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9 Birds

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

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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.

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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°+ to 30°+, 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 holboëllii (Reinh.).

HOLBØELL'S GREBE.

I found Holboëll'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 Holboëll'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 2.45x1.77; the largest, 2.78x1.87. The average of twenty eggs is 2.65x1.81. 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 2.90x1.91. 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.

Cyclorrhynchus 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'īk.

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 2.87x1.87, the largest, 3.40x2.12; a usual size being about 3.25x2.00. The food of all the *Alcidæ* 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 2.05x1.45, 2.00x1.45. 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 2.16x1.56, 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 Īsh-ōōng-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 feces, 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 sabini (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-zhōg'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 Īni-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-loō'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 numerously. 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 Doō-nār'ūk, doō'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'tīl-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-lē'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 Mik-ĭ-loōr'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 3.42×2.33 , 3.31×2.32 . 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 3.56×2.11 , 3.35×2.00 . 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, Vandye 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 *Mjiarchus*. The native name of the crane is Tã-tir'ë-äk.

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 $1.25 \times .85$, the extremes being $1.33 \times .89$, $1.17 \times .85$.

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 $1.16 \times .82$, the extremes being $1.22 \times .85$ and $1.13 \times .80$. 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 Ki-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 Blossom.

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.

Ereunetes pusillus (Linn.).

SEMPALMATED SANDPIPER.

This was the prevailing form of *Ereunetes* 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-toō'ük. 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 Blossom	————	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 manœuvre, 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 Toō-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

Ægialitis semipalmata Bonap.

SEMPALMATED 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, ä-gär'ï-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 gray 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'ÿ-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'ï-ük* in common with the Willow Ptarmigan, but the former is also known by a distinctive name, *Nik-säk-tōng'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'roök. 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-loō'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 Tōō-loō'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 Kōwak 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. c. 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, .84x60. The ground-color is an extremely pale tint of blue. One egg has scattering ill-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 pipped 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 Si-zhōok-ä-pīng'ä-rūk.

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 *holballii* 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 holballii (Brehm).

HOLBELL'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-ūk.

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, .84x60, .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, Pōō-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-tī'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 Tōō-lōō-ān-ā-sūr'ūk.

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-lēl'ōok-sin. 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-tĭ'ōok. 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, Pě-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, "nišh-ī-kā'kā". 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 shiveled 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-zōog'ä-rük.

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'úk-loō-loök'.

Hesperocichla nævia (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.

Cyanocula succica (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 *Cyanocula succica* 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 McLennan 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.

Fratrercula (= *Lunda*) *cirrhatta* and *Fratrercula 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. coesi*), *Larus occidentalis* (= *Larus schistisagus?*), *Charadrius longipes* (= *C. domesticus*).

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 wnanthe*, *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 nœvia*, *Cinclus mexicanus*, *Parus atricapillus septentrionalis*, *Dendroica œstiva*, *Dendroica striata*, *Sturus nœvius* (= *Sciurus noveboracensis notabilis*), *Myiodioides 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 holballii*), *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. vegæ*), *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 holballii*, *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 lincolnii* 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. hymnalis*), *Mergus merganser americanus* (= *Mergus 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 and 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 rodgersii*, *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 pygmaeus** (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 caparoch** (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 holbøllii** (Brehm). Holbøll'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).


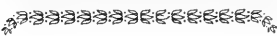
132. **Helminthophila celata** (Say). Orange-crowned Warbler.
Kowak River, quite common (McLenegan); but once seen (Grinnell). Kotzebue Sound, autumn migrant (Nelson).
133. **Dendroica aestiva** (Gmel.). Yellow Warbler.
Shores of Kotzebue Sound (Nelson). Kowak River and delta, common (Townsend, McLenegan, 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. **Phyllopseustes 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-checked 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).

