ice, which still existed in a large floe in the center of the lake. The top of this raft of dead grass presented a saucer-shaped depression which was two inches above the surface of the surrounding water. The eggs lay wholly uncovered and could be plainly seen from shore. They are elongate-ovate, dirty white in ground-color, but with a considerable tawny discoloration. Scraping off the outer layer of shell discloses a delicate pale blue. The set measures: 2.17x1.40, 2.18x1.37, 2.15x1.35, 2.08x1.34. Although the natives eat loons and gulls as readily as ducks and geese, of the grebes they say, "no good cow-cow; all same dog."

Gavia imber (Gunn.).

LOON.

On the first of July, when our vessel was anchored among the ice off Cape Lowenstern which is some 75 miles south-west of Cape Blossom, an eskimo paddled along-side with several freshly shot birds including a single Common Loon. This was the only specimen I saw anywhere in the Kotzebue region.

Gavia arctica (Linn.).

BLACK-THROATED LOON.

The Black-throated Loon was very numerous throughout the Kotzebue region, as much so in the interior as along the coast. At our winter camp on the Kowak River, the last loons in the fall, two immatures, were seen on the fifth of September. The first arrival in the spring was noted on May 26, and two days later loons were common. Most of the lakes in the lowlands are connected by sloughs with the main streams during high water, so that nearly all are plentifully stocked with fish. Thus the loons in the Kowak Valley have their food-supply close at hand, and nearly every lake is the head-quarters of a pair or two of these divers. In the Kowak delta, on June 17th, Dr. Coffin of our party found a nest of the Black-throated Loon containing two fresh eggs. It consisted of a floating mass of dead marsh grass, 18 inches across, with a saucer-shaped depression in the top, $2\frac{1}{2}$ inches above the surface of the water. The nest was 60 feet from the shore out in a small lake in about ten inches of water, and in the midst of a patch of marsh grass. The eggs are nearly ovate in shape and measure 3.05×2.01 , 3.22×2.05 . The ground color is dark olive, tending toward bistre on one of the eggs. The spots are rather evenly and sparsely distributed, are $1/32$ to $1/8$ of an inch in diameter, and vary in color from clove brown to sooty seal brown. There are also a few shell markings of drab. A second set, slightly incubated, also of two eggs, was taken on the 23rd of June. This set was very differently located. The nest consisted of a low mound of mud and rootlets scraped together on the shore of a pond. The eggs lay in a slight hollow on the top and about eight inches from the water's edge. The eggs of this set are elongate-ovate, and measure 3.02×1.87 , 3.14×1.84 . The ground color is similar to that of the first set but the spots are more numerous, and are larger and thicker at the big ends. The spots, are in color, seal brown, bistre, clove brown and drab. On June 22nd I found a floating nest, like the first described, in process of construction. I caught sight of it, as I was approaching the pond, just in time to see the loon depositing a beakful of rotting marsh grass on top of the mass already accumulated. She was in the water at one side but on seeing me, dove to a distance and would not continue operations although I hid and waited a long time.

Gavia lumme (Gunn.).

RED-THROATED LOON.

This is a common summer resident throughout the region under consideration, but it is not nearly so numerous as the Black-throated species. Red-throated Loons were shot on the upper Kowak during the last week in May, and in July

they were often noted along the coast in the vicinity of Cape Blossom. The note or "laugh" of this loon is different from that of the Black-throated, and readily identifies it at a distance.

Lunda cirrhata Pall.

TUFTED PUFFIN.

The Tufted Puffin is apparently an uncommon bird north of Bering Straits. One flew close about the "Penelope" on July 7, '98, as we were sailing into Kotzebue Sound through the broken ice-pack. On July 9, '99, I saw a very few Tufted Puffins around Chamisso Island in company with thousands of the Horned Puffins. There were not over a dozen in all and probably less, for I may have seen the same ones several times. One was flushed from a burrow in the turf near the edge of a bluff, but the hole was too deep to investigate. The species was undoubtedly breeding.

Fratercula corniculata (Naum.).

HORNED PUFFIN.

This species was quite numerous in July out in the open sea, from Bering Straits north into Kotzebue Sound. On July 9, '99, I spent the afternoon and night on Chamisso Island. On this island and a smaller detached one bearing northwest from it, the Horned Puffins were breeding in immense numbers. Their nest-burrows were dug in the earth on top of the islands, principally on the verge of the bluffs. These burrows were from one to three feet in length, with an enlarged nest cavity at the end. The eggs generally lay on the bare ground, but there was often a slight collection of grasses between it and the earth. The parent bird was frequently found on the nest and would sometimes offer courageous resistance to being dragged forth, inflicting severe nips with its powerful mandibles. Where there were rock slides on the side of the island, natural crevices and holes among the fallen boulders were taken advantage of for nesting sites. In such places eggs were to be found from the surf to the top of the island, and by crawling amongst the boulders many eggs were discovered, but often in such narrow crevices that they could not be reached. The birds usually flushed from their nesting places before the collector reached them, being probably warned by the vibration of footsteps on the rocks which I noticed to be quite perceptible when one was in a narrow chasm. The eggs laid in these rocky niches were usually provided with a scanty bed of dry grasses. All the eggs secured were fresh and proved more palatable for the table than the murre's eggs. In a series of fifty eggs of the Horned Puffin, there is considerable variation in size and markings. In the large majority the ground color is pure white, but in four eggs it is cream-buff. All the eggs exhibit shell markings, spots, blotches and in a few cases, scrawls of dull lavender. Five of the eggs one would consider at first sight immaculate, but close scrutiny discloses the shell-markings though they are extremely pale and few in number. Eight eggs in the series have outer spots and fine dashes of isabella color, and one of them is very closely covered by scrawls and spots, with two large blotches of the same color. Also in this specimen there are three of the lavender shell marks fully one-third of an inch in diameter. In

this series the smallest egg measures 2.45×1.77 ; the largest, 2.78×1.87 . The average of twenty eggs is 2.65×1.81 . The eggs of the Horned Puffin are thus readily distinguishable in size from those of the Tufted Puffin. Twenty eggs of the latter species from St. Lazaria Island near Sitka in south-eastern Alaska, average 2.90×1.91 . Mr. Rivers, who was on the "Penelope" during the spring, noted the first Puffins at Chamisso Island on June 25. The eskimo name of the Horned Puffin is Kā-lūng'ūk.

Cyclorhynchus psittaculus (Pall.).

PAROQUET AUKLET.

This bird was fairly common in the open water for fifty miles northward from Bering Straits, the first of July '98.

Simorhynchus cristatellus (Pall.).

CRESTED AUKLET.

This Auklet was extremely numerous within fifty miles to the northward from Bering Straits. From June 28 to July 3, as we were slowly following the northward-moving ice-pack, auklets were almost always in sight, flying low over the water in small squads. A few were seen close to shore off Cape Lowenstern and a single pair, in the outer waters of Kotzebue Sound off Cape Espenberg. I do not know that either of the three species of auklets here enumerated breed north of the Diomed Islands in Bering Straits, so that those we saw probably had their headquarters there. The eskimo at Cape Blossom were evidently familiar with the Crested Auklet, for they recognized my specimens as Īng-ār'ik.

Simorhynchus pusillus (Pall.).

LEAST AUKLET.

The Least Auklet was seen for a few miles northeast of Bering Straits, the first of July. It apparently shared the same range with the Paroquet and Crested Auklets.

Uria lomvia arra (Pall.).

PALLAS'S MURRE.

Murres were extremely numerous in the Arctic Ocean from Bering Straits northeastward into Kotzebue Sound. On July 9, '99, we found this species breeding in immense numbers around Chamisso Island. At this date the eggs were all fresh and many were obtained. They were laid on jutting rocks and terrace-like ledges on the face of the cliffs above the surf. A series of the eggs exhibits great variation in ground-color and markings, as is characteristic in the genus *Uria*. No two eggs in the series of one hundred are alike. There is also considerable difference in size, the smallest measuring 2.87×1.87 , the largest, 3.40×2.12 ; a usual size being about 3.25×2.00 . The food of all the *Alcidae* as shown by the stomach contents of those examined, consisted of small crustaceans. Mr. Rivers saw the first Murres around Chamisso Island on June 6th, when they were frequenting the open channels in the ice.

Stercorarius pomarinus (Temm.).

POMARINE JAEGER.

This jaeger was apparently the least common of the three species, and was confined chiefly to the coast regions. I saw it twice in the latter part of June in the Kowak delta, and in July it was frequently seen in the vicinity of Cape Blossom. An adult male in the light phase of plumage was taken there on July first, '99. The Pomarine Jaeger was also seen at sea between Bering Straits and Kotzebue Sound. The jaegers select as victims principally the Kittiwakes and Short-billed Gulls. The larger Glaucous and Glaucous-winged Gulls are quite free from the attacks of these robbers.

Stercorarius parasiticus (Linn.).

PARASITIC JAEGER.

I only saw two or three of this species in the vicinity of Cape Blossom, but in the Kowak delta quite a number were noted on the marshy tundras in June. On the twentieth of that month I discovered a nest containing a single egg, incubation advanced. The nest was a slight saucer-shaped depression on a low mossy hummock on the tundra. This depression was scatteringly lined with bits of white lichen, such as grew immediately around the nest. The egg is ovate, and measures 2.26x1.70. Its ground-color is olive, over which are scattering spots and lines of sepia and drab. Around the larger end there is a dark wreath of indistinct spots, blotches and scrawls of sepia, bistre and drab. This nest was discovered by watching the birds, which, by their uneasy flight, betrayed its neighborhood. By quietly sitting where I could watch the surrounding tundra, the birds finally became accustomed to my presence and one of them settled down on the nest. Of this pair of Parasitic Jaegers, one was in the dark sooty plumage and the other in the light plumage. As they hovered about, poising against the fresh westerly breeze, the one showing its white breast to the sunlight, and the other in its uniform sombre dress, one could scarcely believe them to be of the same species; and yet here were they mated and breeding. Of this species, those which I saw in June and July were approximately half and half in the light and dark phases of plumage.

Stercorarius longicaudus (Vieill.).

LONG-TAILED JAEGER.

This was the most abundant Jaeger in the Kotzebue region, and was alike numerous along the sea-coast and up the Kowak Valley. In the latter locality its arrival was noted on May 22nd. The haunts of these birds were the smooth low-lying tundras, where they would be seen coursing back and forth over the meadows or poising on fluttering wings just like a sparrowhawk, to finally swoop to the ground. Their food appears to be very varied. Aside from the second-handed morsels forced from the gulls, the jaegers prey upon field-mice and insect larvae, as shown by examination of their stomachs. They also appropriate ducks' eggs when the latter are left exposed. Near our first camp at Cape Blossom in July, there was the carcass of a seal on the beach. This was almost constantly attended

by a single jaeger, which kept the gulls at a distance. This jaeger, or possibly the birds of a pair alternating, devoured the flies which were attracted by the putrifying carcass, and, when they could be detached, fragments of the blubber itself. The jaegers are frequently attacked and pursued to a distance by curlew, terns and sandpipers, when the nests of these birds are approached too closely. These smaller birds are always successful in driving off the jaegers, which exhibit little courage except when in pursuit of the gulls whom they seem sure of intimidating. The jaegers often alight on the ground, usually selecting as a perch the highest hummock in the vicinity. The manner of this species in holding its head far back when roosting and thus showing its conspicuously white breast, render the birds visible a long distance on the level plain. In the Kowak delta, Dr. Coffin found a nest of this species on June 17th. It was simply a shallow depression in the moss on slightly higher ground than its surroundings, and contained two eggs, incubation advanced. These are ovate, and measure 2.05×1.45 , 2.00×1.45 . Their ground-color is dark olive-buff, coarsely spotted, forming a wreath at the large end, with Prout's brown, bistre and drab. On June 20, I found a similar nest, but with only one egg nearly ready to hatch. This measures 2.16×1.56 , and is dark olive buff, with spots of Prout's brown and drab shell markings, most numerous at the large end. In both instances the nest was located by watching the birds whose restless flight and other uneasy actions plainly indicated its approximate situation. The birds would frequently alight on the ground, each time nearer the nest, until finally one of the birds would settle on the eggs. A juvenile male Long-tailed Jaeger, taken on July 30, '98, near Cape Blossom, is about one-third grown, and quantities of a drab-grey down still adhere to the plumage of the head and lower parts. The upper parts are slate grey, the feathers tipped with clay-color, and the upper and lower tail-coverts barred with the same. The plumage of the breast and sides, as seen beneath the down, is a much lighter smoke-grey, the feathers faintly white-tipped. The flanks are barred with pale clay-color. The native name for the Jaegers is *Ish-oōng-ūk'*.

Rissa tridactyla pollicaris Ridgw.

PACIFIC KITTIWAKE.

This gull was noted numerously all along the sea-coast and among the ice-floes northeastward from Bering Straits. I did not see it away from salt water, and it was not even observed in Hotham Inlet. At Chamisso Island the kittiwakes were nesting in large numbers, and on July 9th the eggs were well advanced in incubation. I saw no nests containing more than two eggs, and many nests held but one. The nests consisted of a wet, muddy mass of decaying grasses, adhering to narrow ledges and projecting points of rock frequently so limited in extent as to make it appear as though the nest were stuck to the face of the cliff like a Barn Swallow's. The neatly-moulded, saucer-shaped nest-cavity was lined with dry grasses. As I was let slowly down the face of a cliff at the end of a rope, the sitting kittiwakes beneath me would allow me to approach very closely before launching from their nests. They would leave with a few peculiar shrill cries, and hover about me or soar back and forth along the cliff, while the ever-circling files and swarms of murres and puffins out over the water, was enough to bewilder

one. I found the kittiwakes' nests built in colonies, that is, there would be as many as a dozen built close together, lined along a narrow ledge.

Larus barrovianus Ridgw.

POINT BARROW GULL.

This was the common large gull around Kotzebue Sound and up the Kowak Valley. I saw it in the fall of '98 along the Hunt River, even well into the Jade Mountains. Along such streams the gulls find a plentiful food supply in the numerous dead salmon lodged on the sand-bars. From three to five gulls were generally seen in a company, the majority in the dark, immature plumage. The Point Barrow Gulls remained later in the fall than any other summer birds. They did not finally leave until quite cold weather and the rivers had frozen over. The last, an adult and an immature together, were seen flying south-west high overhead on the 13th of October. They first appeared in the spring on the morning of May 11th, when I discovered ten sitting close together out in the middle of the river ice. Winter was still unbroken at this date, and there was no open water in the vicinity that I knew of. For the next week or ten days, until the ice began to melt and the snow to leave the river banks, the gulls and other early arrivals among the water-birds must have had a pretty slim diet. Point Barrow Gulls were nesting in moderate numbers around Chamisso Island where Mr. Rivers took fresh eggs on an outlying rock on June 6th. The eskimo, however, brought in eggs as early as May 26th. This gull also nested throughout the Kowak Valley, but I failed to find any eggs.

Larus glaucescens Naum.

GLAUCOUS-WINGED GULL.

This was not nearly so common as the Point Barrow Gull. In fact I only positively identified it once: a freshly-killed specimen brought to me on May 11th, the first day in the spring that any gulls appeared. I thought I recognized this species flying overhead along the river several times during the succeeding two weeks.

Larus brachyrhynchus Rich.

SHORT-BILLED GULL.

The Short-billed Gull was a numerous species from Cape Blossom eastward through the Kowak Valley. Many dark-plumaged young were seen along the lower course of the Kowak, August 12 to 17, '98, usually two together at the point of a sand-bar, as yet obviously depending on their parents for food, for at the approach of the latter the juveniles would set up a querulous squealing. I did not see any of these gulls later than the last week in August. As soon as the young were able to fly, all apparently left. In the spring of '99, the first of this species to appear, were noted on the 15th of May and by the 19th they were numerous and a pair or more were to be found at nearly every large lake. Their usual notes are louder and sharper than those of the Glaucous Gulls, and remind one of the bark of a terrier. Two specimens, males, secured on the 19th and compared soon after death with the plates in Ridgway's "Nomenclature of Colors," agreed in having the bill uniform gall-stone yellow, throughout; the interior of the

mouth to the tip of the bill, cadmium orange; and the edge of the eyelids, vermilion. In the Kowak delta in June, I obtained some unusual observations on the nesting habits of this species. The lakes which the Short-billed Gulls mostly frequented were usually surrounded by spruce trees, which in the delta are more low and scrubby than further in the interior. I had in vain searched for the gulls' nests on small bare islets in the lakes and on grassy points, such as the gulls with which I was previously familiar would be likely to select for nesting sites. Although I failed to find any sign of nests, still the birds by their uneasy actions, intimated that there must be eggs or young somewhere. Finally on the 16th of June I determined to discover the secret, and, armed with patience, selected a secluded hiding place among some scrub spruces near a lake, yet where I had a good view of it. Two pairs of Short-billed Gulls kept flying about above me for a long time, occasionally alighting on the tops of the spruces surrounding the lake. I kept track of each of the four gulls as best I could, and finally saw one settle close down on the bushy top of a tree on the other side of the lake. Then it dawned on me that the nests might be in trees. I took my bearings on the tree, and started around the lake. Before I had nearly reached the vicinity, I was met by the gulls, one of which began to dive at me again and again. It would fly high above me and then swoop down past my head with a shrill, startling scream. Just as the bird passed me, it would void a limy mass of fœces, and with such disagreeable precision that I was soon streaked with white. On climbing the spruce, which was about twelve feet tall, I discovered the nest. It was almost completely hidden from below by the flat, bushy top of the spruce on which it was placed. The nest was a shapeless mass of slender twigs and hay, nine inches across on top. There was scarcely any depression and I found the shells of two of the eggs broken on the ground beneath, probably pitched out by a severe wind of the day before. The single egg secured was considerably incubated. After I left the nest the gulls followed me a long ways, dashing down at me at intervals as before described. I found several more nests by carefully examining the bushy-topped spruces around lakes, but none contained eggs. Probably the jaegers which I saw in the vicinity were responsible for this. One of the nests was only about seven feet above the water on a leaning spruce at the edge of a pond. The rest of the nests were from ten to twenty feet above the ground in spruces growing nearest the water's edge. The single egg obtained of the Short-billed Gull is ovate and measures 2.37x1.74. It is light olive brown with spots of sepia, drab and bistre.

Larus philadelphia (Ord).

BONAPARTE'S GULL.

I saw several of this species on June 28, '98, flying about over a pond near the coast about twenty miles north-east of Cape Prince of Wales. I also noted quite a number in a similar locality near Cape Lowenstern on July 1st of the same season. I did not again observe the species until its arrival was noted the following spring on the Kowak near our winter camp. The first were seen on May 18th when a dozen or more, three of which were secured, were seen coursing back and forth over some open water around the margin of a lake in the woods. They frequently alighted and remained for several minutes on the tops of the spruces. Their notes were loud and rasping. When roosting on the trees they

continually uttered a low note, exactly like the creak of my fish-basket cover. A Short-eared Owl made its appearance flying over the tree-tops, but was promptly and vociferously attacked by a pair of Bonaparte's Gulls and driven far away. I saw several of these gulls in the Kowak delta in June in the same localities with the Short-billed Gulls. From the actions of the former, I am sure they had nests nearby, and I think also in trees, though I could not find any that I was sure belonged to the smaller gull.

Xema sabinii (Sab.).

SABINE'S GULL.

I shot an adult female Sabine's Gull at the Mission near Cape Blossom on August 6th, '98. It was alone, nervously alighting and flying short distances along the surf. On September 5th of the same year, at our winter camp on the Kowak, I saw a small flock of perhaps a dozen Sabine's Gulls flying slowly east up the river. By flock, in this case, I mean a straggling company as gulls usually fly. "Flock," as applied in reference to different birds carries different ideas. Thus a flock of geese in flight is not at all the same sort of a company, in arrangement or numbers, as a flock of Turkey Buzzards.

Sterna paradisæa Brünn.

ARCTIC TERN.

This was an abundant species throughout the Kotzebue region, and it was the only tern detected. Although fairly common up the Kowak Valley, it was much more numerous on the coastwise tundras, where they were to be seen coursing over the lakes and marshes. They were very common in the vicinity of Cape Blossom in July, '98. I observed downy young on July 15th. They were seen resting in the grass at the edge of a pond. The parent bird when feeding them does not alight, but hovers over the young with extended neck, the young reaching up to receive the morsel offered; meanwhile the juvenile keeps up a chattering noise, not unlike a nestful of linnets. When the downy young are alarmed or approached, they take to the water, swimming rapidly out into the middle of the pond, with head and whole body flattened down close to the water so that they are very hard to discern especially if there is the least ripple on the surface of the water. The parents are very watchful of their young, and repeatedly dash at an intruder with loud cries. The ordinary note of the Arctic Tern is of a rasping quality. When the young are large enough to fly, they are seen following the parent birds, uttering teasing cries which closely resemble the usual note of the White-throated Swift in California. The young terns are apparently fed by their parents several weeks after they are fully fledged. By August 1st, flocks of fifty or less had gathered along the beaches, where they would be seen flying back and forth close above the surf, now and then hovering for an instant before diving down into the foaming water. After thus feeding for a time, the flock would settle together on the beach for a rest. If disturbed, the company would take flight all at once as if by a common impulse, with a chorus of cries. The food of the terns consisted largely of a small crayfish which fairly swarmed in the surf and brackish sloughs; in the interior, small fish from the rivers and ponds.

The last Arctic Terns in '98 were seen flying down the Kowak River on August 19. They were first seen in the same locality in the spring of '99, on May 20th, when four were observed around a lake. But they were never as numerous up the Kowak as along the coast. They were very common in the Kowak delta in June. There we found them nesting out on the tundras, as much as a quarter of a mile from the nearest lake. And then again, a small islet out toward the centre of a pond was the selected spot. The full set of eggs was apparently as often of one as of two. Dr. Coffin found one set of three eggs. The nests on the tundra were simply slight depressions in the moss, usually on top of a low hummock. A nest on an islet was a depression in the earth, with a thin lining of short dry grasses. The terns in this region were never found nesting in colonies; in fact, two nests were seldom found within 100 yards of each other, and usually a single lake was the rendezvous of but one pair of terns. The earliest egg was found in the delta on June 14th, and downy young on June 22nd. At Cape Blossom a considerably incubated egg was taken on June 30th. So that the middle of June appears to be the average date for depositing the eggs. The eggs secured present the usual variations in ground color and markings. They average 1.58x1.17.

Fulmarus glacialis rogersii (Cass.).

RODGERS'S FULMAR.

This was a common species through Bering Straits and for a few miles northward. I saw a single Rodgers's Fulmar on July 5, '98, about forty miles from Cape Blossom in the outer waters of Kotzebue Sound.

Puffinus tenuirostris (Temm.).

SLENDER-BILLED SHEARWATER.

On July 4th, '99, I secured a single specimen about four miles off Cape Blossom. It was resting on the water not far from a small ice-floe and was in an emaciated condition.

Phalacrocorax pelagicus robustus Ridgw.

VIOLET-GREEN CORMORANT.

At Chamisso Island on July 9th, '99, I saw a single cormorant flying past the northernmost detached islet. A pair were seen on June 27, '98, among the ice-floes a few miles north of Bering Straits.

Merganser serrator (Linn.).

RED-BREASTED MERGANSER.

I found this to be a common species in the Kotzebue region. At Cape Blossom on August 1st, '99, I encountered a brood of six downy young with the female parent. They were out in the middle of a lake, and the juveniles swam in a close bunch. The parent kept diving at short intervals, and whenever she reappeared, which might be at a considerable distance from where she dove, the band of young with one accord scrambled over the water toward her with flapping arms and almost running on the surface. The foremost chick, probably always the hungriest of the lot, was apparently the one to obtain the prey which in all cases

observed was a small fish. Another brood of small young was seen in the Kowak delta on August 12th. This species was last seen in the fall, a flock of six, near our winter camp on October 7th. It was not again seen until the middle of June in the Kowak delta. On Chamisso Island, July 9th, a nest and five fresh eggs were found. It was on the side of the island about fifty feet above the surf well hidden among clumps of tall grass. The native name for this bird is pā-zhōōg'ā-rūk.

Anas boschas Linn.

MALLARD.

This was seemingly a rare duck. A male was shot by a member of our party near the confluence of the Cogaluktuk and Kowak Rivers about May 17th. I saw one in the Kowak delta on June 9th, and a pair on June 10th.

Mareca americana (Gmel.).

BALDPATE.

This was a common duck in the Kowak Valley. They were numerous in the fall of '98 along the river near our winter camp. Flocks of juveniles were to be found feeding along the banks where beds of willows and marsh grass indicated the mouths of sloughs. The last one was noted on September 20th, though the majority had left two weeks previously. The first in the spring, a single pair, were shot on May 22nd. The Baldpates were most plentiful in the Kowak delta, where in June we shot a good many but failed to find any eggs.

Nettion carolinensis (Gmel.).

GREEN-WINGED TEAL.

On September 3rd, '98, we shot six Green-winged Teal along the willowy border of the Kowak opposite our winter camp, and several others were seen. On June 23rd, '99, in the Kowak delta, I shot a solitary adult male. These were the only times I met with this bird.

Dafila acuta (Linn.).

PINTAIL.

This duck was noted everywhere we landed along the coast, and up the Kowak River Pintails formed a frequent addition to our camp fare for two or three weeks after our arrival at the site of our winter quarters. They were most abundant during the first week in September, and the last were noted on the 14th of that month. At this season they were feeding on the seeds of a kind of grass which bordered the sloughs and ponds, and this material was often the only contents of the stomachs of the birds shot. Not a single adult male was seen during the fall, the entire flocks consisting of the previous summer's broods with the female parents. In the spring of '99, the first Pintails made their appearance in pairs on May 14th, and a week later they had arrived in full force. Two or three pairs were often found about a single lake or pond. Those bodies of water with a broad margin of marsh grass were most usually selected as the rendezvous for the future brood. The first eggs, a set of six fresh ones, were obtained on June 1st.