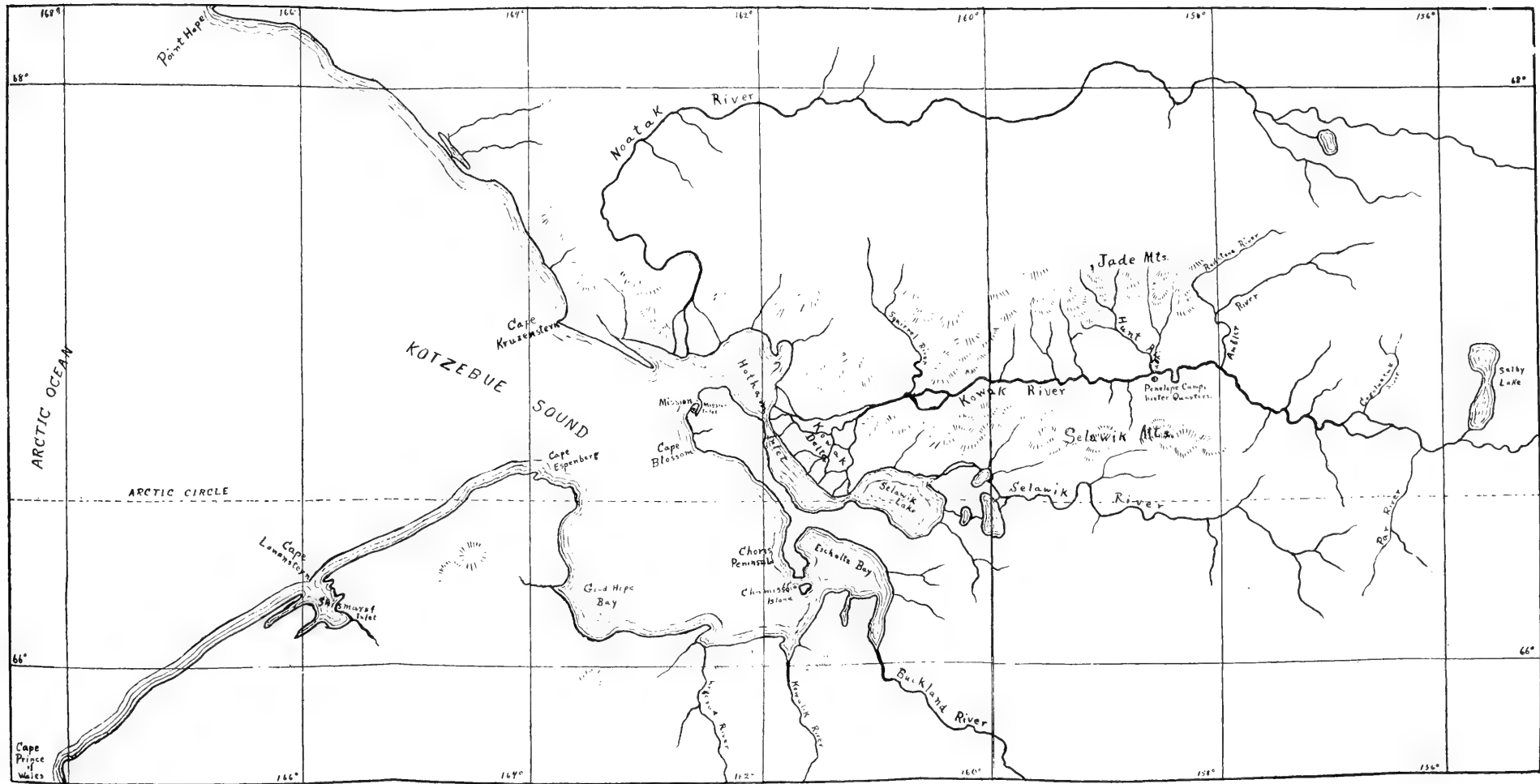
148. **Hesperocichla nævia** (Gmel.). Varied Thrush.
Interior of Kotzebue Sound region (Nelson). Kowak Valley, common (Townsend, McLenegan, Grinnell).

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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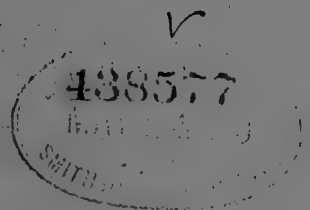
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— BY —

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PACIFIC COAST AVIFAUNA No. 2 is the second 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.

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A LIST OF THE LAND BIRDS OF SANTA CRUZ COUNTY, CALIFORNIA.

BY RICHARD C. MCGREGOR.

INTRODUCTION.