The nest was a mixture of down from the breast of the female parent, and bits of grass, leaves and moss. In the Kowak delta Pintails' nests were found far out on the bare, mossy tundra, in two cases fully 400 yards from the nearest pond. The largest set found contained eight eggs. The latest set was of six slightly incubated eggs taken together with the female parent on June 24th. On the 23rd the first brood of downy young were seen. They were discovered at the edge of a pond, and as the old bird tumbled away through the grass in frantic efforts to distract my attention, the brood of young with one accord scurried across the water to a small islet, and in a moment were scattered through the short grass and completely hidden from view. A series of 25 eggs averages 2.18×1.51 . Extremes are 2.26×1.52 ; 2.06×1.54 , 2.23×1.39 , 2.19×1.59 . In shape they vary from ovate to elongate-ovate and elliptical-oval. The eggs are light pea-green with various discolorations of clay-color. The eskimo name for the Pintail is *Īm-ōō'āk*.

Aythya marila (Linn.).

SCAUP DUCK.

Strange to say, during the fall of '98 we did not shoot a single Scaup Duck on the Kowak River among the numerous Pintails and Baldpates. Probably the Scaups, as soon as the young are able to fly, betake themselves to the larger lakes and thence shortly to the coast. In the spring of '99 this duck was not seen until June 1st. On the 2nd many small flocks were seen flying north, and 8 or 10 were observed on a lake. These, from their curious antics, were evidently just pairing off. In the Kowak delta this species was quite common in June, and on the 14th of that month I took a set of eleven fresh eggs, also securing the female as she flushed from the nest. This nest was on a high, dry hummock, about ten yards from the edge of a lake. It was almost hidden from view by tall, dead grass of the previous year's growth. The eggs rested on a bed of finely broken grass-stems, while the rim of the nest was indicated by a narrow margin of down. A second set of ten fresh eggs was taken on the same day and the nest was similar in construction, but was out on the tundra between two lakes, and fully a quarter of a mile from either. A set of seven fresh eggs taken on the 15th was quite differently situated. The nest was almost without feathers or down, and consisted of a neat saucer of matted dry grass-blades, supported among standing marsh grass and about four inches above the water. It was in a broad, marshy swale about thirty feet from a small pond of open water. The swale was drained into the main river channel by a slough, so that in this case there was little danger of a rise in the water of more than an inch or two. All of the nests of this species were discovered by flushing the female from the immediate vicinity. Twenty-one eggs of the Scaup Duck average 2.46×1.73 . They are uniformly deep olive buff. The native name for the Scaup Duck is *Käch-lōō'tōök*.

Harelda hyemalis (Linn.).

OLD-SQUAW.

The Old-squaw was the commonest duck met with along the coast from Cape Prince of Wales to Cape Blossom. As the "Penelope" was working her way northward among the ice-floes near shore, it was a common thing to see a block of ice

almost covered by a flock of eiders and old-squaws, the latter usually predominating. This was around the first of July and most of the ducks seen off-shore were males, the females at this date being left on shore with their maternal duties. I saw no male old-squaws at Cape Blossom after July 10th, and no old-squaws whatever were observed in the fall of '98 in the Kowak Valley. But in the following spring, along the river and on the larger lakes in the vicinity of our winter camp, this species became common. The first were seen on May 22nd. They arrived in pairs, and several were often seen roosting together on an ice-cake in the river. The beautiful mellow call-note of the male is aptly imitated by the native name of the Old-squaw, Är-hi'loök. Although so common, I personally obtained no eggs of this species. The eskimo along the coast were finding fresh eggs toward the last of June.

Histrionicus histrionicus (Linn.).

HARLEQUIN DUCK.

On June 9th, '99, as we were steaming down the Kowak and were just passing the mouth of the Squirrel River, a pair of Harlequin Ducks flew close around the boat. They were so near, that a good view was afforded, and the identity made satisfactory.

Somateria v-nigra Gray.

PACIFIC EIDER.

This was the only species of eider met with by me in the Kotzebue region. In July, Pacific Eiders were observed along the coast from Cape Prince of Wales northeast into Kotzebue Sound. The males were often seen roosting in companies on blocks of ice a mile or more from shore. I did not see any eiders at Cape Blossom or in Hotham Inlet, but around Chamisso Island I saw quite a number. At the Choris Peninsula, on the Escholtz Bay side of which the "Penelope" wintered, Mr. Rivers noted the arrival of the Pacific Eider in May, and on June 2nd secured a set of five fresh eggs together with the female parent.

Oidemia americana Swains.

AMERICAN SCOTER.

This species was first seen on June 3, '99, when a male was shot. This was at a lake on the tundra back from the Kowak river near our winter quarters. Several more were subsequently noted in that locality. In the Kowak delta from June 12 to 26, this scoter was frequently seen. Parties of four to eight were often met with on the river channels, and pairs were noted about the isolated lakes back on the tundra, where they were undoubtedly nesting. I saw a number of American Scoters in July in the vicinity of Cape Blossom, and on June 30th, '99, one was found dead tangled in our fish seine three feet beneath the surface of the water.

Oidemia deglandi Bonap.

WHITE-WINGED SCOTER.

I saw a single male of this species in the Kowak delta on June 12, and at

Cape Blossom a pair were seen on June 30, '99, and another on August 1st, '98. As these were the only instances of its notice by any of our party, the White-winged Scoter cannot be considered as of common occurrence in the Kotzebue region.

Oidemia perspicillata (Linn.).

SURF SCOTER.

This was by far the commonest scoter in the Kotzebue region, where I observed it from Cape Blossom through Hotham Inlet and up the Kowak Valley. Numbers of the males of both this species and the American Scoter were seen in flocks off Cape Blossom on July 10, '98. The arrival of the Surf Scoter was noted in the vicinity of our winter camp on the Kowak on May 22nd, '99, when a specimen was shot and at least a dozen others were seen about the open margins of a big lake. From this date on until we left the country Surf Scoters were met with numerous. In June they were common in the delta and on the lake-dotted lowlands bordering Hotham Inlet. Up to the 20th of June they were still in pairs and small companies, and I failed to find a single nest. I doubt if this duck began incubation before the last of June. The native name for the Surf Scoter is Dōō-nār'ūk, dōō'nāk meaning evil spirit or devil.

Chen hyperborea (Pall.).

LESSER SNOW GOOSE.

Four Snow Geese were seen flying along the Kowak near our winter camp on May 23, '99. On the 25th several small flocks were flying west low over the valley, and on the succeeding three days many flocks were observed flying northward. On the 27th, while on a short trip to the Jade Mountains, some twenty miles north of our winter camp on the Kowak, I saw many Snow Geese circling upwards as they encountered the mountain ranges, and finally disappearing northward over their summits. Near midnight of the 28th, I met with a flock of fifteen alighted out on the open tundra. They were slowly walking about, evidently feeding on berries, which were numerous in the locality, being left from the previous year's crop and but recently uncovered by the melting of the snow. I saw no Snow Geese in the fall of '98. An eskimo at Cape Blossom on July 26, '98, brought me an adult of this species, probably obtained further down the coast toward Escholtz Bay. The specimen was in moulting plumage, the wing quills having all been lost. This instance might seem to indicate that the Snow Goose passes the summer on the coast of Kotzebue Sound, but if so, only in limited numbers, as this was the only specimen seen.

Anser albifrons gambeli (Hartl.).

AMERICAN WHITE-FRONTED GOOSE.

This was a common goose throughout the region under consideration. It was observed among the lakes in the hills back of Cape Blossom in July. During the last of August and the first week in September, it was numerous along the Kowak in the neighborhood of our winter camp. Flocks of 6 to 20 or more were to be found at the margins of grassy lakes and on mud-bars along the river.

When passing from one feeding ground to another, these flocks were extremely noisy, and could thus be followed and located after they had alighted. The last were seen flying south on September 12th. In the spring of '99 I saw the first White-fronted Geese on May 10th, three flying low over the ice-covered river. An Indian reported seeing two geese two days previously, which were also probably of this species. During the succeeding week the geese arrived in full force, though usually seen in pairs or small companies of not more than eight. The wind-swept sand-bars along the rivers were the first spots to become bare of snow, and on such places the birds would alight and remain silently for hours. By the 18th they became very noisy, and scattered out over the tundras, frequenting the grassy margins of lakes where the natives told me the geese would shortly begin laying. But circumstances prevented me from looking for the eggs at the proper season. On their arrival in the spring the White-fronted and Hutchins's Geese were extremely lean. The weights of two males of the latter were $5\frac{3}{4}$ and $4\frac{1}{2}$ pounds. A male of the former species weighed $4\frac{3}{4}$ pounds. In the Kowak delta, on June 24th, Dr. Coffin obtained a brood of four downy young, together with the female parent. He discovered them by flushing the old bird from immediately in front of him as he was walking around the marshy edge of a lake. The juveniles are a beautiful silky olive green above, much lighter beneath, inclining to straw yellow. The native name of this goose is Kē-ē'ōōk.

Branta canadensis hutchinsii (Rich.).

HUTCHINS'S GOOSE.

This was a common goose in the Kowak Valley, but I did not see it on the sea-coast. In the fall flocks were to be found on the same feeding grounds as the White-fronted Goose, but the companies of the two species did not intermingle. I saw the last for that season on September 14th. In the following spring the first Hutchins's Geese were seen on May 14th. They became fairly numerous and soon scattered out in pairs among the tundra lakes. The natives of the Kowak Valley have a method of trapping geese, which is often a more sure way of obtaining them than by shooting. Across a mud-flat, known to be a favorite resort of the birds, several lines of brush are extended. These fences are very inconspicuous, and are sometimes only two or three willow saplings laid together lengthwise. Gaps are left at intervals in these fences, and ordinary steel traps are set in the openings. The geese while walking about in search of food come to these fences, and however light the obstruction, dislike to step over, preferring to go around, and in thus attempting to walk through one of the gaps, are caught. The natives call this species Īk-sā-ō'til-Īk.

Branta nigricans (Lawr.).

BLACK BRANT.

The presence of the Black Brant was detected only during the spring migrations. At our winter camp on the Kowak the first were noted on May 31st, and for the succeeding four days many flocks, some containing hundreds, were seen flying northeast. A few of the birds stopped at night to feed, and at midnight of

May 31st three specimens were shot. They were extremely fat, in this respect being different from most other water birds taken at that season. The natives distinguish this species by the name Nē-gě-lě'ě-nūk.

Philacte canagica (Sevast.).

EMPEROR GOOSE.

I did not find this maritime species in the Kowak Valley nor in the vicinity of Cape Blossom. Nor did the natives know of its occurrence in these localities. But it was reported to me as common on the south side of Kotzebue Sound near the Kogoruk River, and from Cape Espenberg southwestward coast-wise to Bering Straits it is a common summer resident. At a point on the Alaskan coast twenty miles northeast of Cape Prince of Wales, on July 27 and 28, '98, I saw considerable numbers. In fact it was the only goose seen at that point. Small flocks were seen at night passing back and forth low over the marshes and parallel with the beach. The "Penelope" anchored on July 1st off Cape Lowenstern, and the species was apparently equally numerous there. Many freshly-killed Emperor Geese were seen in possession of the eskimo, and also a few eggs. The natives shoot the birds with rifles on their nesting grounds, which were pointed out to me as being the low marshy tundra along the coast, crossed by brackish lagoons. A badly incubated set of three eggs was obtained from a native at this place, together with the parent birds. The eggs are plain white, much soiled, and measure 3.04x2.07, 3.22x2.07, 3.20x2.13. Some of the eskimo at Cape Blossom are familiar with this goose and call it Mík-ī-lōōr'ūk.

Olor columbianus (Ord).

WHISTLING SWAN.

Swans were not common in the regions visited by me. I saw a pair flying down the Kowak near our winter quarters on May 11th, '99, and later in the same month I was informed of the occurrence of these birds rather commonly among the forest-bordered lakes toward the head of this river.

Grus canadensis (Linn.).

LITTLE BROWN CRANE.

The Little Brown Crane was a common summer resident of the bare tundras from Cape Blossom through the Kowak Valley. Its food consisted largely of berries and grass, while a few insects and, I have reason to believe, mice, also entered into its diet. We found the cranes usually fat, and they proved very fine eating, in fact we esteemed crane above every other game except ptarmigan. The cranes remained in the vicinity of our winter camp until September 4th; and their arrival the following spring, as proclaimed by their far-reaching, rolling call-notes, was on May 14th. I saw no flocks of this species as seen during the migrations further south, and the birds had apparently already paired off. From the day of their appearance they were scattered about, each pair claiming exclusive possession of some certain extent of tundra. The peculiar and often ludicrous performances of these birds during the mating season have been well described by Nelson, but these antics do not seem to be confined to the courting season

only, for late in June I observed a pair of cranes which I knew to have a set of eggs in the near neighborhood already laid, accomplishing a series of hops, skips and profound bows, though these were mainly participated in by one of the birds, the male I presume. Possibly such belated demonstration is analagous to the singing of smaller birds even long after the courting season. Dr. Coffin found a set of two eggs of the Little Brown Crane in the Kowak delta on the 14th of June. They lay about six inches apart on the level ground of the tundra near a willow bush. For a diameter of two feet the ground was sprinkled with finely broken twigs; otherwise there was nothing to mark the spot as a nest. The eggs were far advanced in incubation, and are ovate, measuring 3.42x2.33, 3.31x2.32. A second set, obtained on the 15th, was similarly located and also considerably incubated; the eggs are very much elongated, nearly cylindrical ovate, and measure 3.56x2.11, 3.35x2.00. The eggs of these two sets are quite similarly colored. The general effect is rather pale. The ground color is olive-buff, over which are evenly distributed spots and longitudinally-extending dashes of clay-color, Vandyke brown, vinaceous and lavender. These spottings are rather more numerous at the large end of the eggs, but not so pronouncedly so as to form a wreath. The longitudinal tendency of the markings easily reminds one of the pattern of coloration on the eggs of *Myiarchus*. The native name of the crane is Tă-tîr'ē-āk.

Crymophilus fulicarius (Linn.).

RED PHALAROPE.

I did not see the Red Phalarope on the upper Kowak River, and but a few were noted in the delta from the middle to the last of June. At Cape Blossom in July I saw not more than six individuals of this species, although the Northern Phalaropes were numerous. Near Cape Lowenstern, however, and also at a point on the Alaskan coast about twenty miles northeast of Cape Prince of Wales, I found the Red Phalaropes quite numerous, while curiously enough, I noted only two individuals of the other species. At the latter point, on the 27th and 28th of June, '98, Red Phalaropes were to be found in pairs and small companies everywhere along the muddy edges of brackish lagoons which extended from the coast back into the tundras and connected with many lakes. These birds are extremely graceful in their movements, and a pair preening themselves, or swimming about each other on the surface of the clear water, is a pretty sight. The females are brightest colored, apparently do most of the courting, and correspondingly it was always the male that was flushed from the nest—a strange reversal of the usual case among birds. I found three nests in this locality, all being discovered by seeing the bird close at hand flying up from the grass. The birds are not demonstrative at the disturbance of the nests, but leave the vicinity with one or two metallic "peeps," not to return until the intruder has gone. The nests were all on higher ground and at a distance of 100 yards or more from the lagoons where the birds usually congregated for feeding and social purposes. The three nests agreed in situation, being rather deep depressions sunk into the tops of mossy hummocks. There was a thin lining of dry grasses, and in one case the drooping blades from an adjoining clump of grass partially concealed the nest from view from above. Two of the nests contained four eggs and the other, three. All were but very slightly incubated, indicating that in this region nesting is much later

than at St. Michaels, where Nelson says this species begins nesting early in June and toward the last of the month most of the young are hatched. My three sets of the Red Phalarope's eggs are fairly alike in general appearance, being olive-buff, with dots, spots and blotches of bistre, and shell-markings of wood brown. These spottings are more numerous at the large ends of the eggs. In shape the eggs vary between subpyriform and ovate pyriform. The eleven specimens average 1.25x.85, the extremes being 1.33x.89, 1.17x.85.

Phalaropus lobatus (Linn.).

NORTHERN PHALAROPE.

This beautiful species was a common bird in the Kotzebue region. It was not observed in the fall in the Kowak Valley, but in the spring, in the vicinity of our winter camp, its arrival was on May 22nd, though then only in small numbers. In June in the Kowak delta it was much more numerous. On the 20th I was out collecting across an open tundra between two lagoons, when I came to a pond on rather high ground, which was scarcely twenty yards across, and margined with short, fine grass. Here were congregated fully fifty Northern Phalaropes, and in their company was one pair of Red Phalaropes. These birds I am confident had not yet begun nesting, for they were evidently just mating. Various coquettish antics were indulged in at frequent intervals, and such demonstrations would seemingly become contagious, as several pairs would join in with many peeps and flutters. They were feeding on small flies which were swarming in the grass around the edges of the pond, and the rapid, nervous actions of the birds in picking among the grass blades were fascinating to watch. The birds were quite tame, allowing me to walk within a few feet of them, and if too closely approached, swimming out into the pond or flying but a few yards. In the vicinity of Cape Blossom I found the Northern Phalaropes breeding in considerable numbers, though they were well distributed, a few being found about the borders of nearly every lake and slough. Along the lagoon back of the Mission I discovered several nests. On June 29th, a set of 4 eggs, incubation advanced; on the 30th a set of 4 fresh eggs, and one of four eggs nearly ready to hatch; and on July 1st, a set of 3 eggs, incubation advanced. In each of these cases the male parent was flushed from the nest, and usually before I had come within twenty yards. The birds would very unconcernedly fly to a pond at some distance and begin feeding without paying any further attention to me. The nests were neatly moulded depressions in the grassy sod, usually on a hummock at the side of a pool of water. There was no lining except that formed by the broken-down grasses underlying the nest cavity. The eggs in color and markings as well as shape, closely resemble those of the Red Phalarope, but are smaller. Eleven eggs of the Northern Phalarope average 1.16x.82, the extremes being 1.22x.85 and 1.13x.80. On the 2nd of July a heavy southwest storm set in and the succeeding unusually high tide inundated much of the flats bordering the lagoons, just such ground as was selected by the phalaropes for nesting sites. Hundreds of their eggs must have been destroyed. In July '98, the first juveniles, nearly fledged, were seen on the 27th, and two days later small companies had made their appearance on pools and ponds. Within a week the phalaropes became quite scarce, probably joining in

flocks in more favorable localities for obtaining food, possibly out to sea. The native name of the Northern Phalarope is euphonious, Lĭ-wĭ-lĕ'wĭ-lŭk.

Gallinago delicata (Ord).

WILSON'S SNIPE.

Wilson's Snipe was not observed in the fall of '98, but the following spring it made its arrival evident by its strange song. The first was heard on May 22nd. Throughout the Kowak Valley, especially where there were grassy meadows between stretches of timber, this appeared to be a common species. The song and flight, or combination of the two, as observed on May 22nd and recorded at the time, was something after the following fashion. I was in a broad, grassy swale studded here and there with scrub spruces and bordered by taller timber, when my attention was attracted by a curious far-off song which puzzled me for some time. Finally I descried the producer, a Wilson's Snipe, so far overhead as to be scarcely discernible against the clear sky. It was flying slowly in a broad circle with a diameter of perhaps 600 yards, so that the direction of the sound was ever shifting, thus confusing me until I caught sight of its author. This lofty flight was not continuously on the same level, but consisted of a series of lengthy undulations or swoops. At the end of each swoop the bird would mount up to its former level. The drop at the beginning of the downward dive was with partly-closed, quivering wings, but the succeeding rise was accomplished by a succession of rapid wing-beats. The peculiar resonant song was a rolling series of syllables uttered during the downward swoop; and just before this drop merged into the following rise, a rumbling or whirring sound became audible, accompanying the latter part of the song and finishing it. This curious song-flight was kept up for fifteen minutes, ending with a downward dash. But before the bird reached the ground, and was yet some twenty yards above it, there was apparently a complete collapse. The bird dropped, as if shot, for several feet, but abruptly recovered itself to fly a short distance further and repeat this new manoeuvre. By a succession of these collapses, falls, recoveries and short flights, the acrobatically-inclined bird finally reached the ground, alighting in the grass near me. During the last part of this performance another snipe, probably the female, made its appearance, flying low over the ground and alighting with a weak 'chirp'. A little later one of the birds was seen perched on the top of a spruce, uttering a prolonged series of abrupt resonant, notes, "ka-ka-ka-ka," like the monotonous spring song of the Red-shafted Flicker. Although I tried with some pains to obtain a representation of the Wilson's Snipe from this region, I secured but one skin, that of a male, in the Kowak delta on the 23rd of June. This specimen is much paler than skins from the eastern coast of North America, and lacks most of the rufous and ochraceous tints to be seen in the plumage of latter. On the 29th and 30th of June, I heard the flight-song of the Wilson's Snipe back of the Mission at Cape Blossom.

Tringa canutus Linn.

KNOT.

The only time I met with the Knot was on August 6th, '98, at Cape Blossom.

Two full-grown juvenile males were secured, the only ones seen. They were feeding on the beach at the edge of the surf. These were undoubtedly migrants from further north.

Tringa maculata Vieill.

PECTORAL SANDPIPER.

I noted this species but once, on the 27th of May, '99, near our winter camp on the Kowak. A pair was seen at a grassy pond on the tundra, and a male secured.

Tringa bairdii (Coues).

BAIRD'S SANDPIPER.

At Cape Blossom, from July 20th to August 6th, '98, this species was fairly common. All the specimens taken were full-fledged juveniles. They were in scattered companies, busily foraging along the edge of the water on the beach or about the mouths of sloughs. In company with them were usually *Ereunetes*. I did not gain any evidence that the Baird's Sandpiper breeds in the immediate vicinity of Cape Blossom, but I have no doubt that it does so not far to the northward, perhaps on the north side of the Sound. On May 20th, '99, I shot a solitary female Baird's Sandpiper near our winter camp on the Kowak. It was feeding at the edge of the river. For the succeeding few days small parties of sandpipers were often seen migrating northward, and I thought included this species.

Tringa minutilla Vieill.

LEAST SANDPIPER.

I took a single full-fledged juvenile female of this species on the beach near the Mission at Cape Blossom on the 10th of August, '98. This was probably a migrant from the interior to the eastward or northward. In the following spring the species became fairly common in the vicinity of our winter camp on the Kowak. The first ones were seen on May 15th when the muddy mouths of sloughs along the river began to be bare of snow. At midnight of June 1st, I shot a pair of Least Sandpipers at the edge of a muddy pool where they had been feeding. The oviduct of the female contained a fully-shelled egg which would probably have soon been laid. The shell was pale blue, brown-spotted. On June 3rd, while exploring a stretch of tundra extending northward from the river, I encountered several pairs of Least Sandpipers. But one pair was seen in a single place. Their particular haunts appeared to be the vicinity of grassy ponds, and here I have no doubt they were either nesting or about to do so. One of a pair was often seen in pursuit of the other, flying around the ponds or mounting high upward to dash down and skim low over the ground again, meanwhile uttering an occasional prolonged weak twitter. The eskimo name for any of the small sandpipers is Kĭ-yě'-ōt.

Tringa alpina pacifica (Coues).

RED-BACKED SANDPIPER.

I saw a single individual of this species at the edge of a lagoon at Cape Bloss-

som on July 10, '98. As no others were discovered by me in this vicinity, I cannot but consider this a rare bird there. But at a point on the Arctic coast about twenty miles northeast of Cape Prince of Wales, on June 27 and 28, '98, Red-backed Sandpipers were numerous, and I secured both skins and eggs. The birds were found scattered out on the tundras whence they could be flushed from their nests or from where they had been feeding. One nest was a cup-shaped cavity slightly lined with grasses and sunk into the top of a hummock of moss surrounded by marshy ground. The two others found were similarly located except that they were embedded in clumps of grass, and mostly hidden from view by the surrounding blades. Each nest contained four eggs. One was fresh but the other two were considerably incubated. The eggs are peculiar, and different from those of any other bird I have seen. The ground color is pale olive-buff, and the markings are abruptly outlined against it. The spottings are of clay-color, bistre and burnt umber, with shell markings of ecru drab. These spots and blotches are as a rule oblong in shape, and the common direction of their trend is not in a direct longitudinal line, as in eggs of *Myiarchus*, but with a spiral tendency. This spiral trend is from left to right in every case, and it is most evident when the eggs are viewed toward the larger ends. The most uniformity in this respect is in the deeper shell-markings, for the bright bistre pigment spots, undoubtedly the last to be secreted and deposited on the shell, do not so often have this trend. This would seem to indicate that in the case of the Red-backed Sandpiper, the egg in its advance along the oviduct, continued its slow rotary right-to-left motion, even after it had reached the shell and pigment-secreting portion. This may not be the rule, for Nelson who collected many eggs of this species, does not mention this character. I have only ten eggs of the Red-backed Sandpiper, and eight of these exhibit the spiral trend of the markings to a very noticeable degree, while in the other two it is still distinguishable in the shell-markings, although the outside maculation is much confused. The markings on all the eggs are more numerous about the larger ends. The average measurements of my ten eggs are 1.47x1.04. Extremes: 1.60x1.08, 1.37x1.02. They are subpyriform in shape.

Ercunetes pusillus (Linn.).

SEMIPALMATED SANDPIPER.