SOME time ago Mr. W. Otto Emerson prepared for publication a paper under the title of *Some of the Birds of Santa Cruz County, California*, including therein observations made during his several collecting trips through the Santa Cruz Mountains. These trips were in September, 1883, October and November, 1884, and May, 1889. In the introduction he says: "I have gone over this route three different seasons, making not longer than a three weeks outing at one trip. I found that the bird life did not vary greatly from the canyons of the upper Los Gatos, Soquel, Boulder and Bear Creeks to the higher ground of the summit which lies 2100 feet above the sea level. One great cause of abundance of bird life in this range of country is the great variety of timber and brush which furnishes an abundance of food for insectivorous birds as well as for those that feed upon fruits and seeds, and which gives them at the same time shelter during storms and in the nesting season. The timber is composed of live, black, white, and tan-bark oaks, redwood, narrow-cone pine, creek alder, maple, sycamore, laurel, madrone and willow, with an undergrowth of what is known as the wild coffee bush, buckeye and azalea. Chemise, sage, manzanita, and mountain mahogany are found only around the top of Loma Prieta. In the deep, dark canyons not so much bird life was found as I expected nor as was noted in the more open and higher places. As it was the migration season I looked for many stragglers moving southward in September and early November. Of the 118 species here given, 97 were found breeding, leaving only 21 as visitants from other localities and a number of these no doubt would have been found nesting later on."

In 1898 Mr. Henry B. Kaeding spent a month in the Santa Cruz Mountains and presented before the Cooper Ornithological Club a paper on *Some Summer Birds of Santa Cruz County*. Concerning his list Mr. Kaeding says: "The following notes were taken during one month's stay—from May 1 to June 1—upon the top of Ben Lomond Mountain, Santa Cruz County, at an altitude of 2300 feet, and eight miles west of Boulder Creek. No species are recorded except such as came actually under my observation and were positively identified. While undoubtedly many species inhabit this region besides those noted here, the following are all that can be vouched for by the writer. The list comprises sixty-six genera, em-

bracing eighty species and subspecies. No attempt has been made to record other than land birds."

It has been suggested that, for publication, these two lists be combined and this is the part which I have undertaken. In most cases I have quoted in full from the above lists, crediting the author in each instance with his respective notes.

In March, 1898, Mr. T. J. Hoover and I spent two weeks just north of Santa Cruz and in July of the same year Mr. Hoover collected near the same locality. Notes made on these trips are here incorporated.

The original plan was to use only these manuscript notes but I think it desirable to include such published notes as are at hand and I trust the result is a fairly complete list of the land birds of Santa Cruz County. The present list is of local interest only, but it is hoped that it may be of assistance to those engaged in faunal work and form a foundation for a future and more complete exposition of the Santa Cruz avifauna.

Of the published lists, one by Skirm,¹ enumerating eighty-four land and thirteen water birds and one by McGregor and Fiske,² have been used extensively in the present paper. Belding's Land Birds³ has supplied notes on numerous species of the region and a paper by J. G. Cooper⁴ has furnished dates of migration and of nesting.

Any notes in the text of the present paper which are credited to McGregor and Fiske or to either of them are from their published list. While the identifications of the species in that list are reliable, we wish to disclaim all responsibility for the numerous typographical errors, as it was printed without any proof reaching our hands.

Our list included notes made by me at Santa Cruz during the summer and fall of 1888 and the summers of 1889 and 1891, as well as notes collected by Fiske during a continued residence in the county of five years.

The scientific nomenclature of the present paper is that recommended by the American Ornithologists' Union with such additional names as have been published since the date of the last supplement to the A. O. U. checklist. The trivial names are in most instances from the same checklist.

I am greatly indebted to Mr. Joseph Grinnell for assistance on the scientific names of this list, and to Mr. Walter K. Fisher for the following description of the Santa Cruz region.

¹ List of Birds of Santa Cruz Co., Cal. by Joseph Skirm, *Ornithologist and Oologist*, IX; 1884, pp. 149, 150.

² Annotated List of the Land and Water Birds of Santa Cruz County, California by R. C. McGregor and E. H. Fiske. Originally published in the History of Santa Cruz County and reprinted in the Natural History of Santa Cruz County. Pacific Press Publishing Company, Oakland, Cal. (No date, about 1892.)

³ Land Birds of the Pacific District by Lyman Belding. *Occas. Papers Cal. Acad. Sci.* II; 1890.

⁴ On the Migrations and Nesting Habits of West Coast Birds by J. G. Cooper, *M. D. Proc. U. S. Nat. Mus.*, Jan. 20, 1880, pp. 241-251.

FAUNAL POSITION OF SANTA CRUZ COUNTY.

The greater part of Santa Cruz County lies within the Pacific Coast Transition Faunal Area.¹ This is a humid division of the Transition zone, as defined by Dr. C. Hart Merriam. The belt extends from the Santa Barbara Mountains north as a narrow strip next to the coast to the vicinity of Cape Mendocino, where it merges into the boreal Northwest Coast District. This Humid Transition² belt continues north into the western parts of Oregon and Washington between the coast mountains and the Cascade Range. In California the Humid Transition merges into the Arid Transition on the east and occasionally into the Upper Sonoran.

The Pacific Coast Transition Faunal Area is a region of heavy rainfall and of frequent fogs. In California the latter are especially prevalent during the summer when there is little rain. As a result vegetation is luxuriant beyond any measure to be found elsewhere in California, excepting, of course, the northwest coast.

With this humidity is correlated a peculiarly equable climate. Throughout the summer the mean temperature is low for the latitude, so that boreal species³ of animals and plants are enabled to push southward in low altitudes. On the other hand the season of reproduction is much prolonged on account of this singularly uniform climate. This brings the sum total of summer heat rather high for the region, and many Austral or Warm Temperate types are thus enabled to flourish.⁴

In the Santa Cruz mountains all these conditions exist. The region is characterized by a rather heavy rainfall, particularly that area known as the Big Basin. The climate is temperate, yet frosts occur in the mountain canyons as late as the last of May. But on the other hand the total amount of summer heat is high and thus it is that many forms found in the Sonoran valley to the east and south are likewise familiar residents of the Santa Cruz Mountains.⁴

The Humid Transition portion of the Santa Cruz Mountains merges into the Upper Sonoran on the outlying hills and valleys to the east and southeast. This border land is usually one of great confusion in zone boundaries, for plants characteristic of either zone will frequently be found growing together in perfect amity. As a rule on these outlying ridges, the upper and hotter slopes contain a totality of forms characteristic of the Upper Sonoran zone, while the Transition is confined to the deep canyons. Many mountains are covered with extensive areas of chamiso (*Adenostoma fasciculatum*) which seem often to follow certain rock formations.⁵ Thus it is we find the Upper Sonoran zone ranging up high on these peaks, for the chamiso, which is characteristic of this zone is able to crowd out everything but chaparral plants and shrubs, and a large quantity of heat is let in. The region affords an excellent opportunity to

1 See Life Zones and Crop Zones of the United States by C. Hart Merriam. Bul. 10, U. S. Dep't Agri. Div. Biol. Surv. 1898, p. 27.

2 This name will be used as a more convenient term for the Pacific Coast Transition Faunal Area.

3 Among the birds may be noted *Anorthura hiemalis pacifica*, *Cyanocitta stelleri carbonacea*.

4 Such birds as *Aphelocoma californica*, *Pipilo fuscus crissalis*, *Carpodacus purpureus californicus*, *Vireo gilvus swainsoni* are examples.

5 For instance those containing much lime seem to be preferred.

study the effects of slope exposure, of prevalent fog currents, of soil, and of relative dryness and humidity, for these are all to be observed within a comparatively small area. It would be beyond the purpose of this outline to enter into these problems.

As stated above, the Humid Transition is a region of luxuriant vegetation though the number of species of plants is not large. Within the Santa Cruz Mountains there is one of the finest small bodies of redwood (*Sequoia sempervirens*) now extant. This forest is in the Big Basin, a region drained by numerous creeks. From this center the forest, elsewhere more or less broken, extends through many canyons and frequently up some distance on the ridges, where sooner or later it is replaced by the Douglas spruce (*Pseudotsuga mucronata*).