This was the prevailing form of *Ercunetes* in the Kotzebue Sound and Kowak River regions. In the neighborhood of our winter camp on the Kowak, I positively identified the first on May 29th, when an adult male was secured and another seen. During June I observed a few pairs in the Kowak delta where I was sure they were nesting. They were usually met with about wet, grassy swales far out on the barren tundras, and not necessarily near any lake or pond. At Cape Blossom the Semipalmated Sandpipers were very numerous, and around the first of July, '99, I had plenty of opportunity for observing them on their breeding grounds. A few were to be found in the interior on damp, grassy flats, but the strip of low meadow bordering the lagoon back of the Mission was by far the most popular resort. Here the grass was short and as smooth as a lawn, with occasional narrow branches from the main slough cutting their way back toward the higher ground. In one part of this stretch of tide-flats, the sandpipers were so numerous that as many as a dozen pairs were in sight at once, and their twit-

tering notes were to be heard on all sides. They were flying back and forth over the meadows chasing one another, with shrill, rolling notes uttered so continuously as to become almost inaudible from their monotony. At times in an individual case this trilling would become so intensified as to remind one of the shrill note of the White-throated Swift. As an intruder proceeded across their domain, these sandpipers would rise far ahead of him. Although apparently paying very little attention to him, they were quite loath to return to their nests or young. On June 30th, I found several young not over a day or two old, pretty little puffy balls of down awkwardly stumbling among the grass blades on their slender stilt legs. No eggs were discovered. I took full-fledged juveniles of this species near Cape Blossom on July 20th, 1898.

Ereunetes occidentalis Lawr.

WESTERN SANDPIPER.

Full-fledged juveniles of this species were secured at Cape Blossom July 23 and August 6, '98, and I am sure of seeing others between these dates, though *E. occidentalis* and *E. pusillus* are difficult to distinguish at a distance. No adults, however, of the Western Sandpiper were found at Cape Blossom, and I am inclined to think this species is entirely replaced at the head of Kotzebue Sound in the breeding season by *E. pusillus*. At a point on the Alaskan coast twenty miles northeast of Cape Prince of Wales the Western Sandpiper was a tolerably common species, while none of the other form were obtained. At this point, on June 27 and 28, '98, the Western Sandpipers were scattered out over the tundras near the coast, and their trilling call was often heard. A set of four fresh eggs was secured on the 28th, together with the male parent, which was flushed from the nest. The nest was a neatly-rounded hollow sunk into a mossy hummock and surrounded by marshy ground. There was no lining except that afforded by the moss and grass in which the nest was situated. The eggs are pale clay-color, quite heavily spotted, especially at the larger ends, with bistre, burnt umber, ecru-drab and drab. The eggs are subpyriform in shape, and measure 1.06x.79, 1.13x.80, 1.15x.79, 1.08x.79.

Limosa lapponica baueri (Naum.).

PACIFIC GODWIT.

This was the only species of godwit detected by me in the region under consideration. It was tolerably common at Cape Blossom and in the Kowak delta in June and July, but was not observed elsewhere. The godwits were generally found around marshy places far out on the tundra in much the same environment as the Hudsonian Curlew. I found no nests but I have no doubt that the species was breeding. The native name for the godwit is Shē-tōō'ūk. The four specimens of the Pacific Godwit preserved, measure as follows:

Number Coll. J. G.	Sex	Date	Locality	Length	Wing	Tarsus	Culmen
3757	♂	June 20, '99	Kowak Delta	15.50	8.62	1.97	3.20
3756	♂	June 14, '99	Kowak Delta	15.00	8.40	1.94	2.97
3755	♀	June 17, '99	Kowak Delta	17.50	9.12	2.25	4.33
3754	♀	July 10, '98	Cape Bloss'm	—	9.50	2.27	4.52

Totanus flavipes (Gmel.).

YELLOW-LEGS.

This proved to be a common bird in the Kowak Valley. Its arrival was noted in the vicinity of our winter camp on May 19th, and from that day on its presence could hardly be overlooked, for as one approached their domains the Yellow-legs would fly to meet him, uttering prolonged, monotonous cries. Besides these notes of alarm the males had a full, melodious warble, sung for minutes at a time as they flew slowly about overhead. Their favorite haunts appeared to be the meadows lying between strips of timber, especially if there was a shallow lake or pond in the vicinity. I do not think the Yellow-legs had begun incubation up to June 6th, for previously to this date I took special care to watch the birds at frequent intervals. I saw the Yellow-legs twice in June between belts of timber in the delta of the Kowak, but it was not detected anywhere on the coast.

Helodromas solitarius (Wils.).

SOLITARY SANDPIPER.

The Solitary Sandpiper was found only in the vicinity of spruce timber in the Kowak Valley. Its arrival in the neighborhood of our winter camp was on the 18th of May, and it soon after became common. The particular haunts of this interesting bird were the margins of secluded ponds situated among the densest spruce woods. In such a place I would find a pair of Solitary Sandpipers silently but busily engaged in searching for their food through the grass at the edge of the water. They would allow of my close approach if quiet without exhibiting the least concern. If alarmed they would take flight for a short distance, uttering a few sharp 'peeps.' Sometimes I would discern one of the pair perching quietly at the top of a small spruce or fallen branch near the pond, while the other was on the ground occupied as before. The song-flight of this species is mostly indulged in during the early morning hours. This consists of a slow circuitous flight on rapidly beating wings high over the tree tops, accompanied by the frequent repetition of a weak song somewhat resembling the call of a sparrowhawk. At the close of this song-flight the bird alights, as if exhausted, and perches silently for some time at the top of the tallest spruce in the vicinity. During the performance of the male, the female may be seen feeding around some grassy pool beneath, from all appearances entirely unmindful of the ecstatic efforts of her mate. On June 6th, while taking a walk through the woods around our winter cabin for the last time before leaving this place, I visited the haunts of a pair of Solitary Sandpipers which I had been watching nearly every day since their arrival. Search as I would high and low, I could find but one of the birds, and I therefore supposed that the other bird must be incubating somewhere, but I could discover no trace of a nest, and the remaining bird was very unconcerned. I even examined the old Varied Thrushes' nests in the surrounding spruces, though I think if there were a nest, it was somewhere in the grass of the narrow strip of meadow near by. How I deplored leaving our winter home where I had become familiar with the haunts of the different birds! And to leave it too just at this most interesting season! About the middle of June I heard several times the notes of the Solitary Sandpiper in the timber tracts of the Kowak delta, but it was not noted on the seacoast.

Actitis macularia (Linn.).

SPOTTED SANDPIPER.

The Spotted Sandpiper was tolerably common in the Kowak Valley and undoubtedly nested, though I did not succeed in finding any eggs. The birds were invariably seen at the water's edge, and only along the larger rivers. During our steamer trips up and down the Kowak, this species was often started from the shores, and the characteristic flight and metallic 'peet-weet,' as they skimmed over the water around the next bend in the river, were unmistakable. The last in the autumn were seen on the 20th of August, and the first in the spring appeared on May 22nd.

Numenius hudsonicus Lath.

HUDSONIAN CURLEW.

This was the only species of curlew detected in the Kotzebue Sound and Kowak River regions. As they came under the head of game for our mess, and consequently many were shot, I had opportunity for examining considerable numbers of specimens. Strange to say, among these I failed to find a single Eskimo Curlew (*Numenius borealis*), although Nelson says of this latter species: "This is the most abundant curlew in Northern Alaska, especially along the coasts of Bering Sea and Kotzebue Sound." I found the Hudsonian Curlew to be a common breeding bird over the tundras from Cape Blossom eastward into the Kowak Valley. In the vicinity of our winter camp on the Kowak, the arrival of the curlews was on May 17th. From the middle to the last of June, in the Kowak delta, I became well acquainted with the Hudsonian Curlew. At this season they were of course mated and most of them had eggs. They were ordinarily met with on the open stretches of tundra, often where these alternate with strips of timber and lakes. Where such perches are afforded, solitary birds on watch would be seen sitting on the tips of isolated dwarfed spruces or even willow bushes. As soon as an intruder entered the domains of a pair of curlew, the bird on watch would give the alarm by a loud, ringing call-note, and soon both birds would fly to meet him. As long as the intruder remains in the vicinity, the pair of birds keep flying restlessly to and fro, now and then alighting on the ground and walking about, but most of the time keeping up their monotonous, rolling whistle. This was the only note I heard, except earlier in the season a long, faint whistle like that of a distant locomotive, uttered by the male bird while sailing slowly, on set, motionless wings over the nesting grounds. This is probably their song-flight, though it is certainly very simple. The far-off whistle, however, puzzled me for some time as to its origin. I at first thought it was a steam launch on the river somewhere, until I finally connected the sound with the slow soaring of the curlew overhead. I learned how to find the nests, by selecting an inconspicuous position and patiently watching a pair of curlew, whose unsettled actions plainly indicated that there was a nest in the vicinity. After I had remained quiet for some time, the birds would calm down and be seen silently walking about over the moss. It was often difficult to keep track of both birds, as they would be likely to alight a long distance from each other and perhaps 200 yards from the observer. Finally one of the birds would disappear, and it was seldom that I had noticed exactly where it was last seen, though of course I knew the general direction. I would then get up

suddenly and run toward the locality with eyes peeled. The instant the bird flushed, which was when I was still a long way off, I lined up the spot with two or more land-marks, say a hummock or bush, and keeping my eye on the place, stride over the intervening ground. Although I would sometimes think myself sure of the exact clump of moss which the bird left, I would often search for ten minutes in vain. Returning to another position somewhat nearer and keeping my bearings from the other observation, I would repeat the manoeuvre, the bird finally returning to the nest. The curlew would sometimes stealthily sneak along a low place between the clumps of moss and grass for the last five or six yards, so that one could not tell much from where the bird disappeared. I usually waited some minutes after the bird went on the nest to give it time to settle down, and then I would dash toward it in a hurry. Then it would be more likely to flush directly from the nest. The eggs so closely resemble the monotonous lights and shadows of the surrounding moss and grass that I have stepped directly over the nest, all the while scrutinizing every foot of ground about me, without detecting the eggs. Sometimes from the nature of the surroundings the eggs are more conspicuous and can be seen ten yards or more, but this is the exception. While one is at the nest, the parents fly close about one, almost deafening one with their loud, penetrating cries. If anything, the male bird is the most demonstrative of the two. The nest is simply a saucer-shaped depression in the top of a low hummock of moss or grass. The locality was always a wet swale or low place in the tundra, in which the clumps of grass or moss were often surrounded at their bases with water. The nests were in no way protected, the eggs always being in plain view, but the remarkable mimicry in their coloration is generally of sufficient protection. The number of eggs in a full set was invariably four. Of the eight sets secured, two sets, slightly incubated, and one set, incubation far advanced, were taken on June 14th; a set of slightly incubated eggs on the 16th; a set with incubation barely begun and one set nearly hatched, on the 17th; a set of slightly incubated eggs, and a nest containing two fresh eggs on June 20th. Twenty eggs average 2.36×1.64 . The extremes are 2.22×1.66 , 2.35×1.70 , 2.54×1.61 . In shape they vary somewhat, but approximate subpyriform. Their ground color is very variable, from a bluish pea-green through olive-buff to light olive-green. The markings are numerous and somewhat amassed at the larger ends of the eggs. They consist of dots, spots and blotches of pale lavender, drab, Prout's brown and bistre. The latter seems in every case the real pigment, and the varying depth to which it is covered with subsequent layers of shell material, seems to account for the different tints, even to the palest lavender. No downy young of the Hudsonian Curlew were obtained, but a nearly-fledged juvenile with bits of grayish down still adhering to the ends of the feathers of head, neck and crissum, was secured at Cape Blossom on July 30th, '98. The native name of the curlew is *Tōo-rāt'ūr-ūk*.

Charadrius dominicus Müll.

AMERICAN GOLDEN PLOVER.

Golden Plover were fairly common along the coast of Kotzebue Sound. In June a few were seen over the tundras of the Kowak delta ten miles inland from Hotham Inlet. The birds were shy, however, and quite difficult of approach.

Their clear whistled song-notes of three syllables were heard several times. This was uttered while the bird flew over the tundra at a considerable height, with slowly flapping wings. The actions of a plover during this song-flight reminded me of the flight of a nighthawk. At Cape Blossom, I saw several Golden Plover about the hillsides the first of July, and Mr. Rivers of our party saw the species at Choris Peninsula on June 12th. No eggs or young were discovered, but I have no doubt that this bird nests at these points. The six specimens obtained are apparently referable to the American form rather than *C. d. fulvus*.

Number Coll. J. G.	Sex	Date	Locality	Length	Wing	Tarsus	Culmen
3996	♂	June 14	Kowak Delta	10.25	6.55	1.61	.93
3749	♂	July 1	Cape Blossom	10.50	7.07	1.72	.87
3750	♂	July 3	" "	10.75	7.40	1.75	.90
3751	♂	June 29	" "	10.12	7.20	1.68	.80
3752	♀	June 29	" "	10.37	7.20	1.70	.93
3753	♀	June 29	" "	10.25	7.03	1.70	.83

Aegialitis semipalmata Bonap.

SEMI-PALMATED PLOVER.

This species was only noted twice, in the Kowak Valley, so that it cannot be very numerous. I shot a solitary adult male at the edge of the river near our winter camp on May 30, '99. And I saw a single one in the Kowak delta on June 14th. This bird was flying in broad circles over a swale, following closely a pair of noisy Yellow-legs. The natives along the Kowak River know this species and call it Kō-rūk'ō-rūk.

Aphriza virgata (Gmel.).

SURF BIRD.

I met with this species on only one occasion, and this was on the 29th of May, 1899, at our winter camp on the Kowak. Six waders were seen flying up the river low over the water. They finally lit on the sand at the water's edge, and I succeeded in obtaining three specimens, which proved to be of this species. Two were males, with testes one-fourth of an inch in diameter. The largest ovum in the female was one-eighth of an inch in diameter. Thus, I have no doubt, the birds would have nested within the next two weeks. An Indian in the neighborhood, moreover, when shown these birds recognized them by name (Tōō-āk'til-ik), and told me that when mosquito-time came (I suppose about the middle of June), these birds are found nesting about the small lakes far back on the tundra next to the mountains, and he pointed toward the Selawik Range on the south side of the Kowak Valley. This seems to correspond somewhat with Nelson's experience at St. Michaels. He found the Surf Bird to be a rare fall visitant there, and says "the natives, however, claim that it is found breeding on the bare mountains in the interior, some twenty or thirty miles from the coast." But he further adds, "they probably mistook it for some other bird." I, myself, however, have no doubt that the breeding grounds of this little-known species is somewhere in the

interior of northwestern Alaska. My three specimens from the Kowak River are in perfect nuptial plumage. The scapulars are extensively marked with clear bright tawny. Adults in somewhat worn post-nuptial plumage, taken by me at Sitka, Alaska, July 21, 1896, have these tawny markings much more palely indicated, possibly due to fading.

Arenaria interpres (Linn.).

TURNSTONE.

This species was only met with on the coast, and at but two points. Near Cape Lowenstern on July 1st, '98, I saw two pairs of Turnstones about a marshy tract back of the beach. Judging from their actions, eggs or young must have been in the near vicinity. They frequently uttered a loud note, much like the winter call of the Red-shafted Flicker. A jaeger which happened to approach the locality was speedily driven off by a pair of the Turnstones. At Cape Blossom, during the first week in August, I saw a few Turnstones along the beach near the Mission.

Canachites canadensis labradorius Bangs.

NORTHERN SPRUCE GROUSE.

The Spruce Grouse is a common resident of the Kowak Valley throughout the spruce tracts. During the autumn and spring months they were easier to find, as they were then often flushed from the ground in the woods where they were feeding on cranberries and scratching in the turf. In September and October, wallows where they had scratched up the turf and moss would be met with every few feet along the ridges, and in some places yards in extent had thus been worked over. On the 24th of September, '98, three grouse were shot, and the attendant circumstances well indicate their protective habits. They had been feeding on the side of a ridge, and we had walked nearly past them, within twenty feet, when I noticed a slight movement in what I had taken at a passing glance to be a birch stump sticking up from the moss. I stopped and watched it for several minutes, and except for an occasional wink of its eyes, there was not a stir; the bird remained in a rigid position even though we were talking and walking slowly toward it. Three others were finally distinguished within a few yards of the first one, all thus petrified in the various attitudes in which they undoubtedly were when they first saw us approaching. At last they seemed to realize that they were discovered and straightened up, raising the feathers on each side of their necks and abruptly leaving the ground with a startlingly loud rush and whirr of wing-beats, enough to disconcert any ordinary enemy. They flew but a short distance and alighted in spruces, whence they were finally secured, save one, which flew out of sight. On October 3rd I shot eight grouse early in the morning. A flock of that number were on the sand at the shore of the river, evidently to get water, for all the standing water was frozen over and there was as yet no snow. As usual they were very easy to approach, seeming to trust entirely to their protective colors and keeping perfectly still. After being shot at twice, the remainder of the flock flew up into the nearest spruces and were all successively located by the swaying of the boughs. They were often seen rapidly picking off the tender spruce needles at the tips of the branches. Although their flesh tasted

strongly sprucey, we valued it greatly, for fresh meat was always scarce. After the snow came grouse were seldom found for they remained continually in the trees. I saw but few tracks on the snow all winter, though in the fall their tracks were numerous on the sand-dunes and among the willows along the river. No notes whatever were heard until May, and even then the love-notes of the male were but seldom heard. On May 28th I found several pairs of Spruce Grouse at upper tree limit along the base of the Jade Mountains. A female taken at this date contained a full-sized egg in the oviduct and numerous ova of various sizes in the ovary. I failed to secure eggs or young of this species. The weight of a male bird taken in May was $1\frac{3}{8}$ pounds. The Indians of this region say that it is sure and immediate death for a person to even look upon the eggs of the Spruce Grouse, and I could not get them to hunt grouse eggs for me for any consideration. One man cited to me several such fatalities, one of which was of but recent occurrence and in his own family. The native name of the Spruce Grouse is Nā-pāk'tō-mā-gā'ri-ük, ā-gār'i-ük being their name for the ptarmigan, and nā-pāk'tōk, a spruce tree. After comparing my series of Spruce Grouse from the Kowak Valley, Alaska, with specimens from southeastern localities, I have found the northern birds to be perceptibly grayer, especially on the wing coverts and other upper parts of the males, and with the buffy markings in the plumage of the female paler and less extended. Outram Bangs, in the Proceedings of the New England Zoological Club, Vol. 1, pp. 47-48, has recently described a race of the Spruce Grouse from Labrador which, as far as I can see, is identical in every respect with the Alaskan race. His subspecific name *labradorius* was consequently unhappily chosen, for he had apparently not compared his birds with other northern specimens, and evidently considered his geographical race as confined to Labrador. Mr. Bangs has kindly sent me four of his Labrador birds, and these, together with three others in the National Museum series collected by L. M. Turner in Ungava, I have carefully compared with my Alaskan birds, with the result that I consider the Spruce Grouse of these two distant regions identical, and easily distinguishable from those occurring to the southward, from Maine to Minnesota. The Northern Spruce Grouse from the Kowak Valley average slightly grayer than the few specimens I have seen from the Yukon Valley. In other words, the Kowak birds present the north-western grey extreme. Among twenty-five Kowak specimens are several individual variations worthy of mention. An adult male, (No. 3842, Coll. J. G.) which was secured near our winter camp on May 2nd, '99, has the tail curiously diversified. There are sixteen feathers, the normal number, but the outer seven feathers on the right side are .40 inch shorter than the rest, and they are very narrowly tipped with white. Within this, separated by a subterminal narrow black bar, is a small irregular patch of pale buff. The other nine tail-feathers are normal, being broadly ended with buff. The bird is otherwise as usual. The narrow white tipping of the seven abnormally marked tail-feathers resembles the condition in *Canachites franklinii* which has all the tail-feathers either wholly black or but narrowly white-tipped. Another male exhibits a similar tendency but to a less degree, only three right-hand outer tail-feathers being of the abnormal type. Two males in the series have 18 tail-feathers. Three females have fourteen and one female has but twelve,

though here is the chance of two or more having been lost. However, the usual number of tail-feathers in either sex is sixteen. Since the above account was written, the Spruce Grouse from Alaska has been named and described as distinct from both *canadensis* and *labradorius*. (*Auk*, April 1900, pp. 114-115.) Having examined a considerable amount of material, I feel justified in still maintaining my opinions as above.

Lagopus lagopus (Linn.).

WILLOW PTARMIGAN.

This proved to be a common species throughout the lowlands from Cape Blossom up the Kowak Valley. Although sometimes met with at the borders of timber tracts, or even among scattered belts of spruces, their preferred haunts were the open tundras, especially along patches of dwarf willows. In the vicinity of our permanent camp on the Kowak the Willow Ptarmigan remained throughout the whole winter, but during December, January and February they were much fewer than during the rest of the year. Therefore there must have been a partial midwinter migration. The natives said that the birds went southward to the Selawik Valley at that season. In October and November the ptarmigan were in large flocks among the willow-beds which border the streams. At this time they were wont to congregate at mid-day on the sunny sides of the willow-thickets along the water courses. As yet that year ('98) there was no snow, and these white birds were very conspicuous wherever they were. This probably accounted for their being so shy at this season. Later when the snow came, they would allow of a much closer approach, but were correspondingly difficult to discover. A day when the sky was overcast with dense haze, obscuring the direct rays of the sun, yet dispensing an intense even light, the ptarmigan were extremely hard to distinguish against the blank whiteness of the landscape. Only some movement of the black bill or eye could betray their presence, and often I have unknowingly approached the birds on the snow within a few yards, until they finally flushed with their startling whirr of wings and hoarse alarm notes. But on a clear day, when the sun shines unobstructedly, even white objects are brought out in relief by their dark shadows. The ptarmigan then are discernible on the snow for several hundred yards. When feeding among the alder and willow bushes they are usually scattered about, and flush, a few at a time. Sometimes a single bird will be seen perched on a bush or even a low spruce tree, awkwardly balancing itself on the swaying branches. All through the winter as well as in spring and summer, on fine days, the hoarse nasal cackle of the old male birds may be heard. On the 18th of February, a clear calm day, notwithstanding the spirit thermometer registered 51 degrees below zero, the ptarmigan were very noisy, and could be heard on the tundra across the river over a mile distant from our cabin. I put on my snow-shoes and went over after them. I succeeded in shooting three, by following in the direction of their calls. Only two or three were located in a place, and the bird which was cackling was generally discovered on the top of a hummock or snowdrift. The ptarmigan in their thick winter plumage are hard to kill, for the shot often fails entirely to penetrate the heavy coat of feathers. Unless the birds were within very close range, we found it nearly always ineffective to shoot at them if facing us at rest. But if flying or

walking away from the hunter, they were more vulnerable. The food of the ptarmigan during the winter consisted entirely of buds and the tenderer twigs of dwarf alder and willow. The crops of the birds shot were often found to be greatly distended by an almost dry mass of this stuff. The long nights, when the birds are inactive, seem to afford the necessary time for the digestion of such an amount of material. Occasionally a few spruce needles were also found. The gizzards of the birds obtained, invariably contained a quantity of small polished pieces of clear quartz, this probably being the hardest substance for the purpose obtainable by the birds. A bare place on a sand-bar in the river, kept clear of snow by the wind, was wont to be frequently visited by the ptarmigan and I have seen them scratching over the gravel in such places, even in the coldest mid-winter weather. The weight of a male taken in April was $1\frac{1}{2}$ pounds. The moults of the Willow Ptarmigan in this region, as indicated by my series of skins, takes place as follows: The changes from summer to winter plumage begin in August, and go on until well into October. Three specimens taken on October 6th have the back, upper tail-coverts, breast, head and neck all around still chiefly dark, though many white feathers are mixed in; the rest of the lower parts and the wings including their coverts are entirely white. The birds in this plumage closely resemble in distribution of color the females of May 20th or thereabouts. It will thus be seen that the moult in the fall advances in just the reverse order from that in the spring, but giving the same protective distribution of coloration, that is, dark above and light beneath. Of three birds taken on October 12th one is entirely white, excepting of course the black tail-feathers, though many new feathers on the head and neck are just unsheathing. The other birds still retain several dark feathers on the back, head and scapulars. The new white feathers when fresh have a very noticeable pink blush, which, however, soon fades. Both sexes in the fall apparently undergo moulting at the same time. But in the spring the male precedes the female by three weeks or more. The first appearance of dark feathers is evidenced in two males taken on April 4th. These have many dark feathers in the head and fore-neck just unsheathing. Two males, April 6th, have conspicuously dark-feathered necks. April 13th presents males with the neck all around and breast fully dark-feathered. And so on successively until April 26th, when the first males in perfect courting plumage were secured. They have the whole neck and chest all around deep rich chestnut abruptly defined against the white of the rest of the body. The fore parts of the males are in this plumage until June 14th, when the first barred feathers of the summer plumage are appearing in the fore-neck. A specimen of May 14th, however, presents a few summer feathers in the back, scapulars and upper tail-coverts. Males taken on June 17th have the upper parts entirely dark, head and neck with many barred summer feathers, and also many appearing on the sides and flanks. A male taken on July 10th is completely in the summer plumage; the white tips of the black tail-feathers are worn off, a very few white feathers still persist in the lower parts, and, besides the white wing-quills which never change, being moulted but once a year, in the fall, a few primary coverts only are white. A few of the uniformly dark brown feathers of the courting plumage are still in the breast. The male Willow Ptarmigan thus undergoes at least three distinct moults during

the year, though but one of these, that in the fall, is complete. In the case of the females my specimens seem to indicate but two plumages, the winter like that of the male, and the summer which is different from either the courting or the summer male plumage. In the spring the earliest beginning of moult in the female is shown by a skin taken on April 24th, where several dark feathers are hardly discernible among the white feathers of the head and fore-neck. By May 15th females have many dark feathers in the upper tail-coverts, back and scapulars, head and neck all around and fore-breast entirely dark, except a few white feathers persisting on the head; otherwise pure white. May 20, 22 and 27 show successively advanced stages until a female taken June 3rd, has the entire upper parts fully dark, but many white feathers still in the lower breast and abdomen. Females taken June 17th are completely in summer plumage. It will thus be seen that the female moult occupies much less time for completion than that of the male. In both sexes the tarsi and tops of the toes moult but once, in the fall. But in May, after the heavy pedal feathering is of no further use as snow shoes, the feathers apparently become brittle, for in a short time they become so abraded that the feet and tarsi are almost bare; but a few even of the feather-shafts persist, and these only as short naked stubs. It is an interesting observation that the males in the spring soon after they had gained their abruptly contrasted courting plumage, were much shyer and harder to approach than either previously or later when they became fully dark-plumaged. For they seemed to realize that when on snow, their dark fore parts rendered them conspicuous objects, and when on the dark bare ground, the pure white of the rest of their plumage rendered them equally easy of detection; so that the birds at this season were unable to depend on protective coloration to conceal them from their enemies. It is also worthy of note that the females acquired their protective coloration much earlier in the spring than the males, and were correspondingly difficult to distinguish or flush on the mossy tundras. The females are thus in condition to safely begin incubation by June 1st or earlier. A set of eleven fresh eggs of the Willow Ptarmigan was found near our winter camp on the Kowak by Dr. Coffin on the 3rd of June. The nest was a slight depression on the top of a clump of short, dead grass in an entirely unsheltered situation. There was a slight lining of grasses and moss. The female was shot and her oviduct was found to contain another fully-shelled egg, so the full set in this case was undoubtedly twelve. Another set was found in the Kowak delta on the 17th of June. This was of thirteen eggs, incubation far advanced. The nest was a slight depression in a mossy hummock, with a scanty lining of dry grasses. In this case the female left the nest when almost trodden upon, and exhibited great solicitude, tumbling about in the most distressing manner. The male bird also put in an appearance in the vicinity, but was shy as usual. At Cape Blossom, on July 10, '98, I met with a pair of Willow Ptarmigan with their family of downy young. On July 30 I encountered another flock of about a dozen young, nearly two-thirds grown, together with the adults. In common with most of the grouse and partridges, the young of the ptarmigan have a most wonderful faculty of concealing themselves at a moment's notice. In the first case, although an instant before I had seen the whole flock running about in the short grass, I succeeded in securing but one. The eskimo name, Ä-gär'f-ük or Ä-käzh'rē-gäk, is evidently an imitation of the cackle of the

ptarmigan. The natives capture the birds in winter by snaring. A stretch of thick willow brush is selected, and numerous sinew nooses fixed between the upright stems close to the snow. The ptarmigan in pushing their way through the brush seem to have acquired the firm habit of trying to force their way between the upright twigs, even if a very tight squeeze, rather than backing out and trying another opening. This unfortunate habit is the undoing of the birds, for when they encounter a sinew noose, a very little forcing tightens the noose irrevocably, and they soon strangle.

Lagopus rupestris (Gmel.).

ROCK PTARMIGAN.

I first met with this species on September 17, '98, about the summit of the Jade Mountains on the north side of the Kowak Valley. On that day I saw three flocks of 6, 7 and 20 birds, respectively. In each case they were flushed from ridges at some distance, and were probably feeding on heath and blue-berries, which fairly covered the ground on favorable slopes. At a distance the birds appeared to be entirely white, at this date, though no specimens were obtained. I rather think the summer plumage of the Rock Ptarmigan is of much shorter duration than that of the Willow Ptarmigan in the lowlands. The Rock Ptarmigan, according to my experience, are confined exclusively to the higher hill-tops and mountains in summer, and at such elevations the snow remains later in the spring and comes much earlier in the fall than in the valley, leaving a very brief summer. No Rock Ptarmigan were detected in the Kowak Valley until February 11th. On account of the light snow-fall in the early part of the winter, they probably found sufficient forage on the mountain sides up to this date. However, during March and April flocks of from a dozen to a hundred were often met with in the lowlands. These flocks could be traced up by following their tracks, especially if the snow was freshly fallen or laid by the wind. Then tracks of a large flock of Rock Ptarmigan would form a broad swath and extend across the tundra for miles, the individual lines of tracks zigzagging back and forth so as to take in every willow twig or bunch of grass sticking up through the snow, but all tending in the same general direction. The birds, when on these feeding marches, apparently seldom take flight unless disturbed, and I have followed these roads from one set of "forms" in the snow, where the birds had passed the preceding night to the second set of "forms" of the succeeding night, and then finally found them, doubtless on their second day's walk without taking flight; except occasional individuals left behind. The tracks of the Rock Ptarmigan are easily distinguishable from those of the Willow Ptarmigan by their much smaller size and the shorter strides; and they seem not to be in the habit of dragging their middle toes over the ground at each step, as evidenced by the tracks in the case of the Willow Ptarmigan. A series of eighty Rock Ptarmigan from the Kowak Valley in winter plumage show that in the female the transocular black stripe is never indicated nearly as prominently as in the male, being, if present, much obscured by white; and in the majority of cases there is no trace of black whatever on the lores of the female. A curious thing was that the sexes apparently went in separate flocks. In February and March large flocks entirely or mostly of males were encountered. On April 15th a flock of fully one hundred Rock Ptarmigan were seen and twenty-one

were secured. Of these but one was a male. Out of 25 which I shot from a flock on April 20th not a single one was a male, and not a single bird was seen with the transocular black. In every case the sex of the specimens was determined by dissection. The weights of five Rock Ptarmigan taken on March 29, ascertained within three hours after they were shot, were as follows: three males, respectively, 1 5-16, 1 4-16, 1 3-16 pounds; two females, 1, 1 3-16 pounds. They were all in good condition and somewhat fat. The last Rock Ptarmigan seen in the valley was secured on April 23rd, also a female. It seems that the males precede the females to the nesting-grounds. I next met with the species on the foot-hills of the Jade Mountains on May 27 and 28. The oviduct of the single female secured contained a fully-formed egg, indicating that nesting had already begun. Several males were also taken. The birds were apparently confined to the bare mountain sides just at the edge of the snow-line, for the mountains were still unbrokenly white for the upper two-thirds of their height. The males secured at this time (May 28) are still in entire winter plumage, except that a few new dark feathers are to be found by separating the old feathers on top of the head. The transocular stripe is very abruptly defined, rendered more so by abrasion of the bordering white feathers, so that the line of demarcation is quite distinct. The fleshy combs over the eyes were very brilliant poppy red and much enlarged. The female, however, is fully in dark plumage on the upper parts, breast, neck and head, but the remaining lower surface is still mostly white. In the Rock Ptarmigan therefore the female moults long before the male, just the reverse of the case with the Willow Ptarmigan. The native name for the Rock Ptarmigan is also *Ä-gär'i-ük* in common with the Willow Ptarmigan, but the former is also known by a distinctive name, *Nik-säk-töong'ük*, referring to the black on the sides of the head. The natives say this black is so the Rock Ptarmigan, which live on the mountains where the snow covers the ground till mid-summer, will not be blinded by the intense glare. The natives themselves, in the spring before going out on a day's hunt, thoroughly blacken the region around their eyes and across the nose, with soot, to prevent snow-blindness. This is certainly an interesting suggestion, for on May 28, at the snow-line on the Jade Mountains, as before stated, the males were still in pure white plumage, except the useful transocular black. The females, moulting as they do much earlier than the males, might not need such a provision. Of course during the winter when the sun is low, there is no such necessity.

Circus hudsonius (Linn.).

MARSH HAWK.

I saw this species at Cape Blossom on two occasions, July 26 and August 6, '98. Each time the bird was skimming low over the meadows evidently on the lookout for field-mice. Marsh Hawks were frequently noted in the vicinity of our winter camp on the Kowak, the last of August. They were observed flying over the willow beds nearly every time we went duck shooting across the river. The last seen, an immature in bright rusty plumage, was shot on September 3rd. The following spring, I saw but one Marsh Hawk and this was on the 1st of June.

Accipiter velox (Wils.).

SHARP-SHINNED HAWK.

Several Sharp-shinned Hawks were seen about our winter quarters on the Kowak the last week of August. They were usually seen at dusk silently skirting the edges of the timber tracts. I shot an immature male, the last individual seen, on the evening of September 1st. I failed to see a single Sharp-shinned Hawk during the following spring. The native name for this bird is Kē-gōō-wā-chōr'ūk.

Falco rusticolus gyrfalco (Linn.).

GYRFALCON.

In October when the Willow Ptarmigan were numerous along the Kowak, I saw Gyrfalcons several times in their vicinity, always singly. On October 24th I shot at and wounded a ptarmigan which after a flight of a hundred yards or more fell to the ground in its death struggles. A Gyrfalcon which I had not previously seen suddenly made its appearance rushing toward the dying bird with a swift zigzag flight. Just before reaching the ptarmigan, the Gyrfalcon caught sight of me running toward it and sheared off but kept circling around overhead with frequent wing-beats. It seemed loth to leave such an easy prey, and remained fully five minutes uttering an occasional hoarse cry or croak, sometimes hovering stationarily above the ptarmigan, but always hesitating to dart down for it so close to me. Finally the Gyrfalcon began to fly in broader circles, mounting slowly upward, and an unsuccessful shot sent it flying off toward the foothills. A day or two later I saw a Gyrfalcon flying low over the brush bordering Hunt River and followed by a chattering mob of more than fifty Hoary Redpolls. After October 28th I did not again see the Gyrfalcon until May 10th when I secured an adult male. It was flying northward toward the mountains. During the latter part of May I saw quite a number; and on the 28th several were seen along the base of the Jade Mountains; one was observed in pursuit of a Rock Ptarmigan, but the latter escaped.

Falco columbarius Linn.

PIGEON HAWK.

I found the Pigeon Hawk quite common during the latter part of August along the Kowak above the delta. It was oftenest noted in the tracts of cottonwoods which in places abutted the river banks. Several families were seen, the young accompanying the adults and uttering loud querulous cries. The last one was seen at our winter camp on the 30th of August. The following spring the first was noted on May 19th; and I saw the species but once or twice afterwards.

Pandion haliaetus carolinensis (Gmel.).

AMERICAN OSPREY.

On the 12th of August while we were steaming up one of the channels in the Kowak delta, as many as six ospreys were seen, and a nest was observed. This nest was, I judged, about forty feet above the ground at the top of a spruce where several branches emanated and the tip of the tree was broken off. It probably contained nearly full-grown young at this date. Although the tree in which

the nest was situated was over 150 yards back from the shore, the two parents acted very solicitously, circling about near the nest and whistling mournfully, until we lost sight of them around the next bend in the river. At our winter quarters, ospreys were seen or heard nearly every day up to the 20th of September, on which date they were noted for the last time until the following spring. But not until the 3rd of June did I see an osprey. Possibly the freshets and the consequent difficulty of catching fish, accounted for their late arrival. In the delta in June, '99, I again found the ospreys fairly common, and on the 20th I succeeded in obtaining an adult male. I did not detect this species on the coast, though I saw individuals in the Kowak delta within eight miles of Hotham Inlet. I have taken pains to compare northern specimens of the osprey (Kowak delta, Yukon, Sitka), with southern birds (Southern California, Florida and Atlantic States), with the result that I find absolutely no appreciable difference. I had expected to find a parallel case to those of the Bald Eagle and Raven, in which the northern birds are larger with comparatively much larger bills. But the ospreys present not a trace of similar geographic variation. However the osprey is much more migratory throughout its American range than the eagle or raven, and according to a possible law, "birds vary geographically inversely as they are migratory."

Asio accipitrinus (Pall.).

SHORT-EARED OWL.

The Short-eared Owl was noted everywhere during the summer from the vicinity of Cape Blossom up the Kowak. In the former locality this species was quite numerous among the hills of the peninsula where meadow-mice were remarkably abundant. Until the time we started up the Kowak, August 12, I saw no young, but on July 30th I flushed an adult pair which undoubtedly had a nest in the near neighborhood. One of these birds was very solicitous, hovering high above me as long as I remained in the vicinity, poising against the wind, and continually uttering a nasal "mew." The other owl flew back and forth several hundred yards away, near the crest of a hill, occasionally answering the near bird with a similar note. On the 18th of August, on our way up the Kowak, we had landed to "wood up," when I happened to discover a young Short-eared Owl about two-thirds grown sitting motionless on a log. Even when touched, it did not change the direction of its stare, nor make the slightest movement. In the vicinity of our winter camp on the Kowak this was the commonest owl. I flushed a family of eight from a thicket at the edge of a marshy meadow on August 21st. The last observed were two, shot on the 29th of August. The following spring the first seen was a pair flying southward low over the tundra on May 14th. On the 27th of May I observed a curious procedure, evidently a courting demonstration. A pair of Short-eared Owls were seen flying slowly and erratically close together high in mid-air; first one and then the other of the birds would clap their wings together beneath their bodies, several times in rapid succession, producing a rattling noise. At the same time the bird would drop several feet, finally expanding the wings and flying a few yards before repeating. Every few moments one or the other of the birds would utter a "mew."

Nyctea nyctea (Linn.).

SNOWY OWL.

I found the Snowy Owl unexpectedly scarce in the regions visited. At our first landing a few miles northeast of Cape Prince of Wales, June 27th, I saw a single individual flying over the tundra. It was pursued by a noisy mob of Arctic Terns, and a couple of jaegers gave chase for a short distance. Another was seen perched on a jagged point of ice on a floe several miles from shore, June 29th, and still another on the coast near Cape Lowenstern on July 1st. A very few were seen in July among the low hills back of Cape Blossom. In each case as they were flushed from the ground they were attacked by curlew, and once by some Short-billed Gulls, with their shrieking war-cries. I was told by the natives that sometimes the Snowy Owl has been very numerous along the coast. In the Kowak Valley in the neighborhood of our winter quarters the Snowy Owl was quite rare and apparently only occurred during the migrations. One was seen perched on a hummock on the tundra across the river on October 12th. And in the same locality a single Snowy Owl was again seen several times from April 20th to May 1st, '99.

Surnia ulula caparoch (Müll.).

AMERICAN HAWK OWL.

I first met with the Hawk Owl near the head of Hunt River in the foot-hills of the Jade Mountains, about twenty miles north of our winter camp on the Kowak. On the evening of September 15th two of these birds came very close around our tent, making short flights from tree to tree. On the three succeeding days several more were noted. They were more apt to be seen at dusk, but were also observed at mid-day perched at the tops of spruces by the stream, or flying across the canon high overhead. After returning to our winter camp, I saw two Hawk Owls flying among the spruces around the cabin at dusk, and the next evening, the 21st of September, I saw the last one for the season. The following spring their arrival was noted on April 10th. At this date they were already paired, and a female secured contained large ova. On April 26th I located a pair of Hawk Owls which by their restlessness indicated a nesting site near by. The nest was finally found, but there were as yet no eggs. It was in the hollow end of a leaning dead spruce stub about ten feet above the ground. The dry rotten-wood chips in the bottom were modelled into a neatly-rounded depression. The male bird was quite noisy, often repeating a far-reaching rolling trill. Both birds frequently uttered a low whine, alternately answering one another. On May 8, while snow-shoeing across the country toward the base of the Jade Mountains, my attention was attracted by the distant trill of a Hawk Owl. After a half-hour's search through a heavy stretch of timber, I located the bird perched at the top of a tall live spruce, partly hidden by the foliage. Then I began an inspection of all dead stubs and trees in the vicinity. I had given up hope of finding a nest and had started on, when, by mere chance, I happened to catch sight of a hole in a dead spruce fully 200 yards away. A close approach showed a sitting bird which afterwards proved to be the male. Its tail was protruding at least two inches from the hole, while the bird's head was turned so that it was facing out over its back. When I tapped on the tree the bird left the nest, flew off about thirty yards,

turned and made for my head like a shot. It planted itself with its full-weight onto my skull, drawing blood from three claw-marks in my scalp. My hat was torn and thrown twelve feet. All this the owl did with scarcely a stop in its headlong swoop. When as far the other side the courageous bird made another dash, and then another, before I had collected enough wits to get in a shot. The female, which was evidently the bird I had first discovered on lookout duty, then made her appearance, but was less vociferous. The nest contained three newly-hatched young and six eggs in various advanced stages of incubation. The downy young, although their eyes were still tightly closed and they were very feeble, uttered a continuous wheedling cry, especially if the tree were tapped or they were in any way jarred. This could be heard 20 feet away from the base of the tree. The nest cavity was evidently an enlarged woodpecker's hole. The wood was very much decayed and soft, so that it had been an easy matter to enlarge the entrance. The entrance was 14 feet above the snow, and the nest proper was about three inches below that. The cavity was lined with a mixture of feathers and bits of the rotten wood. The feathers were all apparently from the breast of the female parent. The female bird (the male not at all, although he was sitting on the nest when it was found) had the whole breast and abdomen, from the upper end of the breast-bone to the vent, entirely bare of feathers; also on the sides up to the lateral feather tracts, and through these for about one inch on both sides under the wings; also down the inside of the thighs to the knees. This was the most extensive feather divestment I ever saw in any species. The skin of this area was very thick and glandular, emitting a watery fluid on the inside when squeezed, and filled with distended blood vessels and some fat. This is obviously a warmth-producing organ. The feathers removed from it were evidently mostly used in the nest lining. Although I met with a good many Hawk Owls during the latter part of May, this was the only nest I found. The six eggs average 1.64x1.26, and in shape are nearly short-ovate. The native name for this bird is Nĕ-āk-tōr'ūk, which means "big-head."

Ceryle alcyon (Linn.).

BELTED KINGFISHER.

One or two Belted Kingfishers were noted almost daily at our winter camp on the Kowak during the last week of August. They would fly along the bank uttering their harsh clattering notes, occasionally perching on a snag or tree inclined over the water. The last kingfisher was seen on September 2nd. The first for the following spring was heard May 21st. Although I did not personally find this species nesting, the Indians were familiar with its habits, and told me of the nesting-burrow dug in the sandy bank of a stream.

Picoides americanus alascensis (Nels.).

ALASKAN THREE-TOED WOODPECKER.

This, the only species of woodpecker detected by me in the Kowak region, was resident throughout the year. It could scarcely be called common, though its borings were noticed in nearly every tract of spruces visited. In the fall and mid-winter these birds were silent and seldom seen. But after the first of March their drumming on some resonant dead tree was heard nearly every morning.

This sound could be heard a long distance through the quiet woods, giving notice of the whereabouts of the woodpeckers, but on account of the soft deep snow and tangled underbrush, they were not easy to follow up even with snow-shoes on. On April 26th a freshly-dug hole was discovered in a dead spruce. Chips were scattered about on the snow beneath, a good hint to observe in locating a nest. A bird appeared in the vicinity and his call was answered by one in the distance. The call-note consisted of several abrupt cries uttered together in quick succession, thus much like that of the Nuttall's Woodpecker. This excavation was not complete, and as I failed to visit the place again, I lost my only opportunity to observe the nesting habits of the species. The eskimo call this bird Tōō'yūk.

Perisoreus canadensis fumifrons Ridgw.

ALASKAN JAY.

The Alaskan Jay was observed in the vicinity of spruce timber everywhere in the valley of the Kowak from the delta eastward. It was resident throughout the year, and was the most noticeable and familiar bird about camp especially in winter. When we first arrived at the site of our permanent camp in the latter part of August, the tents were pitched on the sandy river bank just above the water-line. The cook-tent opened facing the 'dining' tent, leaving a passage way between scarcely three feet wide. When I was at work over the stove in the cook-tent, the door-flap was generally thrown back, and a pair of jays visited me regularly several times a day. First one and then the other would fly to the tent-ropes at the side of the passage-way and then onto the ground within the tent, or quite as often onto the table where they found plenty of bread-crumbs and scraps of bacon. They were particularly fond of cheese. At one side of the room was a cheese-box with the cover partly off. They soon discovered this, and it was very entertaining to watch them peck at the hard cheese, now and then dislodging a chunk. If both birds got to the cheese at the same time, a scuffle usually ensued in which one of the birds was driven out of the tent. At night the tent-door was closed; but one morning I found both birds in the tent greatly frightened. They had squeezed under the edge of the canvas and were unable to find their way out. The tameness of these jays was remarkable. They would alight at one's feet or on a tent-rope within an arm's length, fluffing out their soft plumage till they looked twice their usual bulk, and peering calmly up at one, or searching about for scraps of food. They had not probably ever been disturbed by white men, and the natives for some superstitious reason never molest them. But it does not require a great amount of experience to teach a jay some things. The prospectors called them camp robbers, and did not hesitate to repay their tameness by shooting them for the dogs. After we moved into our cabin, the jays became less familiar, and as other cabins were built in our neighborhood, their visits were divided and I did not see so much of them. The jays certainly lived well through this winter, for the dump-pile was well supplied with crumbs and fragments of other food too small for the dogs to pick out. One day I saw a jay pecking at a piece of laundry soap, eating several bills-ful and at last trying to fly off with it. They carried the greater part of their spoil into the woods somewhere, but I could never locate their store-house, if they had any special place. I found several through the winter caught in my mammal traps and usually frozen to

death. They were persistent robbers of the bait, but I was always sorry to see them destroyed especially around our winter home. During September and October, in my tramps across the tundras lying along the base of the Jade Mountains, I frequently met with two or three jays far out on the plains a mile or more from timber, feeding on blue-berries. They were never seen singly, and sometimes as many as five were within a short distance of one another on the ground, hopping among the low shrubs, or flitting from hummock to hummock. In the morning and evening one after another in far-separated succession were to be seen flying, in lengthy undulations, between the woods and some distant blue-berry patch. Later, in the coldest days of mid-winter, I found them in the dense willow thickets. But they were then very wary and quiet. The notes of the Alaskan Jay are quite varied, and scarcely to be described intelligibly. There is a low warbling call-note, and a loud harsh cry; and sometimes a very pleasing, softly-modulated song, rambling along for some length, which one would rather credit to a thrush. Toward spring the jays became remarkably reclusive, and their visits around camp were less and less frequent. I suspected that by the middle of March they would nest, and I consequently spent much time in fruitless search. On the 20th of March, while out snow-shoeing across the valley, I happened to see a pair of jays flying toward a tract of spruces, and, as had become almost habitual with me under such incentive, I followed them up. I did not see the birds for some time, until finally I saw a jay with a large bunch of white down in its bill flying back along the timber. The other bird was accompanying it, following a little behind. I lost sight of them among the distant trees, but by following the general course of their flight, and peering into all the thicker spruces, I chanced to discover the nest. It was ten feet above the snow in a dense young spruce growing among a clump of taller ones on a knoll. It was as yet a flimsy affair consisting of dry spruce twigs, with bits of down and feathers showing through from beneath. Although I did not disturb the nest in the least, a visit two weeks later found it covered with snow and apparently deserted. On April 10th, among ten jays, secured about twenty miles down the Kowak from our winter camp, was one female which contained in the oviduct a full-sized, though unshelled, egg. Not until May 13th, however, did I finally find an occupied jay's nest, and its discovery then was by mere accident. It was twelve feet up in a small spruce amongst a clump of larger ones on a low ridge. There were no "tell-tale sticks and twigs on the snow beneath," as Nelson notes, and in fact nothing to indicate its location. The nest rested on several horizontal or slightly drooping branches against the south side of the main trunk. The foliage around it was moderately dense, so that it could be seen from the ground, though only as an indistinct dark spot. The bird was sitting on the nest when I discovered it. Her head and tail appeared conspicuously over the edge of the nest, and she remained on until I had climbed up within an arm's length of her. She then left the nest and silently flew to a near-by tree where she was joined by her mate. They both remained in the vicinity, but ostensibly paid little attention to me. They followed each other about playfully, uttering low conversational notes. The male would try to approach the female, vibrating his wings and striking various coquettish attitudes, but the latter would quickly turn on him, as if to repel his advances at such a serious time. Then both birds would pause for a moment within six inches of each other, with their beaks wide open, and mayhap a snap or two. The nest proper was built on a

loose foundation of slender spruce twigs. The walls and bottom consist of a closely felted mass of a black hair-like lichen, many short bits of spruce twigs, feathers of ptarmigan and hawk owls, strips of a fibrous bark and a few grasses. The interior is lined with the softest and finest-grained material. The whole fabric is of such a quality as to accomplish the greatest conservation of warmth. Which certainly must be necessary where incubation is carried on in below-zero weather! The dimensions of the nest are: Diameter of cavity, 3.00; depth, 2.00. External diameter, 7.50; depth, 5.00. The contents of the nest were three eggs, one of which was infertile, and the other two incubated to an advanced stage. Their ground-color is a pale gray, almost white, finely freckled with lavender-gray, drab-gray and hair-brown. They thus resemble in color a common type of shrikes' eggs. Their shape is ovate, and they measure 1.12x.81, 1.13x.82, 1.16x.81. On May 19th I secured a brood of four nearly-fledged juvenile jays. They were flying about the woods in the wake of their parents, with many harsh cries. During the last week of May several more full-grown young were noted, all of which seems to show that the Alaskan Jay in this region begins nesting about the 1st of April. The set secured was surely much later than the average. The eskimo name of the jay is Kē'roōk. My series of 41 skins of *P. c. fumifrons* from the Kowak Valley exhibits a large amount of variation in the plumage characters assigned to this race. The width and color of the frontal light patch is no criterion for separation from true *canadensis*, though there may be a slight average difference. I find that the Alaskan birds average .20 inch shorter in wing and tail measurements than birds from Minnesota and Nova Scotia. One of the best characters of *fumifrons* seems to be the extension of the black anteriorly from the nape to include the eye and the upper edge of the ear-coverts, almost as in *nigricapillus*. The Kowak River jays are slightly greyer dorsally than Yukon Valley specimens, and both are somewhat ashier than true *canadensis*.