The redwoods are thus typically found in the canyons. In this dark still forest bird life is scarce. The boreal nature of these tracts is exhibited by the presence of such plants as *Achlys triphylla*, *Alnus oregana*, *Azalea occidentalis*, *Corylus rostrata californica*, *Gaultheria shallon*, *Myrica californica*, *Oxalis oregana*, *Rhododendron californicum*, *Rubus parviflorus*, *Vaccinium parvifolium*, *Vaccinium ovatum*, and *Whipplea modesta*. The tan-bark oak (*Quercus densiflora*) is also found in this forest, but thrives better upon the drier ridges with the Douglas spruce. Those forms characteristic of the drier ridges, yet undoubtedly Transition, are the Douglas spruce, tan-bark oak, madrone (*Arbutus menziesi*), narrow-cone pine (*Pinus attenuata*), manzanitas (*Arctostaphylos nummularia*, *A. andersoni* et alia), mountain lilac (*Ceanothus thyrsiflorus*), mountain mahogany (*Cercocarpus betulafolius*), and on debatable land *Quercus wislizeni* and *Castanopsis chrysophylla*. Mention should also be made of the Gowen cypress (*Cupressus goveniana*) which is found on Ben Lomond and in other localities.

Among those forms characteristic of the Upper Sonoran zone may be mentioned the buckeye (*Aesculus californica*), pigeon-berry or wild coffee (*Rhamnus californica*), chamiso (*Adenostoma fasciculatum*), sage (*Artemisia californica*), and blue oak (*Quercus douglasi*).

The Santa Cruz Mountain region appears to be the home of a number of characteristic birds which, however, range to the southward, and perhaps somewhat the northward. These are *Junco hyemalis pinosus*, *Chamaea fasciata intermedia*, *Parus rufescens barlowi*. Typical *Thryomanes bewickii spilurus* is found here and in the valleys around, and such birds as *Cyanocitta stelleri carbonacea*, *Zonotrichia leucophrys nuttalli*, *Anorthura hiemalis pacifica*, *Sitta pygmaea* and *Dryobates villosus harrisi*, though of wider distribution give a distinct tone to the region.

WALTER K. FISHER.

LAND BIRDS OF SANTA CRUZ COUNTY.

1. *Oreortyx pictus* (Dougl.). Mountain Partridge.

Fiske.—Rare, occasionally seen in the Santa Cruz mountains. Must breed, as I saw a very young bird in the market here in July, 1888. Emerson.—I am told that in the Ben Lomond region this species is found. *Oreortyx* was not observed by Kaeding nor have I seen it in the county. It is safe to say that if found here it will prove to be a local race, quite distinct from either *pictus* or *plumiferus*.

2. *Lophortyx californicus* (Shaw). California Partridge.

Emerson found it common all over the range. Kaeding considers it common and took fresh eggs May 15, but saw no young birds. Specimens examined by him were rather light colored, but by no means intermediate. McGregor and Fiske found quail common on the coast in suitable localities. Bailey found it common at Boulder Breek in October.

3. *Columba fasciata* Say. Band-tailed Pigeon.

Emerson.—Found large numbers congregated in September in the tall sycamores in Soquel canyon. I am told they go to the source of Soquel creek, where they make their nests on the ground in large colonies. Kaeding.—Two or three stragglers seen and may possibly breed in the redwoods. Flocks are reported to be abundant in fall, feeding on madrone berries. Recorded by Fiske as being common in the winter and rare in summer. Coues² quotes Cooper on this species as follows: "I have found them breeding in the Coast Range as far south as Santa Cruz, though I did not succeed in finding any nests. I was told that they built in companies, on low bushes in unfrequented parts of the mountains, but Townsend found their eggs on the ground near the banks of streams in Oregon, numbers congregating together. I have myself found eggs, which I supposed to be of this bird, in a similar situation."

4. *Zenaidura macroura* (Linn.). Mourning Dove.

Emerson found the dove common in all openings, while Kaeding records a few breeding pairs. McGregor and Fiske found it an abundant summer resident along the coast, arriving about April 1. Skirm³ gives it as first seen April 10, 1882, and April 6, 1883.

5. *Gymnogyps californianus* (Shaw). California Condor.