Corvus corax principalis Ridgw.

NORTHERN RAVEN.

I saw a pair of ravens at Cape Blossom on August 1st, '98, and several were noted along the lower course of the Kowak from August 13 to 18. In the vicinity of our winter quarters, ravens were seen in small but unvarying numbers during our entire stay there. Even on the coldest or windiest days of mid-winter we would seldom fail to see an individual or pair flying silently along the course of the river. In the fall, up to the time of deep snow, there was plenty of dead salmon to be found along the streams. But after the snow came I failed to discover what regular source of subsistence the ravens had. I found evidences that the ravens were ever on the lookout for disabled birds and mammals, and did not hesitate to attack such as they were sure of. Several instances came under my notice of their preying on ptarmigan caught in snares set by the natives. The natives of this region, in common with most uncivilized tribes, have many superstitious beliefs concerning this bird. Their name for the raven is Tōō-lōō'āk, a vocal imitation of the bird's note.

Scolecophagus carolinus (Müll.).

RUSTY BLACKBIRD.

This was a fairly common bird along the Kowak River from the delta eastward. Up to the first week of September parties of from 4 to 8 were to be seen in the willows bordering the opposite side of the river from our winter cabin. After being flushed from the brush they would fly erratically a short distance and then drop suddenly out of sight into a thicket. On September 6th a flock of 25 Rusty Blackbirds silently lit in the spruces near camp, remaining but a few moments before again taking flight. After September 8th none were noted until the 8th of October, when a solitary straggler was shot from the tip of a tall spruce, where it had just lit from the westward. The following spring this species arrived in flocks on the 22d of May, after which small communities were often met with along the borders of lakes surrounded by the woods. In such haunts these blackbirds probably nidify, though I failed to find any nests up to the fifth of June. The native name for the blackbird is Tōo-lōo'kāt-ūn-īt'tōk.

Pinicola enucleator alascensis Ridgw.

ALASKAN PINE GROSBEEK.

The Alaskan Pine Grosbeak proved to be a common resident throughout the year in wooded tracts from the delta eastward through the Kowak Valley. My first acquaintance with this species was made on the 25th of August, '98, when two adults and two full-grown young were observed. They were silent save for a low, mellow call-note, and were feeding on the green alder seed-pods. I secured the two adults, which were in moulting plumage. In September and October Pine Grosbeaks were quite numerous, being often met with in companies of six to a dozen, immatures and adults together. They were usually among the scattering birch and spruce which line the low ridges. There, until the snow covered the ground, they fed on blueberries, rose-apples and cranberries. During the winter their food was much the same as that of the redpolls—seeds and buds of birch, alder and willow, and sometimes tender spruce needles. In the severest winter weather they were not often seen in the spruces, but had then retreated into the willow-beds. The usual note is a clear whistle of three syllables. The native name Kī-u-tāk' represents it. Then there was a low, mellow, one-syllabled note uttered among members of a flock when alarmed. Twice I noted solitary males, when flying across the woods, singing a loud, rollicking warble, much like a Purple Finch. One morning, the 18th of February, found me across the river skirting the willows in search of ptarmigan. Although it was 50 degrees below zero, a Pine Grosbeak, from the depths of a nearby thicket, suddenly burst forth in a rich melodious strain, something like our southern Black-headed Grosbeak. He continued, though in a more subdued fashion, for several minutes. Such surroundings and conditions for a bird-song like this! Again one day in March, during a heavy snow-storm, a bright red male sang similarly at intervals for nearly an hour, from an alder thicket near the cabin. And as summer approached their song was heard more and more frequently. Not until May 25th did I discover a nest. This was barely commenced, but on June 3rd, when I visited the locality again, the nest was completed and contained four fresh eggs. The female was incubating, and remained on the nest until nearly touched. The nest was eight feet above the

ground on the lower horizontal branches of a small spruce growing on the side of a wooded ridge. The nest was a shallow affair, very much like a Tanager's. It consisted of a loosely-laid platform of slender spruce twigs, on which rested a symmetrically-moulded saucer of fine, dry, round-stemmed grasses. Its depth was about one inch and internal diameter 3.25. The eggs are pale Nile blue with a possible greenish tinge, dotted and spotted with pale lavender, drab and sepia. The markings are very unevenly distributed, the small ends of the eggs being nearly immaculate, while there is a conspicuous wreath about the large ends. The markings are not abruptly defined, but the margins of the spots are indistinct, fading out into the surrounding ground-color. One of the eggs is more thickly and evenly sprinkled with various tints of bistre. The eggs are rather ovate in shape, but the small ends are blunt. They measure 1.05x.71, 1.05x.72, 1.04x.74, 1.03x.75. On June 11th, in the Kowak delta, I found a similarly-constructed nest containing four small young; this was six feet up in a dwarf spruce. And on the 12th, I found another nest in all particulars like the other two, and containing four eggs almost ready to hatch. My series of 44 skins of *P. e. alasensis* confirms the distinctness of that race. The Kowak River birds present an extreme of ashness.

Loxia leucoptera Gmel.

WHITE-WINGED CROSSBILL.

This species was a common resident throughout the year in certain parts of the Kowak Valley. I did not see it in the delta of the Kowak, nor in any numbers along the river. But along the bases of the mountains, especially in the tracts of dwarf spruces bearing great clusters of cones, the White-winged Crossbills were liable to be found at any time. During the winter they were usually noted in flocks of a dozen to fifty or more, flying from place to place. They then readily attracted attention by their chorus of notes, somewhat resembling those of redpolls. But the crossbill's ordinary call-note was sharper and more harsh, with several uttered together in rapid succession. But when feeding, perched in various attitudes among the cones of the thick-foliaged dwarf spruces, they were invariably quiet, and were then extremely difficult to discern, even if one had spotted the tree in which the flock had alighted. Their movements, as they pick open the cones and extract the seeds within, are slow and deliberate, and a bird will work away on a cone for many minutes without changing his position. Then, all of a sudden, at two or three sharp chirps from some one in the crowd, the whole flock will take flight as with one accord, uttering a chorus of cheerful chirps. The bright red adult males seem to have a special note of their own, a sharp metallic "cheet," to me remarkably like the spring call-note of the Arizona Hooded Oriole in Southern California. This note is often repeated during a flight of the crossbills, and is distinctly recognizable among the medley of ordinary notes. On April 26th I found a regular paradise for crossbills. It was a stretch of the requisite dwarf spruces lying along the Jade Mountains near the head of Hunt River. Here I met with several flocks of White-winged Crossbills which, from their unusually lively behavior, indicated the mating season to be at hand. Two or three pairs were apparently already mated, for they were detached from the main flock, each by itself. The males were singing very loudly a twitter somewhat resembling

that of the American Goldfinch, but coarser. The females were shy, flying covertly from tree to tree and darting through the foliage to avoid the officious advances of the males, who were following them. The latter flew in broad circles above the females, with slowly beating wings, singing continuously, and finally settling on quivering, outstretched wings to a tree-top. I visited this locality again on the 28th of May, and was fortunate enough to find three nests of the White-winged Crossbill. On this date the large flocks had scattered out, and the birds were mostly seen singly or in pairs. Two or three companies of a dozen or so were noted, these probably being non-breeders or yearlings. The first nest was found by spotting a pair of birds and closely watching their movements. They were feeding when first noted, but in a few minutes I suddenly lost sight of the female, although the male remained in the vicinity, frequently uttering the metallic call-note previously described. After waiting some time, I proceeded to the tree where the female was last seen. On vigorously shaking the tree several times she flew out of a dense clump of branches and perched a few yards off, chirping solicitously. Both birds soon left the vicinity and did not return while I remained. The nest was situated close to the trunk, ten feet above the ground, in a mass of foliage so thick as to entirely hide it from view. It contained two eggs about one-third incubated. These are ovate, and measure .86x.61, .84x.60. The ground-color is an extremely pale tint of blue. One egg has scattering illy-defined spots and blotches of pale chocolate. The other egg has numerous very pale lavender markings, and, mostly at the larger end, a number of spots and four large blotches of dark seal-brown. The second nest was found through locating a male bird by its call-note, and then tapping every tree in the vicinity with a stick. The female was thus flushed from her nest, which was twelve feet up near the top of a dwarf spruce. It was embedded in a mass of foliage against the stem of the tree, much as in the case of the first nest. It contained two piped eggs and one newly hatched young. The parents evinced more solicitude in this case, chirping and flying from tree to tree. The third nest was found similarly, though the female left the nest unobserved and I had to wait until she returned to be able to locate the nest. This was fifteen feet from the ground, hidden in the dense spruce top, as before. There was but one fresh egg. This measures .77x.58. It is almost white (before blown, pinkish) with scattering abruptly-defined spots and lines of bay and fawn-color, most numerous at the larger end. The three nests are just alike in every way. They consist externally of short dry spruce twigs; and internally of a black wool-like lichen, closely felted, and with a scanty admixture of feathers and bits of grasses. The nests are nearly black, and thus present an odd appearance as compared with those of the usual consistency of other birds. The nest measurements are: internal diameter 2.20, depth 1.20; external diameter 4.00, depth 2.50. A series of 20 of *Loxia leucoptera* from the Kowak Valley do not differ in any constant characters from specimens of the same species from Maine and Labrador. The species is resident in both extremes of its range, and I had expected to find a perceptible amount of geographical variation. The native name of this bird is Sĭ-zhōok-ä-pĭng'ä-rŭk.

Acanthis hornemannii exilipes (Coues).

HOARY REDPOLL.

The Hoary Redpoll was a common resident throughout the region under con-

sideration. At Cape Blossom during July, '98, they were mainly in pairs, though small companies of from 4 to 8 were occasionally seen. They frequented the dwarf willow and alder patches, especially among the hills back from the coast. Two nests were found on the 20th of July. They were each built in the crotches of low bushes about two feet from the ground, and were only one hundred feet apart on a slope sparsely covered with small bushes. The nests were composed of dry mildewed grasses externally, with a thick lining of cottony down from the seed-cases of a kind of grass, and a few feathers. One of the nests contained four eggs and the other five. Both sets were far advanced in incubation, and the latter set contained one infertile egg. The female birds were sitting closely when the nests were discovered, and in both cases I nearly touched them before they slipped from the nests. They darted quickly out of sight, making no solicitous demonstrations whatever. Another nest was found near Cape Blossom on July 1st, '99. This was in every way similar to the other two, and contained four slightly-incubated eggs. In the Kowak Valley the Hoary Redpolls were present in unvarying numbers throughout the year. They were obviously less noticeable up to the middle of September, or until the summer birds had all left; but during the long winter, from September 15 to May 15, they were by far the most numerous species. The days of extremest cold were invariably calm and clear, and on such days one could walk scarcely a half-hour in any direction from camp without meeting with flocks of from ten to fifty redpolls. In the morning especially, they kept constantly on the go, flying about from place to place with a continuous medley of chit-chat notes. Later, in the short winter day, they would be less noticeable, and were to be looked for in the thickets of alder and willow, where their presence would be first betrayed by the rustle of pods and dead leaves. The alders in particular retain their dead dry foliage through the winter, where the bushes are sheltered from the heavy north winds. The redpolls when feeding seldom utter a note, but if alarmed the flock takes flight from the brush in scattering succession with a chorus of calls. The seeds and buds of the alder, birch and willow constitute their sole food supply. When feeding, the redpolls assume all manner of postures, most often clinging beneath the twigs, back downward and picking to pieces the pods. They keep almost motionless, save for slight movements of the head, unless when flitting from one base of operations to another. Among the brown curled leaves their forms are hardly discernible from any distance, especially if a breeze is swaying the branches. When picking to pieces the pods on the alder bushes, lots of the small seeds are lost and fall to the ground. The redpolls often fly down to the snow beneath to pick up these crumbs, and their little parallel tracks frescoed the snow under the bushes. These tracks show that a redpoll never walks, stepping alternately as a fowl, but always hops, planting both feet at once side by side. The hop-tracks, with the marks of the dragging toes between, show this in an interesting manner. On ordinary yielding snow where the bird sinks in $\frac{1}{4}$ to $\frac{1}{2}$ an inch, the double tracks average four inches apart; and the two foot-prints are $\frac{3}{4}$ of an inch apart. The redpolls had usually a single note, a sharp chirp; but sometimes, especially when individuals were calling to each other from a distance, one would hear a cheery "twe-e-et," like a goldfinch. On windy days, which were very numerous in the fore part of the winter, one had to look for the redpolls in the most sheltered situations, and sometimes he would fail to find them at all. But the next calm day would bring them

out in full force again. A flock would be seen approaching over the tree tops, their figures tinged to a brick red by the rays of the declining winter sun, when by some sudden impulse one bird would change his course sharply for a birch, and instantly the rest of the flock would follow, the hindermost birds alighting a little after the first ones. Even if no other species were met with during a day's tramp in mid-winter, a flock or two of these lively birds made up for the exertion. It was always a delight to meet with them in that otherwise dreary land. The eskimo name for the redpoll is Säk-sī'yōök, a possible imitation of the birds' note. As the month of May advanced the flocks of redpolls began to break up though the pairs were prone to stay within call of each other, a sociable trait. The first nest was found on June 4th, and contained five badly incubated eggs. This indicates that nesting begins soon after the middle of May. Another nest, containing five slightly incubated eggs was taken on the 5th; the nest was saddled in the forks of a leafless willow above water at the margin of an ice-covered lake. This nest may be described as typical of the ones found in the Kowak Valley. It is a very compact and well proportioned structure, of fine dry rootlets, grasses and slender plant stems, lined with soft white willow down and a few ptarmigan feathers. The diameter of the nest cavity is 1.70, and the depth 1.25. External diameter, 4.00; depth, 2.10. A nest of five fresh eggs taken on June 6th was nine feet above the ground in the top of a small spruce at the edge of a dense strip of timber. The eggs of the Hoary Redpoll are pale Nile blue, with spots, lines, dots and scrawls of vinaceous, lavender, chocolate and so dark a brown as to appear black in some cases. These markings tend to form wreaths about the larger ends of many eggs. The eggs vary in shape from ovate to short-ovate. Fourteen specimens average .65x.50, the extremes being .61x.53 and 6.9x.49.

Acanthis linaria (Linn.).

REDPOLL.

Out of 112 skins of *Acanthis* brought home, seven are referable to *linaria*, one to *holbællii* and 104 to *exilipes*. The specimens of *linaria* are usually taken in company with *exilipes*, and in the case of immatures and females were not distinguishable until in hand. Specimens of *linaria* were taken in the vicinity of our winter camp on the Kowak on September 29, October 6, March 18, March 21 and May 24, and at Cape Blossom on July 10 and 30. Two of the skins are of adult males with bright red breasts, far different from the pale pink of *exilipes*. I saw Common Redpolls on Chamisso Island on July 9, '99.

Acanthis linaria holbællii (Brehm).

HOLBÆLL'S REDPOLL.

I refer to this race on account of its dark plumage and extreme length and acuteness of the bill, a male specimen, probably immature for there is but a trace of red on its breast, taken on the Kowak River, April 10, '99.

Passerina nivalis (Linn.).

SNOWFLAKE.

On the first day of July, '98, the "Penelope" was anchored behind a grounded

mass of ice near Cape Lowenstern. I was ashore for a few hours in the evening, and during my tramp I first met with this decidedly arctic species. There were two pairs of Snowflakes about an old eskimo burying ground on a low eminence near the beach. They evidently had young, as I saw one of the birds carrying a billful of insects to a patch of grass, but I failed to find a nest. Two of the birds were secured. One, an adult male, was shot from the top of one of the poles composing a burial scaffold. This seemed to be a favorite perch, judging from the numerous streaks of excrement on the timbers. Strange to say, I did not find this species again anywhere until the spring of '99, on the Kowak, and then only as a passing migrant. On April 19th a specimen was secured, and on the 21st I saw another. Several persons subsequently described them to me as having been seen about the same time at different points up and down the Kowak. They were noted singly and in small flocks but soon left. The natives know the bird as Ä-mot'lē-ük.

Calcarius lapponicus alascensis Ridgw.

ALASKAN LONGSPUR.

The first landing after our tedious voyage of forty days was at a point on the Alaskan coast about twenty miles northeast of Cape Prince of Wales. It was toward midnight, at the close of the 27th day of June, that our dinkey struck the sandy beach, and as I stepped ashore and walked back from the water a few yards, the first bird-song to meet my expectant ear was that of the Alaskan Longspur. My acquaintance with the birds at this point was limited to the few hours ashore during this evening and the next. But the Alaskan Longspur was, with the single exception of the Snowy Owl, the only land bird observed. The low-lying moss-covered tundras with not even a dwarfed bush or any extensive patch of grass to offer attraction to any other land bird, seemed to constitute a congenial abode for this species, and the longspurs were fairly common. They seemed to show preference for the driest tracts lying just back of the beach and on the higher ground separating the numerous lagoons and lakes. In my tramp across these tundras I would frequently meet with a male longspur standing motionless on some conspicuous hummock. If I approached too close he would attempt to get out of my way by stealthily running to one side, but if pressed he would take flight and mount upwards, circling high overhead and uttering his pleasing song. I sometimes heard them singing from their perches on the ground, but they were most generally heard while circling with apparent aimlessness far above, the yellow reflection of the midnight sun bringing out their forms against the indigo sky. To my ear the song of the Alaskan Longspur resembles closely that of the Western Meadowlark, except that it is much weaker and more prolonged. A nest was found at this point containing two newly-hatch young and three eggs. It was sunk into a hummock of spagnum and completely concealed from above by a tussock of grass, part of which was artfully arched over it. The nest proper consisted of a remarkably scant lining of long, fine grasses. At Cape Lowenstern, on July 1st, I noted a few longspurs, and at Cape Blossom, over the rolling hills just back of the coast, this bird was common. Its song was heard for a few days after our arrival, June 9th, but ceased altogether after the 16th. The first juveniles, full-grown, were seen on July 30. In 1899, apparently a much earlier season,

many nearly-fledged young were noted on July 1st. From August 1 to 12, '98, juveniles were plentiful in the vicinity of the Mission. They were in small companies or scattered singly in the edge of the tall grass bordering the beaches. The tendency at this season seemed for them to be gathering into flocks; and on the 11th, the last day of our stay on the Sound, I saw a flock of about 25. I last saw the Alaskan Longspur in 1898 on the 16th of August; it was on our way up the Kowak, and at a point about 100 miles from the mouth. A small company flew across the river in front of our steamer in a southerly direction. In the spring of '99, on the Kowak, the first longspurs were noted on the 20th of May. In this region they inhabit the bare level stretches of tundra extending at intervals from the river back to the foot-hills. On June 1st I secured a nest and five fresh eggs. The nest was embedded in the moss under an overhanging clump of dead grass, and consisted of fine dry grasses, with a lining of dark feathers of ptarmigan and Short-eared Owls. The diameter of the nest cavity is 2.50, with a depth of 1.00. The eggs are nearly oblong-ovate in shape and measure .87x.60, .86x.61, .84x.60, .86x.60, .85x.61. Their ground-color, as disclosed for a limited space at the small ends of two eggs, is very pale blue. Otherwise the eggs are so completely covered with pigment as to be almost uniform isabella-color. Overlying this are scattered scrawls and dots of bistre. I found another nest, on Chamisso Island on the 9th of July. This was similarly located and contained four eggs in which incubation was nearly complete. Native name, Pōo-tōō-kē'li-ūk.

Ammodramus sandwichensis alaudinus (Bonap.).

WESTERN SAVANNA SPARROW.

The Western Savanna Sparrow was fairly numerous in the vicinity of Cape Blossom. The grassy meadows bordering lagoons seemed to be its most congenial haunt, although I met with a few on the hillsides toward the interior of the peninsula. I found half-fledged young in the grass on July 10, and by the 20th juveniles could be heard calling in every direction. By the first week in August they had become common along the beaches where a sparse growth of tall grass clothed the sand above tide-limit. The eskimo knew it by the name Īk-sīk-ti'ōök. The Western Savanna Sparrow was rare in the interior, for I saw it but once. On the 29th of May, near our winter camp on the Kowak, I saw a pair and secured the male.

Zonotrichia leucophrys gambelii (Nutt.).

GAMBEL'S SPARROW.

A few Gambel's Sparrows were observed in the vicinity of Cape Blossom in July. They were always seen in brush patches or at their borders, just as is the case in winter in Southern California. An adult in much worn nuptial plumage was taken on July 10th. Full-fledged young were seen on July 20, and for a few days thereafter they would come around the cook-tent for crumbs. They were unusually shy, and my appearance at the tent door was sufficient to send them in their flurried zigzag flight to the nearest thicket on the opposite hillside. At our winter quarters on the Kowak they were very common the last week in August, and their song was often heard from the dripping woods, for the rain was almost incessant at that season. They left suddenly and together. Two, the last

observed, were noted on September 2nd. The following spring the arrival of the Gambel's Sparrow, as indicated by its beautiful song, was in the evening of May 21st, and the species soon became common. The song is a clear sad strain of five syllables and with rising inflection. In the Kowak delta on the 11th of June I obtained a set of six eggs in which incubation had commenced. The nest was sunk into a hummock of moss on the ground under some alder bushes on a hillside. A clump of dead grass partly concealed it from view. It consisted of dry grasses, lined with finer grass and black rootlets. The eggs are pale Nile blue, rather evenly covered with irregularly-outlined spots of chocolate and vinaceous. They are ovate, and measure .83x.63, .81x.62, .86x.63, .85x.64, .83x.62, and .76x.60, the latter being a runt egg. The native name of the Gambel's Sparrow is Nōōng-āk-tō'rūk.

Zonotrichia coronata (Pall.).

GOLDEN-CROWNED SPARROW.

A few of these sparrows were seen and heard on the 21st of August in brush among spruces back of our camp on the Kowak. An immature male was secured. They were shy and when alarmed took to the upper foliage of the spruces, instead of diving deeper into the thickets as most sparrows do. The following spring they were first noted on May 23rd, and their extremely sad quavering song of two syllables was occasionally heard thereafter. I should, however, consider the species as not at all common in this region.

Spizella monticola ochracea Brewst.

WESTERN TREE SPARROW.

The Western Tree Sparrow was numerous at Cape Blossom. The patches of stunted willow and alder back among the hills seemed to be particularly favored by this species, and in such localities full-fledged young and moulting adults were found in the latter part of July. I saw nearly fledged young on the 10th of July. At our winter quarters on the Kowak, the species was tolerably common during the last of August and up to the 12th of September. It was last noted in the mountains toward the head of Hunt River, where I saw two in a dwarf willow thicket in a ravine on the 17th of September. The following spring their arrival was noted on May 21st, and they were soon common along the brush-bordered timber tracts. Their song reminded me strongly of that of the Lazuli Bunting in California. In the Kowak delta on the 14th and 15th of June I took a set of five and one of six slightly incubated eggs, respectively. The two nests were similarly placed in the tops of clumps of grass at the edge of a marsh about six inches above the water. The nest proper consists of closely-matted broad dry grass blades and stems, while the lining is entirely of white ptarmigan feathers, though not one shows above the rim. The deeply cup-shaped cavity is thus pure white, though when the bird was sitting she entirely concealed it. The internal diameter of the nest is 2.00, depth, 1.90; external diameter, 4.80, depth, 2.60. The ground color of the egg is very pale blue. The set of six is quite uniformly and thickly spotted with liver-brown and vinaceous tints. One egg of the set of five is like them, but the others are wreathed at the large ends with confluent markings of the same colors, while the rest of the surface is very finely dotted and

blurred with a pale brown tint, so as to nearly obscure the ground color. The eleven eggs average .74x.57.

Junco hyemalis (Linn.).

SLATE-COLORED JUNCO.

At the time of our arrival at our winter camp on the Kowak, and up to the 9th of September, juncos were seen nearly every day, though not more than five at a time. They were always met with in the deep spruce woods, where their succession of faint "peeps," uttered as they took short flights from one log or fallen branch to another, would give the first intimation of their presence. The last junco was seen on the 12th of September. The first in the following spring was noted on May 23rd. They were never numerous, two pairs being the most that were seen in a half day's hunt. A pair was seen on May 28th in the spruces at the base of the Jade Mountains. This species was not noted further down the Kowak than near the mouth of the Squirrel River, where a pair was seen on June 8th.

Passerella iliaca (Merr.).

FOX SPARROW.

I did not discover the presence of the Fox Sparrow at Cape Blossom until the evening of July 31, '98. As we were landing at Mission Inlet, I heard its beautiful song from the opposite hillside. By considerable searching through the brush patches, I caught sight of several of the birds and secured two. They were quite shy, and to chase them out of the brush was almost impossible. But by hiding and making a squeaking noise I could attract them into plain view. All but one observed were juveniles. Fox Sparrows were seen or heard all along the lower course of the Kowak; and at our winter camp they were quite common up to the 23rd of August, when they abruptly disappeared. Until the day of their departure, their clear ringing songs were to be heard almost every hour of the day. With the exceptions of the Fox and Gambel's Sparrows, birds were silent at this season, save for simple call-notes. In the spring Fox Sparrows were first observed on May 21st, and thereafter were met with wherever brushy tracts afforded them congenial haunts.

Hirundo erythrogastra Bodd.

BARN SWALLOW.

This swallow was seen almost daily during my summer visits at Cape Blossom. It was usually seen singly or in pairs, coursing back and forth over the lagoons and ponds, where there was certainly an abundance of food among the swarms of gnats and mosquitoes. The notes of these Barn Swallows, as they skimmed over the water or mounted upwards at the end of a course, seemed to me to be quite different from those we hear in the States. They sounded to my ear exactly like the "peet-weet" call of the Spotted Sandpiper. I was told by the missionaries that the swallows nested in the deserted eskimo igloos, building their mud nests against the sides near the roofs. On July 1st, '99, I found a Barn Swallow's nest built on a beam in the house of a small river steamer stranded at the side of Mission

Inlet. The nest was constructed as usual of a mixture of mud and grasses, with a lining of finer grass and a large quantity of white ptarmigan feathers, almost burying the eggs. One of the birds had been seen the previous day carrying in its bill one of these conspicuous white feathers. After the spring moult of the ptarmigan their winter feathers are to be found abundantly scattered over the tundra. This nest contained two fresh eggs. The last Barn Swallows in '98 were seen near Cape Blossom on August 10th, several flying southward high overhead. I did not see the species on the upper Kowak. A single one, the first for '99, was seen near the confluence of the Squirrel River with the Kowak on June 9th. This is only about fifty miles east of the mouth of the latter. The species was seen on a few occasions in the Kowak delta, in the latter part of June. The Barn Swallow is called by the natives Töö-loö-än-ä-sür'ük.

Tachycineta bicolor (Vieill.).

TREE SWALLOW.

The presence of the Tree Swallow was first detected on June 3rd, '99, near our winter camp on the Kowak. I saw a pair flying back and forth along a hillside; now and then one of the birds would hover in front of an old woodpecker's hole in a tall dead spruce, which had evidently already been selected as a nesting-site. The species was seen but once again, on June 23rd in the Kowak delta. A pair of Tree Swallows, a pair of Barn Swallows and a large number of Bank Swallows were coursing back and forth together over a marsh-bordered lake at about 10 P. M.

Clivicola riparia (Linn.).

BANK SWALLOW.

The Bank Swallow was very common all along the Kowak, from the delta close to Hotham Inlet, eastward. On our trip up the Kowak from August 12 to 19, '98, many colonies of the nesting burrows were observed in the sandy river banks. In the case of one visited on the 17th, the burrows were nearly all on the same plane, being dug in a soft stratum in the bank ten feet above the water and two feet below the edge above. The young had apparently nearly all left, but two burrows were seen with juveniles at the entrances where they were being fed at frequent intervals by the parent birds. They were full-grown and would undoubtedly have left the nests in a day or two. A good many Bank Swallows were seen in the vicinity skimming over the water or hawking back and forth above the thickets on the banks. Save for an occasional weak twitter they were notably silent. None were seen after August 19. The following spring, the first were seen on May 25. On June 15th in the Kowak delta, nest burrows were examined, but were as yet empty. They were, however, complete, the cavities at the extremities being lined with grasses. Their length did not exceed 12 inches in any case, for the ground was thawed but little deeper. The birds select a refrigerator to incubate in!

Ampelis garrulus Linn.

BOHEMIAN WAXWING.

On August 20, the day we arrived at the site of our winter camp on the Kowak, I saw a flock of nearly fifty waxwings. They left a bunch of spruces near the bank and circling out over the river flew back and disappeared beyond the woods. Their manner of flight and general appearance closely resembled those of our Cedar Waxwing in California. I did not again meet with the Bohemian Waxwing myself. But a prospector showed me parts of the plumage of this species from birds which he had shot near the head of the Kowak in April. He said that toward the last of that month, the birds appeared in small flocks among the birches and cottonwoods.

Lanius borealis invictus new subspecies.

NORTHWESTERN SHRIKE.

TYPE—♂ (not fully adult, judging from the light brownish wash in places on the upper surface); No. 3366, Coll. J. G.; Kowak River, Alaska, April 15, 1899; Collected by J. Grinnell.

DESCRIPTION—Lower surface, white; foreneck, crissum and lower abdomen, immaculate, otherwise distinctly and narrowly barred with vermiculate blackish markings, two such bars being discernible on each feather. Upper surface (except irregularly where washed with clay color), French gray merging on rump and scapulars into whitish; superciliary stripe and brow, white; lores and upper two-thirds of auriculars, black, excepting a faint admixture of grayish in middle of lores and next to lower eyelid. Wings and tail, blackish, edged with lighter; all the tail feathers white for an inch or more at base; outer web of outer tail feather completely white, and inner web white for terminal 1.50; second feather 1.05; third, .80; fourth, .35 and remaining two pairs only narrowly tipped with white. White patch on wing formed by white bases of primaries; secondaries tipped with whitish.

MEASUREMENTS—Length, 10.25; wing, 4.60; tail, 4.70; tarsus, 1.03; culmen, .71; bill from nostril, .58; depth of bill at base, .37.

L. borealis invictus differs from *L. borealis borealis* in larger size, paler coloration dorsally and greater extent of white markings. These differences are fairly comparable to those between the southwestern *L. ludovicianus excubitorides* and *L. ludovicianus* proper. As shown by specimens at hand the summer home of *invictus* is in Alaska, thus restricting true *borealis* to the eastern portion of North America. In the winter *invictus* comes south as far as the northwestern United States. A specimen is in the Leland Stanford Junior University collection (No. 758) taken at Quincy, California, Feb. 17, '92; and I have a skin from Lac Qui Parle County, Minnesota, both of which are typical of *invictus*.

During the fall the Northwestern Shrike was met with in the Kowak Valley rather sparingly. Single individuals would be seen, one or two in a day's tramp, in the willow bottoms where they were the terror of the redpolls. On only one occasion did I see more than one in a place. Near the head of Hunt River where the canon winds into the foothills of the Jade Mountains, a party of us had just pitched our tents on the evening of September 16th, when three shrikes made

their appearance in the cottonwoods nearby. For several minutes they chased each other among the trees, dodging back and forth among the branches. At frequent intervals they burst out in a series of harsh cries, very much like the notes of the White-rumped Shrike in the States. These three birds were probably of a single brood of the previous summer. As a rule the shrikes were very shy. None were seen after October 26th, until March 22nd, when one was secured. During April and May they became fairly common, that is, for shrikes. At this season they had a musical and varied but weak song, sometimes interspersed with the harsher, more characteristic notes. In the Kowak delta, during two weeks which we passed encamped at one place, a shrike was seen, sometimes several times a day, carrying prey to a clump of spruces further up the channel where there must have been a brood of young. On one occasion the bird was carrying a redpoll, but usually it was a lemming or meadow mouse. It was astonishing what a heavy weight the bird could sustain. Once he had grasped in his claws a lemming so heavy that it dragged in the water as the bird flew laboriously across the river. The native name for this bird is E-rā'yā-yōk which means eye-extractor. They say that he catches mice and redpolls, picks out their eyes and lets them go again. From his perch the cruel bird then watches the blind wanderings of his victims, until he tires of the sport and finally eats them.

Helminthophila celata (Say).

ORANGE-CROWNED WARBLER.

I saw this species but once, on the 25th of May near our winter camp. Its characteristic song was heard among the spruces on a hillside, and I finally obtained a good view of it, so that identity was quite satisfactory.

Dendroica aestiva (Gmel.).

YELLOW WARBLER.

Yellow Warblers, mostly in immature plumage, were observed commonly in the Kowak Valley in the latter part of August. The last one was noted on August 24th. In the spring I did not see the species until June 9th, in the Kowak delta. They were soon common, however, and their familiar song was to be heard from nearly every willow thicket.

Dendroica coronata hooveri McGregor.

HOOVER'S WARBLER.

Hoover's Warblers were numerous summer residents of the timber tracts throughout the Kowak Valley from the delta eastward. In the latter part of August scattering companies were frequenting the spruce, birch and cottonwoods, among the foliage of which they were constantly searching, with oft-repeated "chits," just as are their habits in winter in California. The last observed, a straggling flock of six or eight, were seen in a patch of tall willows about sunset of August 30th. The following spring the arrival of Hoover's Warblers was on May 22nd. They were already in pairs and the males were in full song. At this season they were confined exclusively to the heavier spruce woods. In the Kowak delta, on the 23rd of June, a set of five considerably-incubated eggs was

secured. The nest was in a small spruce in a tract of larger growth, and only four feet above the ground. It is a rather loose structure of fine dry grass-blades, lined with ptarmigan feathers. The color of the eggs is an extremely pale creamy tint, almost white, with wreaths about the big ends of large lavender blotches, and smaller spots of drab, overlaid by a few of vandyke brown. The native name of this bird is Sē-lē'ōōk-sīn. My six specimens of *Dendroica coronata hooveri* from the Kowak Valley confirm the distinctness of this subspecies, and also indicate its summer home. They show the following measurements:

Number Coll. J. G.	Sex	Date	Length	Wing	Culmen	Tail	Tarsus
3598	♀ im.	Aug. 21	————	2.76	.33	2.40	.73
3600	♀ ad.	May 25	5.50	2.86	.37	2.41	.75
3602	♂ ad.	June 6	5.75	3.02	.33	2.50	.75
3599	♂ ad.	May 25	5.62	3.01	.36	2.55	.76
3601	♂ ad.	June 3	————	3.11	.35	2.50	.76
3603	♂ ad.	June 11	5.75	2.94	.37	2.46	.76

Dendroica striata (Forst.).

BLACK-POLL WARBLER.

Strangely enough I did not detect this species at all in the late summer of '98. Possibly the Black-polls leave earlier than most of the other warblers. They did not appear in the spring until many days after the arrival of Hoover's Warblers and Grinnell's Water-Thrushes. The first Black-poll Warblers were observed on the 2nd of June near our winter camp on the Kowak. They were thereafter found commonly in spruce tracts down the Kowak to the western tree-limit in the delta. They were undoubtedly breeding though I failed to find a nest. The male has a very peculiar song, if it can be called such, different from that of any other warbler I am acquainted with. It consists of a succession of very faint "peeps," of such a quality as to confuse the hearer as to its direction. I have listened to this oft-repeated song, straining my eyes for the author in some distant tree, when finally a swaying branch or flitting shadow would disclose his presence within a few yards. Six skins of this species are identical, as far as I can see, with eastern specimens.

Seiurus noveboracensis notabilis (Ridgw.).

GRINNELL'S WATER-THRUSH.

For a few days after our arrival in August at the site of our winter quarters on the Kowak this species was moderately common. It frequented the alder and willow thickets along the streams and was shy and restless. A sharp loud call-note like that of Gambel's Sparrow would generally be the only indication of its presence for it was quite successful in keeping out of sight. I heard the song of the Water-Thrush several times up to the day of its departure, August 23rd. This song was louder than, but otherwise closely resembled that of Hoover's Warbler—a querulous trill. Grinnell's Water-Thrush arrived in the spring on

May 22nd and was thenceforward common, especially in the Kowak delta in June. But it was not detected west of the tree-limit. The native name of this bird is Īk-sĭk-ti'ōök. The following table of measurements of *Seiurus noveboracensis notabilis* is from my Kowak Valley specimens.

Number Coll. J. G.	Sex	Date	Length	Wing	Tail	Culmen	Tarsus
3591	♂ im.	Aug. 21	—	2.91	2.15	.45	.80
3597	♂ ad.	June 6	—	3.02	2.20	.49	.82
3592	♂ im.	Aug. 23	—	2.95	2.18	.44	.80
3596	♂ ad.	June 6	—	3.12	2.25	.48	.81
3593	♂ ad.	May 22	5.87	3.08	2.29	.45	—
3595	♂ ad.	June 1	5.87	3.05	2.30	.45	.80
3594	♀ ad.	June 1	5.62	2.87	2.10	.42	.83

Wilsonia pusilla (Wils.).

WILSON'S WARBLER.

Like the Black-poll Warbler this species was not detected in the fall, and correspondingly was not seen in the spring until quite late. Wilson's Warblers were first noted at our winter camp on the Kowak on June 3rd, when three were seen, and a male secured. They did not, however, become common, and but few were seen afterward. In the Kowak delta one was observed on June 12. The denser willow thickets seemed to be the preferred haunts of this warbler.

Budytes flavus leucostriatus (Hom.).

SIBERIAN YELLOW WAGTAIL.

The Yellow Wagtail proved to be an abundant summer bird of the coast region of Kotzebue Sound. I saw it on the tundras of the Kowak delta bordering the eastern shore of Hotham Inlet, within a radius of eight miles of Cape Blossom, and on Chamisso Island. The minute I first landed at Cape Blossom, 1 A. M., July 9, '98, I was attracted by a bird which flew in a hesitating manner in broad circles above the beach, which at this point rose abruptly to a grassy bank with a low growth of brush at the top. The bird uttered a faint "pe-weet" at frequent intervals, and its general demeanor reminded me strongly of our American Pipit. On July 10th I rowed several miles up a winding lagoon, and during the day I saw several pairs of wagtails. They were always shy, flying falteringly high overhead, but from their notes of anxious tone and general bearing, I judged they had nests in the neighborhood. The first of the species I secured was a nearly-fledged juvenile on July 18th. It was flushed from the weedy border of a dwarf alder thicket near a pond. On July 20th, during a tramp along the coast southeasterly, I saw several squads of three to six full-grown juveniles. The southern faces of the low bluffs still held large snow-banks, and where these were melting the ground was muddy and much vegetation was just springing up. At these oases the little groups of wagtails were most often encountered. On July 28th, I took a long walk into the interior of the peninsula over the hills and tundras. Although juveniles were common enough along the beaches I met with none further than a

hundred yards back from the coast. But at least a mile back in the hills, I discovered a solitary pair of adult wagtails. They were in a dwarf alder thicket in a ravine and were very seclusive. I could scarcely drive them out of the bushes. They were in extremely ragged plumage, though bright new feathers were appearing in all the feather-tracts. One bird had only one tail-feather, and was otherwise so scantily feathered that its flight was noticeably labored. These birds had been feeding on the salmon-berries which grew plentifully near their retreat. By the first week in August small companies of juveniles were numerous, frequenting the tall grass growing in clumps on the sand-piles which margin the shore in the vicinity of the Mission. Several came around our tents at Mission Inlet daily for crumbs, and if I kept quiet they would come quite close. A wagtail would approach from the nearest grass-patch, sidling along, hopping daintily with ever-changing attitude and canting its head from one side to the other. At every step or two the bird would hesitate a moment before again advancing, its tail nervously twitching up and down. If it spied a crumb, a quick dart and away the bird would fly to a safer rendezvous. The wagtails would also snap up lots of flies. The Yellow Wagtails had not begun to decrease in number up to the time we left Cape Blossom for the interior, August 12th. The following year I met with the species again, in the Kowak delta in June. Two nests were found on the 20th and 21st of June, each containing six eggs in which incubation was nearly complete. The first nest was in the bank of a narrow slough, and about 18 inches above the water. It was built in a cavity under an overhanging clump of moss, and was plainly visible from the opposite side of the slough. The second was in a cavity under the side of a hummock of grass on the tundra. The nests consisted of a wet mass of fine grasses, bits of moss and dead leaves, moulded into a rather shallow depression with a few feathers for a lining. The ground color of the eggs is hardly distinguishable, being obscured by small confluent spots of pale drab. The large ends are most deeply marked. Three eggs average .76x.57. The nests were found by watching the restless birds until one of them returned to the nest. In the second case the female was captured by slowly approaching the nest and clapping a hat over it. On July 3rd, '99, at Cape Blossom, a nest was found, sunk into a mossy bank and containing small young. Eskimo name, Pĕ'ā-wāk.

Anthus pensilvanicus (Lath.).

AMERICAN PIPIT.

The American Pipit was observed on two successive days, the 22nd and 23rd of August, at our winter camp on the Kowak. A pair, probably the same birds each day, appeared in the morning walking along the sand at the edge of the water. I got quite close enough to them to make their identity satisfactory, but each time they took flight before I could fetch my gun. I saw the species but once again, on the 3rd of June. A pair of pipits were met with on the bare tundra to the north of the camp, but they were restless and shy, finally flying off to the northward as if in migration.

Cinclus mexicanus Swains.

AMERICAN DIPPER.

I did not personally meet with this bird, but I was thoroughly convinced of

its residence in the Kowak Valley. One of our party informed me as follows: Near the junction of the Kalamute River with the Kowak a party of prospectors passed the winter. Their cabin was built by a small creek which, probably fed by warm springs, remained open all winter, even during the severest weather. One of the men living there described a small-sized, dark-colored bird which was undoubtedly the water-ouzel. He said he saw it nearly every day during the entire winter, and he was astonished to see it "bathing and skating along the water even in the coldest weather when the thermometer registered 70 degrees below zero." Only one bird was noted, and it was a familiar visitor to the creek near the cabin where it was regularly fed on bread crumbs and miscellaneous scraps of food from the table. I was told of another place where the species wintered. In the short stream which flows from Walker Lake to the Kowak, there were several stretches which remained open, though the ice formed along their edges. A bird was described as singing most beautifully in midwinter from the caverns in these icy banks, and it was seen to fly in and out under the overhanging ice-margins.

Parus atricapillus septentrionalis (Harris).

LONG-TAILED CHICKADEE.

On the 26th of October, '98, I was hunting in the willow bottoms along the Hunt River, north of our winter quarters, when I met with this species for the first and only time. I heard some chickadee notes back in the brush, and by making a squeaking noise attracted them into sight. I secured two and although I did not see or hear it after I fired, I think there was at least another. The two specimens secured were smoothed out and plugged and laid on a willow branch to freeze in proper shape before packing away. I had gone but a few yards around a clump of bushes when a shrike darted down and carried off one of my rare chickadees. The single specimen of this species has been examined by Mr. Ridgway who writes me that it agrees in coloration with typical examples of *P. a. septentrionalis*. It is not referable to *P. a. turneri* Ridgw. (Type locality, St. Michaels) which is "paler, with flanks pure white or with just a faint tinge of buff."

Parus cinctus alascensis (Prazak).

ALASKAN CHICKADEE.

This chickadee was fairly common in the spruce districts in the vicinity of our winter camp on the Kowak. Although occasionally noted during midwinter, it was most often met with in the fall and spring. I was unable to recognize any decided differences in the notes and habits between this species and Coues' Chickadee—nothing more than is often evident among different individuals of the same species. The Alaskan Chickadee was never seen in company with the other species, and was an inhabitant of the spruce tracts along the base of the mountains rather than in the river bottoms. A female taken on the 8th of May contained a fully-formed egg in the oviduct, thus indicating the nesting season to be at hand. Fourteen specimens of the Alaskan Chickadee were obtained.

Parus hudsonicus evura Coues.

COUES' CHICKADEE.

At our winter camp on the Kowak this species was common up to the middle of September. After that date and up to the first of April but one or two at a time were seen and then only at long intervals. Early in September groups of four to seven were noted nearly every day in the spruces around our cabin, frequently calling their "chick-a-dee-dee" as we hear it, or, as the eskimo name has it, "mish-ĩ-kã'kã". The latter I think really the better imitation of the two in the case of the present species. Those chickadees observed during the winter were all in the dense willow thickets along Hunt River. They were there quieter and, by nature of their retreat, hard to find. It may have been that at the advent of cold weather all the chickadees left the spruces and betook themselves to the shelter of the willow-brush; but I am rather inclined to believe that there was a partial migration to the southward. By the first of May the chickadees were back again roving through the woods in pairs. Old woodpecker holes were selected as nesting sites, and I spotted nests in process of construction by the 15th of May. But through various mishaps I failed to secure any eggs. Eighteen skins of this bird were obtained. On submitting several specimens to Mr. Ridgway for comparison with the type of his *P. h. stoneyi*, he informs me as follows: "None of your specimens match the type, which has the color of the pileum and hind-neck paler, and very slightly different from the color of the back. It is in fresher plumage, and may be a fall specimen, but there is no date on the label. I do not now consider *P. h. stoneyi* to be a good form, at least as distinguished from specimens from other parts of Alaska; but if the Alaskan birds are to be separated they will probably have to be called *P. h. evura* Coues, (Key, 2nd ed., p. 267)". Rhoads in the *Auk*, Vol. X, p. 321, characterizes *evura* as distinct from the other northern races of *hudsonicus*, on the grounds of color as well as size.

Phylloscopus borealis (Blas.).

KENNICOTT'S WILLOW WARBLER.

I secured an immature female of this species on August 21, '98. Two were discovered flitting rapidly among the foliage of some birches a hundred yards back from the Kowak River near our winter cabin. Their behavior closely resembled that of the Ruby-crowned Kinglet. I saw Kennicott's Willow Warbler but once again, on the 14th of June, '99, in the Kowak delta. I was following close around the margin of a small lake, when I found myself within twenty feet of a single individual which I at once recognized as of the same species taken the previous fall. The bird was close to the ground searching among some willow bushes and stunted spruces. I watched it intently for some minutes, fully confident that it would either be joined by its mate, or that it would visit its nest which I thought at this date must surely be nearby. Finally my warbler suddenly left the bushes, flying across the pond, but instead of alighting on the other side, it kept flying on, mounting higher and higher, until I lost it to view against the deep blue of the northern horizon.

Regulus calendula (Linn.).

RUBY-CROWNED KINGLET.

On the 23rd of August, I shot one specimen and saw two others in a willow copse bordering the Kowak a couple of miles above our winter camp. I did not see the Ruby-crowned Kinglet again until the 10th of June, in the Kowak delta. Here I heard its beautiful song, and by tracing this found solitary male birds in the thickest spruce woods where they kept in the upper foliage and were hard to follow in their wanderings. I spent an hour or two in watching them, but did not succeed in seeing a female, so I supposed the latter to be incubating somewhere.

Hylocichla aliciae (Baird).

GRAY-CHEEKED THRUSH.

This thrush was a common summer resident from Cape Blossom eastward to the head of the Kowak River. In the former locality it was less noticeable, being confined to the densest alder thickets lining the ravines back in the hills. But in the Kowak Valley it was to be heard from every willow bed and tract of spruces. At the time of our arrival in August at our winter camp they were still fairly common though quite shy, and with the exception of a faint call-note at long intervals, were silent. They were noted singly, most often in the vicinity of a blueberry patch whence they seemed to gain most of their food at this season. The last Gray-cheeked Thrushes were seen on August 25th. The following spring their arrival was on the 24th of May, when they were already in pairs; and within five days nest-building was well under way. Their beautiful liquid song reminded me of that of the Russet-backed Thrush in California. The ordinary call-note was a liquid "what", and besides this there was a harsh squall. The nests of this species were quite variously situated, according to environment. In willow and alder beds I found them within a foot of the ground built on the slanting or horizontal trunks. While in the spruce woods they were found as high as twenty feet, though commonly about six feet above the ground. A typical nest is of fine shriveled grass blades, incorporated when damp, and mixed with a small amount of mud. The lining is of fine dry grasses. When this structure dries it is remarkably compact and firm, in fact almost indestructible by the elements, for the woods were full of old nests some of which must have survived many seasons. The cavity of the nest is deeply cup-shaped, with a diameter of 2.55 and depth of 1.80. The first set was of four fresh eggs taken on June 6th near our winter camp. The latest was of five slightly-incubated eggs taken in the Kowak delta on June 15th. The ground-color of the eggs is Nile blue, with rather obscure spots and blotches of liver-brown and vinaceous, more numerous at the larger ends. Thirteen eggs average .93x.68. The native name of this bird is Pā-wā-zōōg'ā-rūk.

Merula migratoria (Linn.).

AMERICAN ROBIN.

The Robin was a fairly common summer bird in the Kowak Valley from the delta eastward. In the fall they were seen but seldom, the last, five flying east high overhead, being noted on September 7th. In the spring the first one was

found feeding on juniper berries on May 20th, and within three days the familiar robin notes had become a frequent sound from the spruce woods. On May 28th I found many robins on the bare slopes of the Jade Mountains at snow-line, feeding on last year's blueberries, which the receding snow was leaving uncovered. The native name for this bird is *Sing'ük-lō-lōk'*.

Hesperocichla naevia (Gmel.).

VARIED THRUSH.