Fiske.—The condor was common a few years ago, when it could be seen feeding with the Turkey Vulture. The last I saw were two in September, 1885. A few still breed in the wild mountains north of Santa Cruz. Breninger records the condor as breeding in the county, having its nest in a huge redwood tree.⁵ Emerson, on the verbal authority of Cooper, records them as common in 1866. Skirm.—Tolerably common. I have seen them in a flock in company with *Cathartes aura*. It journeys along the coast.⁶

1. *N. A. Fauna*, No. 7, 1893, page 27.

2. *Birds of N. W.*, p. 386; also Cooper, Proc. Nat. Mus., 1880, p. 251.

3. Belding, *Ld. Bds.*, Pac. Dist., p. 22.

4. Richmond, *Condor III*, 1901, p. 49.

5. *Vid.*, II, 1895, p. 77.

6. Belding, *op. cit.*, p. 24.

6. *Cathartes aura* (Linn.). Turkey Buzzard.

Emerson.—Could be seen sailing high over the ranges every day. Kaeding.—Common, skimming the hilltops in bunches of three or four. An immature, fully fledged male was shot on June 1. McGregor and Fiske.—A common resident, breeding at Santa Cruz.

7. *Elanus leucurus* (Vieill.). White-tailed Kite.

Emerson noted one along the shore between Soquel and Santa Cruz. Fiske considers it rare at Santa Cruz, where he knows of but one set of eggs being taken.

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

Emerson.—Common along open fields and along the bay shores between Soquel and Santa Cruz. Two were seen in gray plumage. McGregor and Fiske.—We have taken the Marsh Hawk near Santa Cruz.

9. *Accipiter velox* (Wils.). Sharp-shinned Hawk.

Emerson.—Found all through the oak range. A silent forager on small birds at all times, sailing between the trees like an evil spirit. In September, 1885, Fiske took a specimen which he referred to this species.

10. *Accipiter cooperi* (Bonap.). Cooper Hawk.

Kaeding saw an adult female on May 10 and Emerson records a single bird.

11. *Buteo borealis calurus* (Cass.). Western Redtail.

McGregor and Fiske found it to be a common resident near Santa Cruz, while Emerson found it common all through the country. Kaeding gives it as breeding but not common.

12. *Buteo lineatus elegans* (Cass.). Red-bellied Hawk.

Emerson gives it as having been found breeding by Ingersoll.

13. *Buteo swainsoni* Bonap. Swainson Hawk.

McGregor and Fiske.—Occasionally seen at Santa Cruz.

14. *Aquila chrysaetos* (Linn.). Golden Eagle.

Skirm¹ records the eagle as a "quite common resident" and Fiske has taken its eggs. Emerson.—At the summit of one range looking down the slope, a tall redwood stood out alone, some 200 feet high. The wind-broken top was the eyrie of this "king of the air," who could be seen floating in circles far down the canyon. Kaeding.—A pair of eagles undoubtedly breeding among lofty cliffs, were said to have been resident there for over ten years.

15. *Haliaeetus leucocephalus* (Linn.). Bald Eagle.

Fiske saw two in March, 1885.

16. *Falco mexicanus* Schleg. Prairie Falcon.

Recorded by Fiske as breeding each year on a cliff eight miles north of town.