The Varied Thrush proved to be an abundant summer resident of the Kowak Valley, and was observed in every tract of spruces visited. In the fall of '98, it remained common until the last of August, though at that season the birds were quiet and of secretive habits. They were then feeding almost exclusively on cranberries and blueberries. Two juveniles taken on August 21st are in the midst of their first moult. In an adult female taken on September 1st, the fall moult is completed. The last Varied Thrushes, two in number, were seen on September 4th. The following spring its arrival in the neighborhood of our winter camp was noted on May 21st, when the twanging notes of the males were heard several times in the morning and evening. The next day they had arrived in full force and were to be seen and heard throughout the spruce woods. The snow had by this date nearly all disappeared, though the rivers and lakes were still covered with ice. The food of the Varied Thrushes at this time consisted largely of the cranberries and blueberries which were left from the previous summer's crop, and had been preserved beneath the winter snows. For a few days the birds were quite lively for being of the thrush tribe, which are usually of a quiet demeanor. When not feeding on the ground in one of the fruitful openings in the forest, they would be seen in wild pursuit of one another, either courting or quarrelling. The males were often seen in fierce combat; that is, fierce for a thrush. Of course some female ensconced in a thick evergreen in the vicinity was the cause of the duel. I never saw just how a quarrel would commence. The swift pursuit would follow a tortuous route around and about, twisting among the close-standing trees and across openings, so rapidly as to be difficult to follow with the eye. The *finale* would be a brief scrimmage among the thick foliage of a spruce, with a clatter of fluttering wings and a few sharp squeals like a robin's. They would fall slowly through the branches to the ground, when the contestants would separate, panting and puffing out different parts of their plumage. The greatest apparent injury to either of the belligerents would be the loss of two or three feathers, yet one of them would consider himself fairly beaten and soon retire leaving the victor free to continue his courting. The song of the male Varied Thrush consists of a series of peculiar notes uttered slowly and at rather long intervals. Each note is complete in itself. It is a quavering twang, with a faint rasping quality, the effect resembling the twang of a banjo string on a cracked bridge. These strange notes are produced on various keys, including a full octave, but the succession in which they are slowly uttered is irregular; a high note, then a low one, then a medium, with apparently no set arrangement. I have heard a single Varied Thrush, from his secluded perch near the top of a dark evergreen, thus sing for twenty minutes at a time. It is an odd bird song, but when heard amid the solitude of the dark, damp spruce woods, it has an indescribably melancholy quality, which sets one to dreaming of far away home. Many a half-hour have I spent lying on my back on

a mossy hummock in the northern forest, mesmerized, as it were, by this hypnotizer of the woods. The ordinary call-note or note of warning of both male and female is a low, liquid "quirt." It is heard quite frequently as one walks through the woods, disturbing the thrushes, the sites of whose homes may be nearby. In the Kowak Valley I noticed the first signs of nest-building by the Varied Thrushes on the 25th of May, just four days after their arrival, and by the 28th nearly every pair were busy; for the summer is short, and there is no loitering, as is often the case with our southern birds, after their arrival. The female does all the work of constructing the nest, the male accompanying her constantly in her many trips after material, but, as far as my observations go, never proffering any assistance. Many of the nests are built on those of the previous year as a foundation, and I even found three-storied nests. The old nests are flattened and dilapidated by the heavy August rains and winter snows, with the mud mostly dissolved out of them. During the winter a tour of the woods discloses hundreds of old thrushes' nests in various states of preservation, and in some sections nearly every tree harbors one or more. Where well-protected in dense spruces they must survive many years. Probably the same pair of birds return to a single nesting site for several successive seasons, especially if they raise their young there unmolested. I found no evidence of any natural enemies of the Varied Thrushes during the breeding season. The shrikes and small hawks seem to prey mainly on mice and lemmings, with an occasional redpoll. All the nests of the Varied Thrush observed were in spruces, and varied in height above the ground from 6 to 20 feet, the latter being far above the average height, which I should judge to be 10 feet. Even in the tallest timber the nesting sites are chosen in the lower foliage at a similar elevation. The parent birds are very solicitous about the safety of their homes, and the female especially exhibits great distress when the nest is disturbed. The female performs the entire duty of incubation. At least I never discovered a male bird on the nest. The female sits very close, once remaining on the nest until I had climbed within a yard of her, and in this instance there were as yet no eggs in the nest. While one is near the nest, the female flies wildly around the tree at a short distance, uttering loud squeals and cries, much resembling those of the common robin. The male is less vehement in his protests and follows the movements of the female, but at a longer radius, answering her screams with the ordinary liquid alarm note frequently uttered. I often found it an unpleasant task to rob a nest in the face of such unmistakable solicitude and remonstrance, and I would hurriedly leave the vicinity after the deed was done, like some criminal, to escape further contumely. A collector does sometimes feel conscience-smitten, as I am willing to admit. The nest of the Varied Thrush is usually built close to the main trunk of a spruce, often directly against it, and supported by a clump of the stiff, horizontal twigs or small branches. Sometimes the surrounding foliage renders the nest almost completely hidden from view. And then again it may be supported by bare, dead branches, affording hardly any screen. The majority of the nests are situated on the south side of the tree-trunks, as probably being the driest and warmest side, and then, too, strong, cold north winds are of frequent occurrence. All the nests which I examined are very much alike in composition and structure. The foundation is a rather loose and bulky mass of plant stems and dry grasses, but the nest proper is a

solid, closely-felted structure. The bottom and sides are substantially formed of a mixture of mud, and wet, partly-decomposed grasses and moss. The amount of mud varies in different nests, and in some there is scarcely any, but the various vegetable materials are always incorporated when wet, so that after the structure dries, the walls and rim are very firm like *papier mache*. When finished the nest presents a neatly-moulded cup-shaped cavity, with an inner lining of fine dry grasses. The measurements of a typical nest are as follows: Inside diameter, 3.25; depth, 2.25. Outside diameter, 6.50; depth, 4.50. The weights of the dry nests vary from one-half to one pound, depending on the amount of mud in their composition. The earliest egg of the Varied Thrush was found on June 2nd, and on the 4th a fresh set of three eggs was taken; on the 6th a set of four, incubation slight. The latter seemed to be the average date of completion of the full set of eggs, although a slightly incubated set of four eggs was taken as late as the 23rd of June. Of four sets of four each taken on the 11th, one was fresh, and in three incubation was well advanced. I secured eleven sets of the eggs of the Varied Thrush. There are two sets of three, seven sets of four, and two sets of five eggs each, 44 eggs in all. This series exhibits remarkable uniformity in size and coloring. The ground color is Nile blue, the exact tint varying somewhat, probably due to the different terms of incubation and exposure to light. The eggs are rather sparsely but evenly dotted and spotted with burnt umber and seal brown, with similar-sized shell-markings of ecru drab and vinaceous tints. The eggs of one set show larger blotchy markings of raw umber. One egg is almost without markings, thus resembling a robin's. There is a slight tendency toward a congregation of the markings at the larger ends in some cases. In shape the eggs vary between ovate and short-ovate. The average measurements of the 44 eggs are 1.18x.84. The largest egg measures 1.24x.88; the smallest, 1.10x.83. In size and ground color the eggs of the Varied Thrush closely resemble those of the California Thrasher, but the spottings are fewer, finer and much darker. Taking every character into consideration, the Varied Thrushes' eggs appear unique, and not to be confused with those of any North American bird which I have examined. The native name for this species is Kän-ä-zhōōr'ük.

Cyanecula suecica (Linn.).

RED-SPOTTED BLUETHROAT.

I met with this species in the vicinity of Cape Blossom on July 3, '99. The locality was the side of a ravine between two hills of the first range, about a mile back of the Mission. This hillside was of a gentle slope, and was clothed with thick patches of dwarf willows one to two feet in height. I was tramping along the bed of the ravine when I heard a harsh note, entirely unfamiliar to me, from the brush a little to my right. I started up the slope so as to be in more open ground and get a better view, when I caught a moment's glimpse of the author of the strange note, as he flew hurriedly close along the ground to a distant bush. The note and bearing of the bird reminded me more of those of a wren, and not until I finally had the bird in hand did I have any idea of its identity. By hiding and making squeaking noises I succeeded in attracting the bird within range, and secured it. It had an insect in its bill, and so I judged there must have been a nest in the vicinity. But after waiting a long time I failed to see or hear any

other Bluethroat, and as it was late in the day I started on my return to camp. I had proceeded about a quarter of a mile when I heard that faint harsh note, unmistakable after once learned, among the calls of Tree and Savanna Sparrows and Yellow Wagtails, on a similar hillside. I soon obtained a good view of this Bluethroat, and it, too, had an insect in its bill. It was less shy than the first one. I had no doubt of a nest this time, and selecting a point of observation behind a bush, waited and watched. At last I gave it up, intending to return the next day. But that proved to be my last day with the birds at Cape Blossom, for the "Penelope" had arrived from her winter quarters at Escholtz Bay, and we had to make preparations for sailing. The single specimen obtained of *Cyanecula suecica* is an adult male in somewhat worn plumage. That this species was breeding at Cape Blossom, I have no doubt, and I can easily see how I could have previously entirely overlooked it, on account of its unfamiliar habits and notes.

BIBLIOGRAPHY.

The following Bibliography of Kotzebue Sound Ornithology may not be complete, for it contains only the appurtenant literature which I have personally examined; however, this is also all that I know of. Of this, the lists of Nelson, Townsend and McLenegan are the most important, being based on most extended observations, though in each case confined to a part of the summer only. Many records made by Nelson were founded on skins and information received from intelligent natives. The notes of these writers are for the most part very brief.

VIGORS (N. A.). Ornithology. The Zoology of Captain Beechey's voyage—in H. M. S. *Blossom*. 1839. pp. 13-42.

Fratercula (= *Lunda*) *cirrhata* and *Fratercula glacialis* (= *F. corniculata*) are noted as occurring on Chamisso Island. These are the only specific references to the Kotzebue Sound Ornis.

DALL (W. H.) and BANNISTER (H. M.). List of the Birds of Alaska, with Biographical Notes. Transactions of the Chicago Academy of Sciences. Vol. 1. 1867-1869. pp. 267-310.

One species, *Puffinus tenuirostris*, is recorded as having been obtained in Kotzebue Sound.

HARTING (J. E.). *Ibis*, 1869, p. 426, Pl. XII.

The Choris Peninsula specimen of *Eurynorhynchus pygmaeus* is here for the first time referred to, and is figured as the first specimen in summer plumage known to science.

HARTING (J. E.). Catalogue of an Arctic Collection of Birds presented by Mr. John Barrow, F. R. S., to the University Museum at Oxford; with Notes on the Species. Proc. Zool. Soc. of London, 1871. pp. 110-123.

The following species are indicated as having been obtained on Choris Peninsula in 1849 by Capt. Moore of H. M. S. Plover: *Corvus corax* (= *C. corax principalis*), *Budytes flava* (= *B. flavus leucostriatus*), *Plectrophanes* (= *Passerina*) *nivalis*, *Plectrophanes lapponicus* (= *Calcarius lapponicus alascensis*), *Ægialites mongolicus* (= *Ægialitis mongola*), *Eurynorhynchus pygmaeus*, *Tringa alpina* (= *T. alpina pacifica*), *Tringa maritima* (= *T. couesi*), *Larus occidentalis* (= *Larus schistisagus?*), *Charadrius longipes* (= *C. domicus*).

BEAN (T. H.). Notes on Birds Collected During the Summer of 1880 in Alaska and Siberia. Proc. U. S. Nat. Mus., Vol. V, pp. 144-173. 1882.

The following species are recorded from Chamisso Island and the vicinity of Escholtz Bay: *Saxicola œnanthe*, *Ægiothus* (= *Acanthis*) *linaria*, *Ægiothus canescens exilipes* (= *Acanthis hornemannii exilipes*), *Passerculus* (= *Ammodramus*) *sandwichensis alaudinus*, *Corvus corax carnivorus* (= *C. corax principalis*), *Circus hudsonius*, *Strepsilas* (= *Arenaria*) *melanocephala*, *Grus canadensis*, *Mareca americana*.

NELSON (E. W.). Birds of Bering Sea and Arctic Ocean. Cruise of Revenue-steamer *Corwin* in Alaska and the N. W. Arctic Ocean in 1881. pp. 55-118. 1883.

The following birds not recorded by previous writers are definitely mentioned as known to the author to occur in the Kotzebue Sound region: *Hylocichla*

aliciae, *Merula migratoria*, *Hesperocichla nævia*, *Cinclus mexicanus*, *Parus atricapillus septentrionalis*, *Dendroica æstiva*, *Dendroica striata*, *Seiurus nævius* (= *Seiurus noveboracensis notabilis*), *Myiodiodes pusillus* (= *Wilsonia pusilla*), *Lanius borealis* (= *L. b. invictus*), *Hirundo erythrogastra*, *Zonotrichia gambeli intermedia* (= *Zonotrichia leucophrys gambelii*), *Spizella montana* (= *S. monticola ochracea*), *Junco hyemalis*, *Passerella iliaca*, *Scolecophagus ferrugineus* (= *S. carolinus*), *Perisoreus canadensis fumifrons*, *Picus* (= *Dryobates*), *pubescens* (= *D. p. nelsoni*), *Colaptes auratus* (= *C. auratus luteus*), *Nyctala tengmalmi richardsoni*, *Nyctea scandiaca* (= *Nyctea nyctea*), *Surnia funerea* (= *S. ulula caparoch*), *Æsalon* (= *Falco columbarius*), *Accipiter fuscus* (= *A. velox*), *Astur* (= *Accipiter atricapillus*), *Haliaeetus leucocephalus* (= *H. l. alascanus*), *Strepsilas* (= *Arenaria*) *interpres*, *Gallinago media wilsoni* (= *G. delicata*), *Macrorhamphus griseus scolopaceus* (= *M. scolopaceus*), *Actodromas* (= *Tringa*) *acuminata*, *Actodromas* (= *Tringa*) *maculata*, *Olor americanus* (= *O. columbianus*), *Anser albifrons gambeli*, *Bernicla canadensis leucoparia* (= *Branta canadensis minima*), *Dafila acuta*, *Spatula clypeata*, *Nettion carolinensis*, *Fulix* (= *Aythya*) *marila*, *Somateria v-nigra*, *Oidemia americana*, *Melanetta fusca* (= *Oidemia deglandi*), *Rissa tridactyla kotzebuei* (= *R. t. pollicaris*), *Larus glaucus* (= *L. barrovianus*), *Larus brachyrhynchus*, *Xema sabinei*, *Podiceps holbolli* (= *Colymbus holbellii*), *Dytes* (= *Colymbus*) *auritus*, *Colymbus* (= *Gavia*) *adamsi*, *Colymbus arcticus* (= *Gavia arctica*), *Colymbus septentrionalis* (= *Gavia lumme*), *Lomvia arra* (= *Uria lomvia arra*).

NELSON (E. W.) Counter-Notes on Some Species of Birds Attributed to Point Barrow, Alaska. *Auk*, July, 1885. Vol. 11, pp. 239-241.

Refers to *Numenius hudsonicus* as being a spring migrant at Kotzebue Sound.

MURDOCK (J.). Report on Birds Observed at Point Barrow During the Stay of the Polar Expedition in 1881-'82-'83. Report of the International Polar Expedition to Point Barrow, Alaska. pp. 104-128. 1885.

References made to previously-recorded birds from Kotzebue Sound.

NELSON (E. W.) Birds of Alaska. Report upon Natural History Collections made in Alaska, 1877-1881. pp. 21-226. 1887.

The following species not recorded previously are definitely mentioned as known to the author to occur in the Kotzebue Sound region: *Urinator* (= *Gavia*) *imber*, *Cephus columba*, *Stercorarius longicaudus*, *Larus cachinnans* (= *L. vegø*), *Larus philadelphia*, *Oceanodroma furcata*, *Merganser serrator*, *Anas boschas*, *Histrionicus histrionicus*, *Oidemia perspicillata*, *Branta nigricans*, *Numenius borealis*, *Ægialitis semipalmata*, *Asio accipitrinus*, *Loxia leucoptera*, *Zonotrichia coronata*, *Helminthophaga* (= *Helminthophila*) *celata*, *Parus hudsonicus* (= *P. h. evura*).

TOWNSEND (C. H.) List of the Midsummer Birds of the Kowak River, Northern Alaska. *Auk*, January, 1887. Vol. IV, pp. 11-13.

The following birds not previously recorded from the Kotzebue Sound region are reported from the Kowak Valley: *Larus leucopterus*, *Sterna paradisæa*, *Tringa minutilla*, *Ereunetes pusillus*, *Totanus flavipes*, *Bartramia longicauda*, *Actitis macularia*, *Numenius tahitiensis*, *Dendragapus canadensis* (= *Canachites canadensis labradorius*), *Lagopus lagopus*, *Archibuteo lagopus* (= *A. lagopus sancti-johannis*), *Pandion haliaetus carolinensis*, *Ceryle alcyon*, *Acanthis linaria holbellii*, *Tachycineta bicolor*, *Dendroica coronata* (= *D. coronata hooveri*), *Anthus pensilvanicus*, *Phylloscopus borealis*.

TOWNSEND (C. H.). Notes on the Natural History and Ethnology of Northern Alaska. Cruise of the Revenue-marine Steamer *Corwin* in the Arctic Ocean in 1885. pp. 90-101. 1887.

Although apparently based on the same material and notes as his list in *The Auk*, Townsend here for the first time records *Clivicola riparia*, *Melospiza lincolni* and *Larus glaucescens*, from the Kowak River. He also leaves out several species given in the other list, for what reasons he does not say.

MCLENEGAN (S. B.). Birds. Exploration of Noatak River, Alaska. Cruise of the Revenue-marine Steamer *Corwin* in the Arctic Ocean in 1885. pp. 76-80. 1887.

The following birds not attributed by previous writers to the Kotzebue Sound region are recorded from the Noatak River: *Tinnunculus* (= *Falco*) *sparverius*, *Clangula glaucium americana* (= *C. clangula americana*), *Squatarola helvetica* (= *S. squatarola*), *Calidris arenaria*, *Stercorarius parasiticus*.

RIDGWAY (R.). Man. N. Am. Birds, Aug., 1887, p. 591.

Parus stoneyi, new species. (= *P. hudsonicus evura*). Also p. 364, *Picicorvus* (= *Nucifraga*) *columbianus* recorded from the Putnam (= Kowak) River.

A. O. U. CHECKLIST. 1st Supplement, 1889. p. 17.

Parus hudsonicus stoneyi (= *P. h. evura*).

MCLENEGAN (S. B.). Birds of the Kowak River. Cruise of the Revenue-marine Steamer *Corwin* in the Arctic Ocean in the year 1884. pp. 111-125. 1889.

The following species not given by previous writers are recorded from the Kowak River or Hotham Inlet: *Parus cinctus* (= *P. cinctus alascensis*), *Pica rustica hudsonica* (= *P. pica hudsonica*), *Ulula* (= *Scotiaptex*) *cinerea*, *Hierfalco gyrfalco sacer* (= *Falco rusticolus gyrfalco*), *Bonassa umbellus umbelloides*, *Lagopus rupestris*, *Limosa lapponica novæ-zealandiæ* (= *L. l. baueri*), *Limosa hæmastica*, *Rhyacophilus* (= *Helodromas*) *solitarius*, *Phalaropus* (= *Crymophilus*) *fulicarius*, *Lobipes hyperboreus* (= *Phalaropus lobatus*), *Branta canadensis hutchinsii*, *Harelda glacialis* (= *H. hymalis*), *Mergus merganser americanus* (= *Merganser americanus*), *Pagophila eburnea* (= *P. alba*).

The two papers by McLenegan are characterized by many irrelevant remarks and statements too general to be of much value. On this account the notes on the species are to a large degree of little use in compiling a faunal list. There are also many apparent errors, and in regard to the records of such unexpected species as *Falco sparverius*, I have serious doubts. McLenegan, however, offers many records and notes of undoubted authenticity an value, backed up by specimens in some cases. It is hard for one to discriminate, and I deem it inadvisable therefore to reject any of his questionable records, though, in the Checklist to follow, I take the liberty of expressing doubt in one or two cases.

RHOADS (S. N.). The Hudsonian Chickadee and its Allies, with Remarks on the Geographic Distribution of Bird Races in Boreal America. *Auk*, Oct., 1893. Vol. X. pp. 321-333.

Refers to the supposed race *Parus hudsonicus stoneyi* from the Kowak River.

A. O. U. CHECKLIST. 2nd Edition, 1895. pp. 33, 87, 90, 102, 201, 310.

Refers to the Kowak River, Kotzebue Sound and Choris Peninsula in giving the geographical distribution of several species.

GRINNELL (J.). The Varied Thrush in Summer. The Condor, January, 1900. Vol. II, pp. 5-7.

This is substantially as given under *Hesperocichla nævia* in the present paper.

Finally, my own observations, as recorded in the first part of the present paper, have added the following species not before accredited to the Kotzebue Sound Region: *Cyclorrhynchus psittaculus*, *Simoryhynchus pusillus*, *Simorhynchus cristatellus*, *Stercorarius pomarinus*, *Fulmarus glacialis rogersii*, *Phalacrocorax pelagicus robustus*, *Chen hyperborea*, *Philacte canagica*, *Tringa canutus*, *Ereunetes occidentalis*, *Tringa bairdii*, *Aphriza virgata*, *Picoides americanus alascensis*, *Pinicola enucleator alascensis*, *Ampelis garrulus*, *Regulus calendula*, *Cyanecula suecica*.

CHECKLIST OF THE BIRDS OF THE KOTZEBUE SOUND REGION.

The following list is intended to include every species so far recorded from the Kotzebue Sound region, together with the authority or authorities for each. The notes on comparative abundance pertain exclusively to the summer months, unless otherwise stated.

1. **Colymbus holboëllii** (Reinh.). Holboëll's Grebe.

Selawik Lake, point of greatest abundance (Nelson). Kowak Delta, common (Grinnell).

2. **Colymbus auritus** Linn. Horned Grebe.
Shores of Kotzebue Sound (Nelson).

3. **Gavia imber** (Gunn.). Loon.
Kotzebue Sound and Selawik Lake (Nelson). Cape Lowenstern (Grinnell).
Kowak River (Townsend, McLenegan). Not common.

4. **Gavia adamsii** (Gray). Yellow-billed Loon.
Not rare summer resident—about head of Kotzebue Sound; Selawik Lake and the Kunguk (=Buckland) River, points of greatest abundance (Nelson). Kowak River, occasionally noted (Townsend); not abundant (McLenegan). Noatak River, several (McLenegan). I was surprised and disappointed not to be able to find this species in any of the region visited. I kept special look-out during both summers, and although numbers of loons were shot and very many more were seen closely enough to make identification certain, yet I never saw the Yellow-billed Loon. Possibly it is becoming scarcer than formerly, for Nelson and others apparently considered Kotzebue Sound to be its centre of abundance. The natives use the skins of loons for clothing and "ditty-bags," and I saw a great many such skins in their possession. The plumage of the head and neck is particularly desirable for fancy-work. Although I examined numbers of such articles among the natives from Cape Blossom up the Kowak to our winter camp, I did not see a single fragment which I could identify as belonging to any other than the Black-throated and Red-throated Loons.

5. **Gavia arctica** (Linn.). Black-throated Loon.
Abundant throughout the Kotzebue region (Nelson, McLenegan, Grinnell).

6. **Gavia lumme** (Gunn.). Red-throated Loon.
Common throughout the Kotzebue region (Nelson, Townsend, McLenegan, Grinnell).

7. **Lunda cirrhata** Pall. Tufted Puffin.
Escholtz Bay and Kotzebue Sound (Vigors, Nelson, Grinnell). Not common.

8. **Fratercula corniculata** (Naum.). Horned Puffin.
Escholtz Bay and Kotzebue Sound (Vigors, Nelson, Grinnell). Abundant.

9. **Cyclorhynchus psittaculus** (Pall.). Paroquet Auklet.
Outer waters of Kotzebue Sound, fairly common (Grinnell).

10. **Simorhynchus cristatellus** (Pall.) Crested Auklet.
Outer waters of Kotzebue Sound, abundant (Grinnell).

11. **Simorhynchus pusillus** (Pall.). Least Auklet.
Outer waters of Kotzebue Sound, not common (Grinnell).
12. **Cephus columba** Pall. Pigeon Guillemot.
A few pairs—seen in Kotzebue Sound (Nelson).
13. **Uria lomvia arra** (Pall.). Pallas's Murre.
Kotzebue Sound and Escholtz Bay, abundant (Nelson, Grinnell).
14. **Stercorarius pomarinus** (Temm.). Pomarine Jaeger.
Coast of Kotzebue Sound, moderately common (Grinnell).
15. **Stercorarius parasiticus** (Linn.). Parasitic Jaeger.
Coastwise, not common (McLenegan, Grinnell).
16. **Stercorarius longicaudus** Vieill. Long-tailed Jaeger.
Common throughout the Kotzebue region (Nelson, McLenegan, Grinnell).
17. **Pagophila alba** (Gunn.). Ivory Gull.
Hotham Inlet or Kowak River, one specimen taken (McLenegan).
18. **Rissa tridactyla pollicaris** Ridgw. Pacific Kittiwake.
Coast and Islands of Kotzebue Sound, abundant (Nelson, Grinnell.).
19. **Larus barrovianus** Ridgw. Point Barrow Gull.
Kotzebue region everywhere, abundant (Nelson, Townsend, McLenegan, Grinnell).
20. **Larus leucopterus** Faber. Iceland Gull.
Kowak River, common (Townsend).
21. **Larus glaucescens** Naum. Glaucous-winged Gull.
Kowak River, moderately common (Townsend, McLenegan, Grinnell).
22. **Larus schistisagus** Stejn. Slaty-backed Gull.
Harting records a specimen, taken by Capt. Moore in 1849 at Choris Peninsula, as *Larus occidentalis* Aud.; I have little doubt but that this is the species to which it should be referred.
23. **Larus vegæ** (Palmen). Vega Gull.
Nelson records this as *L. cachinnans*, and says that it reaches the Alaskan shore from Kotzebue Sound to the Yukon mouth.
24. **Larus brachyrhynchus** Rich. Short-billed Gull.
Kotzebue Sound and Kowak River, abundant (Nelson, Grinnell).
25. **Larus philadelphia** (Ord). Bonaparte's Gull.
Kotzebue Sound and Kowak River, common (Nelson, Townsend, McLenegan, Grinnell).
26. **Xema sabinii** (Sab.). Sabine's Gull.
Kotzebue Sound and Kowak River, not common (Nelson, Grinnell).
27. **Sterna paradisæa** Brünn. Arctic Tern.
Abundant coastwise; less so up the river valleys (Townsend, McLenegan, Grinnell.).
28. **Fulmarus glacialis rogersii** (Cass.). Rodgers's Fulmar.
Outer waters of Kotzebue Sound, not common (Grinnell).

29. **Puffinus tenuirostris** (Temm.). Slender-billed Shearwater.
Kotzebue Sound, two specimens (Dall, Grinnell).
30. **Oceanodroma furcata** (Gmel.). Forked-tailed Petrel.
Two specimens obtained in Kotzebue Sound (Nelson).
31. **Phalacrocorax pelagicus robustus** Ridg. Violet-green Cormorant.
Not common; seen at Chamisso Island (Grinnell.)
32. **Merganser americanus** (Cass.). American Merganser.
Seen and specimens obtained along the Kowak River (McLenegan).
33. **Merganser serrator** (Linn.). Red-breasted Merganser.
Common throughout the Kotzebue Sound Region (Nelson, Townsend, McLenegan, Grinnell).
34. **Anas boschas** Linn. Mallard.
Found breeding along north shore of Kotzebue Sound (Nelson). Kowak River, not common (Grinnell).
35. **Mareca americana** (Gmel.). Baldpate.
Common throughout the Kotzebue region (Bean, Nelson, Townsend, McLenegan, Grinnell).
36. **Nettion carolinensis** (Gmel.). Green-winged Teal.
Fairly common throughout Kotzebue region (Nelson, Townsend, McLenegan, Grinnell).
37. **Spatula clypeata** (Linn.). Shoveller.
A few observed in middle of September at Escholtz Bay (Nelson).
38. **Dafila acuta** (Linn.). Pintail.
Abundant throughout the Kotzebue region (Nelson, Townsend, McLenegan, Grinnell).
39. **Aythya marila** (Linn.). Scaup Duck.
Common throughout the Kotzebue region (Nelson, Grinnell).
40. **Clangula clangula americana** (Bonap.). American Golden-eye.
One pair seen on the lower Noatak River (McLenegan).
41. **Harelda hyemalis** (Linn.) Old-squaw.
Abundant throughout the Kotzebue region, principally coastwise (McLenegan, Grinnell).
42. **Histrionicus histrionicus** (Linn.) Harlequin Duck.
Kotzebue Sound and Kowak River, not common (Nelson, Grinnell).
43. **Somateria v-nigra** Gray. Pacific Eider.
Common along the coast of Kotzebue Sound (Nelson, Grinnell). Noatak River, one noted (McLenegan).
44. **Oidemia americana** Swains. American Scoter.
Common coastwise and up the river valleys (Nelson, Townsend, Grinnell).
45. **Oidemia deglandi** Bonap. White-winged Scoter.
Coastwise, not common (Nelson, Grinnell).

46. **Oidemia perspicillata** (Linn.). Surf Scoter.
Abundant coastwise and up the Kowak Valley (Nelson, Grinnell).
47. **Chen hyperborea** (Pall.). Lesser Snow Goose.
Common migrant in Kowak Valley; Cape Blossom, one specimen, July (Grinnell).
48. **Anser albifrons gambeli** (Hartl.). American White-fronted Goose.
Common throughout the Kotzebue region especially in the interior river valleys (Nelson, Townsend, Grinnell).
49. **Branta canadensis hutchinsii** (Rich.). Hutchins's Goose.
Common in the interior valleys (Townsend, McLenegan, Grinnell).
50. **Branta canadensis minima** Ridgw. Cackling Goose.
Abundant about head of Kotzebue Sound (Nelson). Kowak River (Townsend).
51. **Branta nigricans** (Lawr.). Black Brant.
Breeds rarely north to Kotzebue Sound (Nelson). Common spring migrant in the Kowak Valley (Grinnell).
52. **Philacte canagica** (Sevast.). Emperor Goose.
South shore of Kotzebue Sound, common (Grinnell).
53. **Olor columbianus** (Ord). Whistling Swan.
Kowak Valley, fairly common (Townsend, McLenegan, Grinnell). Noatak River (McLanegan). Head of Kotzebue Sound, July 15 (Nelson).
54. **Grus canadensis** (Linn.). Little Brown Crane.
Common throughout the Kotzebue region (Bean, Townsend, McLenegan, Grinnell).
55. **Crymophilus fulicarius** (Linn.). Red Phalarope.
Moderately common coastwise (McLanegan, Grinnell).
56. **Phalaropus lobatus** (Linn.). Northern Phalarope.
Abundant coastwise; Kowak Valley (McLanegan, Grinnell).
57. **Gallinago delicata** (Ord). Wilson's Snipe.
Shore of Kotzebue Sound and Kowak Valley (Nelson, Grinnell).
58. **Macrorhamphus scolopaceus** (Say). Long-billed Dowitcher.
Shores of Kotzebue Sound (Nelson). Lower Kowak, abundant (McLanegan). Upper Kowak, common (McLanegan).
59. **Tringa canutus** Linn. Knot.
Cape Blossom, two specimens, August (Grinnell).
60. **Tringa couesi** (Ridgw.) Aleutian Sandpiper.
Obtained on Choris Peninsula (Harting). Occurs in autumn on shores of Kotzebue Sound, (Nelson).
61. **Tringa acuminata** (Horsf.). Sharp-tailed Sandpiper.
But one record, that by Nelson of a single specimen taken at Hotham Inlet, September 1st, 1880, by Capt. C. L. Hooper.

62. **Tringa maculata** Vieill. Pectoral Sandpiper.
Coast of Kotzebue Sound, common (Nelson). Kowak River, common (McLenegan). Kowak River, one specimen (Grinnell).
63. **Tringa bairdii** (Coues). Baird's Sandpiper.
Cape Blossom and Kowak River, fairly common (Grinnell).
64. **Tringa minutilla** Vieill. Least Sandpiper.
Kowak River, moderately common (Townsend, McLenegan, Grinnell).
Noatak River, not common (McLenegan). Cape Blossom, one specimen (Grinnell).
65. **Tringa alpina pacifica** (Coues). Red-backed Sandpiper.
Coast district (Harting, McLenegan, Grinnell). Not common.
66. **Eurynorhynchus pygmæus** (Linn.). Spoon-bill Sandpiper.
Harting has recorded a single specimen contained in a collection of arctic birds in the University Museum at Oxford, England. This specimen was in summer plumage and was taken on the Choris Peninsula by Captain Moore of H. M. S. Plover in 1849.
67. **Ereunetes pusillus** (Linn.). Semipalmated Sandpiper.
Kowak Valley and Cape Blossom, common (Townsend, McLenegan, Grinnell).
Lower Noatak Valley (McLenegan).
68. **Ereunetes occidentalis** Lawr. Western Sandpiper.
Fairly common coastwise (Grinnell).
69. **Calidris arenaria** (Linn.). Sanderling.
Flock noted on shore of Selawik Lake; seen several times on banks of lower Noatak (McLenegan).
70. **Limosa lapponica baueri** (Naum.). Pacific Godwit.
Cape Blossom and Kowak delta, common (Grinnell). Lower Kowak (McLenegan).
71. **Limosa hæmastica** (Linn.). Hudsonian Godwit.
Taken only by McLenegan who records it as common in the upper Kowak Valley; also in large numbers in August on Kotzebue Sound.
72. **Totanus flavipes** (Gmel.). Yellow-legs.
Kowak Valley, common (Townsend, McLenegan, Grinnell).
73. **Helodromas solitarius** (Wils.). Solitary Sandpiper.
Kowak Valley, common (Grinnell). Hotham Inlet or Kowak River, one specimen, (McLenegan).
74. **Bartramia longicauda** (Bechst.). Bartramian Sandpiper.
Recorded only by Townsend who saw the species two or three times on the Kowak River, and secured one specimen, July 15.
75. **Actitis macularia** (Linn.). Spotted Sandpiper.
Kowak River, rare (Townsend); moderately common (Grinnell).
76. **Numenius hudsonicus** Lath. Hudsonian Curlew.
Noatak and Kowak, not common (McLenegan, Nelson). Abundant from Cape Blossom up the Kowak valley (Grinnell).

77. **Numenius borealis** (Forst.). Eskimo Curlew.

Recorded as numerous along the seacoast by Nelson and up the river valleys by McLenegan; but, curiously, it was not detected at all by me in any of this region, although a considerable number of curlew were examined, all being *hudsonicus*.

78. **Numenius tahitiensis** (Gmel.). Bristle-thighed Curlew.

But one record, that by Townsend of a juvenile shot on Kotzebue Sound, August 26th, 1885.

79. **Squatarola squatarola** (Linn.). Black-bellied Plover.

Recorded only by McLenegan as occurring on the dryer portions of the tundra in the Kowak Valley; also Noatak, common.

80. **Charadrius dominicus** Müll. American Golden Plover.

Common, mostly in the coast district (Harting, Nelson, McLenegan, Grinnell).

81. **Ægialitis semipalmata** Bonap. Semipalmated Plover.

Kotzebue Sound and afferent river valleys, fairly common (Nelson, Townsend, McLenegan, Grinnell).

82. **Ægialitis mongola** (Pall.). Mongolian Plover.

Harting records two specimens in summer plumage obtained on the Choris Peninsula in 1849 by Capt. Moore of H. M. S. Plover.

83. **Aphriza virgata** (Gmel.). Surf Bird.

Only one record, which is the northernmost so far for this species, and probably indicates a breeding locality; Kowak River, May 29 (Grinnell).

84. **Arenaria interpres** (Linn.). Turnstone.

Fairly common coastwise (Nelson, McLenegan, Grinnell).

85. **Arenaria melanocephala** (Vig.). Black Turnstone.

Coastwise, not common (Bean, Townsend, McLenegan).

86. **Canachites canadensis labradorius** Bangs. Northern Spruce Grouse.

Kowak Valley (Townsend, McLenegan, Grinnell); common.

87. **Bonasa umbellus umbelloides** (Dougl.) Gray Ruffed Grouse.

Kowak River; but comparatively few specimens noted (McLenegan). The only possible evidence that I found of the occurrence of this species was the report that a party of prospectors on the upper Kowak had obtained a "wild turkey" or "pheasant" for Christmas dinner.

88. **Lagopus lagopus** (Linn.). Willow Ptarmigan.

Common throughout the Kotzebue region, except on the mountains (Townsend, McLenegan, Grinnell).

89. **Lagopus rupestris** (Gmel.). Rock Ptarmigan.

Common locally in the interior (McLenegan, Grinnell).

90. **Circus hudsonius** (Linn.). Marsh Hawk.

Fairly common coastwise and up the river valleys (Bean, Nelson, Townsend, McLenegan, Grinnell).


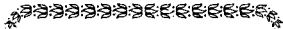
91. **Accipiter velox** (Wils.). Sharp-shinned Hawk.
Coast region (Nelson). Kowak Valley (Grinnell). Not common.
92. **Accipiter atricapillus** (Wils.). American Goshawk.
Escholtz Bay (Nelson). Kowak River, observed once or twice (McLenegan).
Not common.
93. **Archibuteo lagopus sancti-johannis** (Gmel.). American Rough-legged Hawk.
Noatak River; noted several times and two nests found (McLenegan). Lower Kowak, one specimen taken (Townsend). The specimen taken by Townsend is in the National Museum Collection, and has recently been identified for me, as above. Townsend records it in the "Auk" as *A. lagopus*, and in the "Cruise of the Corwin" as *A. ferrugineus*, both of which undoubtedly refer to the same bird.
94. **Haliaeetus leucocephalus alascanus** Townsend. Northern Bald Eagle.
Noatak River, nesting commonly (McLenegan). Specimen obtained from Kotzebue Sound (Nelson).
95. **Falco rusticolus gyrfalco** (Linn.). Gyrfalcon.
Kowak Valley, common (McLenegan, Grinnell).
96. **Falco columbarius** Linn. Pigeon Hawk.
Shores of Kotzebue Sound (Nelson). Kowak River (Townsend, McLenegan, Grinnell). Moderately common.
97. **Falco sparverius** Linn. American Sparrow Hawk.
McLenegan in his Noatak list records this species as "more or less abundant, principally in the mountain regions." This is, to say the least, unexpected. As the Pigeon Hawk is not named in this list, I have an idea that is what is meant. At any rate I consider this record as rather doubtful, until confirmed.
98. **Pandion haliaetus carolinensis** (Gmel.). American Osprey.
Kowak River and delta, common (Townsend, Grinnell).
99. **Asio accipitrinus** (Pall.). Short-eared Owl.
Common throughout the Kotzebue region (Nelson, Townsend, Grinnell).
100. **Scotiaptex cinerea** (Gmel.). Great Gray Owl.
Recorded only by McLenegan in the altogether too generous statement: "In the dense spruce forests of the interior the Gray Owl is a well-known resident."
101. **Nyctala tengmalmi richardsoni** (Bonap.). Richardson's Owl.
Recorded only by Nelson as "reaching the shores of Kotzebue Sound at rare and irregular intervals."
102. **Nyctea nyctea** (Linn.). Snowy Owl.
Common, chiefly coastwise (Nelson, McLenegan, Grinnell).
103. **Surnia ulula caparochi** (Mull.). American Hawk Owl.
Rarely in spring and fall on coast of Kotzebue Sound (Nelson). Hotham Inlet (McLenegan). Kowak River, common (Grinnell).

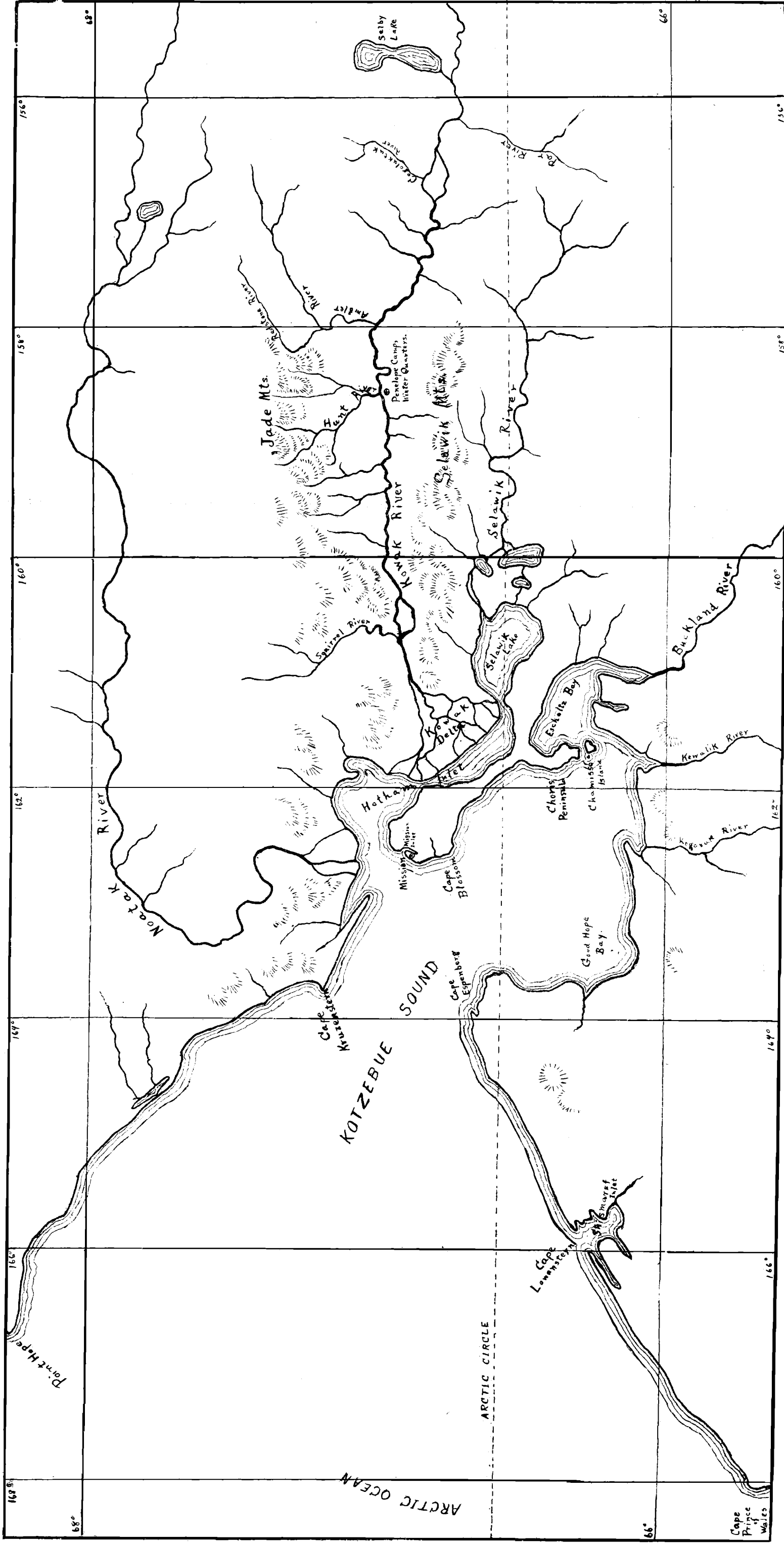
104. **Ceryle alcyon** (Linn.). Belted Kingfisher.
Kowak River (Townsend, McLenegan Grinnell); moderately common. Noatak River, rare (McLenegan).
105. **Dryobates pubescens nelsoni** Oberholser. Nelson's Downy Woodpecker.
Found at times in alders about Kotzebue Sound (Nelson). Kowak River, 300 miles above mouth; very rare (McLenegan).
106. **Picoides americanus alascensis** (Nels.). Alaskan Three-toed Woodpecker.
Kowak Valley, moderately common (Grinnell).
107. **Colaptes auratus luteus** Bangs. Northern Flicker.
Reported by natives as not rare on Kotzebue Sound (Nelson). One seen on upper Kowak (McLenegan).
108. **Pica pica hudsonica** (Sab.). American Magpie.
Only recorded by McLenegan, who secured a specimen on "Hotham Inlet or Kowak River."
109. **Perisoreus canadensis fumifrons** Ridgw. Alaskan Jay.
Strays to shores of Kotzebue Sound (Nelson). Noatak River (McLenegan). Kowak Valley (Townsend, McLenegan, Grinnell); common.
110. **Corvus corax principalis** Ridgw. Northern Raven.
Common throughout the Kotzebue region (Harting, Bean, Townsend, McLenegan, Grinnell).
111. **Nucifraga columbiana** (Wils.). Clarke's Nutcracker.
Putnam (=Kowak) River (Ridgway). This record is based on a specimen taken by Lieut. Stoney. I am informed that it is in the National Museum, but there is no date on the label.
112. **Scolecophagus carolinus** (Müll.). Rusty Blackbird.
Kowak Valley from Hotham Inlet eastward (Nelson, Townsend, McLenegan, Grinnell). Noatak River (McLenegan).
113. **Pinicola enucleator alascensis** Ridgw. Alaskan Pine Grosbeak.
Kowak Valley; very common (Grinnell).
114. **Loxia leucoptera** Gmel. White-winged Crossbill.
Rare straggler on coast of Kotzebue Sound (Nelson). Kowak Valley, common (Grinnell).
115. **Acanthis hornemannii exilipes** (Coues). Hoary Redpoll.
Abundant throughout the Kotzebue region (Bean, Nelson, McLenegan, Grinnell).
116. **Acanthis linaria** (Linn.). Redpoll.
Common, chiefly coastwise (Bean, Nelson, McLenegan, Grinnell).
117. **Acanthis linaria holbœllii** (Brehm). Holbœll's Redpoll.
Upper Kowak, two specimens, July 15 (Townsend). Kowak Valley, one specimen (Grinnell).

118. **Passerina nivalis** (Linn.). Snowflake.
Choris Peninsula (Harting). Cape Lowenstern (Grinnell). Kowak River, not common (McLenegan, Grinnell).
119. **Calcarius lapponicus alascensis** Ridgw. Alaskan Longspur.
Abundant throughout the Kotzebue region (Harting, Nelson, Townsend, McLenegan, Grinnell).
120. **Ammodramus sandwichensis alaudinus** (Bonap.). Western Savanna Sparrow.
Coast of Kotzebue Sound, common (Bean, Nelson, Grinnell). Noatak River (McLenegan). Kowak River (Townsend, Grinnell).
121. **Zonotrichia leucophrys gambelii** (Nutt.). Gambel's Sparrow.
Common throughout the Kotzebue region (Nelson, Townsend, McLenegan, Grinnell).
122. **Zonotrichia coronata** (Pall.). Golden-crowned Sparrow.
Shores of Kotzebue Sound, not common (Nelson, McLenegan). Noatak River (McLenegan). Kowak River, not common (Grinnell).
123. **Spizella monticola ochracea** Brewst. Western Tree Sparrow.
Common throughout the Kotzebue region (Nelson, Townsend, McLenegan, Grinnell).
124. **Junco hyemalis** (Linn.). Slate-colored Junco.
Sparingly in vicinity of Kotzebue Sound (Nelson). Kowak Valley, moderately common (Townsend, Grinnell).
125. **Melospiza lincolni** (Aud.). Lincoln's Sparrow.
Only one record, that by Townsend of a specimen taken on the upper Kowak River, July 20, '85.
126. **Passerella iliaca** (Merr.). Fox Sparrow.
Common coastwise and up the Kowak Valley (Nelson, Townsend, McLenegan, Grinnell).
127. **Hirundo erythrogastra** Bodd. Barn Swallow.
Fairly common coastwise and up the Kowak and Noatak Rivers (Nelson, Townsend, McLenegan, Grinnell).
128. **Tachycineta bicolor** (Vieill.). Tree Swallow.
Kowak Valley, moderately common (Townsend, McLenegan, Grinnell).
129. **Clivicola riparia** (Linn.). Bank Swallow.
Kowak River, common (Townsend, Grinnell). Noatak River (McLenegan).
130. **Ampelis garrulus** Linn. Bohemian Waxwing.
Upper Kowak River, not common (Grinnell).
131. **Lanius borealis invictus** Grinn. Northwestern Shrike.
Shores of Kotzebue Sound (Nelson). Lower Noatak, common (McLenegan). Kowak Valley, fairly common (McLenegan, Grinnell). Kotzebue Sound, one specimen, August 26 (Townsend).

132. **Helminthophila celata** (Say). Orange-crowned Warbler.
Kowak River, quite common (McLenegan); but once seen (Grinnell). Kotzebue Sound, autumn migrant (Nelson).
133. **Dendroica aestiva** (Gmel.). Yellow Warbler.
Shores of Kotzebue Sound (Nelson). Kowak River and delta, common (Townsend, McLenegan, Grinnell).
134. **Dendroica coronata hooveri** McGregor. Hoover's Warbler.
Kowak Valley, common (Townsend, McLenegan, Grinnell).
135. **Dendroica striata** (Forst.). Black-poll Warbler.
Shores of Kotzebue Sound as spring and fall migrant (Nelson). Kowak Valley and delta, common (Townsend, McLenegan, Grinnell).
136. **Seiurus noveboracensis notabilis** (Ridgw.). Grinnell's Water-Thrush.
Kotzebue Sound (Nelson). Kowak Valley and delta, common (Townsend, Grinnell).
137. **Wilsonia pusilla** (Wils.). Wilson's Warbler.
Breeding about Kotzebue Sound (Nelson). Kowak Valley and delta, common (Townsend, McLenegan, Grinnell).
138. **Budytes flavus leucostriatus** (Hom.). Siberian Yellow Wagtail.
Kotzebue Sound, rare, two or three seen (Nelson). Choris Peninsula (Harting.) Kowak delta and coastwise, very common (Grinnell).
139. **Anthus pensilvanicus** (Lath.). American Pipit.
Middle Kowak, drier hilltops; three specimens, August 1-18 (Townsend). Kowak Valley, not common (Grinnell).
140. **Cinclus mexicanus** Swains. American Dipper.
Streams flowing into the head of Kotzebue Sound (Nelson). Upper Kowak in winter (Grinnell). Not common.
141. **Parus atricapillus septentrionalis** (Harris). Long-tailed Chickadee.
Shores of Kotzebue Sound, spring and fall (Nelson). Kowak River, noted once (Grinnell).
142. **Parus cinctus alascensis** (Prazak). Alaskan Chickadee.
Kowak Valley, common (McLenegan, Grinnell).
143. **Parus hudsonicus evura** Coues. Coues' Chickadee.
Occasional on seacoast of Kotzebue Sound (Nelson). Kowak Valley, common (McLenegan, Grinnell). One specimen (Townsend).
144. **Phylloscopus borealis** (Blas.). Kennicott's Willow Warbler.
One specimen, middle Kowak, August 1 (Townsend). Kowak Valley and delta, fall and spring (Grinnell).
145. **Regulus calendula** (Linn.). Ruby-crowned Kinglet.
Kowak Valley and delta, not common (Grinnell).
146. **Hylocichla aliciae** (Baird). Gray-cheeked Thrush.
Common throughout the Kotzebue region (Nelson, Townsend, McLenegan, Grinnell).

147. **Merula migratoria** (Linn.). American Robin.
Coast of Kotzebue Sound, straggler (Nelson). Lower Noatak (McLenegan).
Kowak Valley, common (Townsend, McLenegan, Grinnell).
148. **Hesperocichla nævia** (Gmel.). Varied Thrush.
Interior of Kotzebue Sound region (Nelson). Kowak Valley, common (Townsend, McLenegan, Grinnell).
149. **Cyanecula suecica** (Linn.). Red-spotted Bluethroat.
Cape Blossom, two individuals noted and one secured (Grinnell).
150. **Saxicola œnanthe** (Linn.). Wheatear.
Two specimens taken on Chamisso Island, August 31, '80; others reported seen (Bean).


Chas. A. Nace Printer Santa Clara.




MAP OF KOTZEBUE SOUND REGION

DRAWN TO SHOW LOCALITIES REFERRED TO IN THE FIELD NOTES

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Special Papers

PACIFIC COAST AVIFAUNA NO. I

Birds of the Kotzebue Sound
Region, Alaska, by *Joseph Grinnell*, \$.75