1. Belding, *op. cit.*, p. 39.

17. **Falco peregrinus anatum** (*Bonap.*). Duck Hawk.
Emerson.—A rare falcon. One was seen along the high ranges of Loma Prieta.
18. **Falco columbarius** *Linn.* Pigeon Hawk.
Emerson.—Cooper, in his notes, mentions seeing this species.
19. **Falco sparverius** *Linn.* Sparrow Hawk.
Emerson.—Noted quite commonly all through the mountains. Kaeding.—Common, breeding in the white-oak groves.
20. **Pandion haliaetus carolinensis** (*Gmel.*). American Osprey.
Emerson.—Noticed on one occasion below Santa Cruz beach. Skirm.¹
—A pair have nested here several summers.
21. **Strix pratincola** (*Bonap.*). American Barn Owl.
Fiske² found fresh eggs in a hole on the face of a cliff July 5, 1884. McGregor and Fiske.—The Barn Owl is abundant around Santa Cruz. It nests in hollow trees, old houses and barns, and holes in cliffs. A second set will be deposited if the first is taken. Emerson.—Heard all through the forests at night. Kaeding.—Fairly common, breeding.
22. **Asio wilsonianus** (*Less.*). Long-eared Owl.
Emerson.—One was flushed out of an old gray squirrel's nest in a black oak. Kaeding.—Fairly common, breeding.
23. **Asio accipitrinus** (*Pall.*). Short-eared Owl.
I shot one in March, 1898, from a flock of four or five in a field near Hall's Beach.
24. **Nyctala acadica** (*Gmel.*). Saw-whet Owl.
Emerson.—Cooper tells me that he took this species at Santa Cruz some years ago.
25. **Megascops asio bendirei** (*Brewst.*). California Screech Owl.
This and the following owls breed at Santa Cruz or very near there. Emerson.—Common all through the forests. Kaeding.—Fairly common, breeding.
26. **Bubo virginianus pacificus** *Cassin.* Pacific Horned Owl.
Emerson.—Could be heard at early dusk saluting one another as they came out of their hiding places, *Too-hoo, too-hoo* sounding loud and solemn among the tall redwoods. Kaeding.—A very common breeder. Every night their calls could be heard and often at twilight as many as five or six individuals congregated in a grove to swell the concert. Pending further investigation and the collection of more material, I feel safe in saying that the coast region, from Sonoma county south to San Benito County, is inhabited by forms intermediate between *saturatus* and *pacificus*. The birds from Sonoma county show a decided leaning toward the dark race, with slight increase in size, while those from the southern limit lean toward the other extreme. I hope to have at my disposal before long material enough to map definitely the distribution of these races in California. McGregor and Fiske.—Common resident in the redwoods where it breeds.

1. Belding, *op. cit.*, p. 40.

2. *Young Oologist*, III, 1885, p. 30.

27. *Speotyto cunicularia hypogæa* (Bonap.). Burrowing Owl.
McGregor and Fiske.—Fresh eggs can be found at Santa Cruz about April 15. It usually nests in deserted squirrel holes, about four feet deep. Kaeding.—Fairly common. breeding.
28. *Glauclidium gnoma californicum* (Scl.). California Pygmy Owl.
Two heavily incubated eggs and the female parent were taken by George H. Ready on June 8, 1876. The eggs were in a deserted woodpecker's hole in a dead poplar two miles from Santa Cruz on the San Lorenzo River.¹ Fiske shot a female at Soquel, September 1, 1882.² In May, 1881, Skirm found a nest with three eggs.³
29. *Geococcyx californianus* (Less.). Roadrunner.
Emerson.—Observed only once along an old unused mountain road. Kaeding.—Two seen May 5. McGregor and Fiske.—Rare at Santa Cruz, where we observed them in July and September.
30. *Ceryle alcyon* (Linn.). Belted Kingfisher.
Emerson.—I found this fisherman along the streams at all times. Kaeding.—Common along every stream. McGregor and Fiske.—Found breeding along streams in the mountains and taken at tide-water on the San Lorenzo.
31. *Dryobates villosus harrisi* (Aud.). Harris Woodpecker.
Emerson.—A male, the only one seen, was shot. Kaeding.—Not common. Eggs taken May 28 were about one-third incubated. McGregor.—I took one at Santa Cruz August 17, 1891.
32. *Dryobates pubescens gairdneri* (Aud.). Gairdner Woodpecker.
Collected at Santa Cruz by Fiske and McGregor. Emerson.—Found commonly all through the forests. Kaeding.—Common and undoubtedly breeding.
33. *Dryobates nuttalli* (Gamb.). Nuttall Woodpecker.
Emerson.—Seen more particularly among the oak timber. Kaeding.—Common and undoubtedly breeding.
34. *Sphyrapicus varius ruber* (Gmel.).⁴ Red-breasted Sapsucker.
Emerson.—This species seemed to be more common about the old apple orchards, where three or four were sure to be seen among the trees.
35. *Sphyrapicus thyroideus* (Cass.). Williamson Sapsucker.
This species and *S. ruber* have been taken near Santa Cruz by Vrooman and are considered by him to be migrants.
36. *Melanerpes formicivorus bairdi* Ridgw. Californian Woodpecker.
Emerson.—Was only seen in the openings among the dead trees. At one place where I camped at the summit of the mountains for ten days, was a slight hollow where there was a small stream. There were here several tall, burnt trees on which a pair of these woodpeckers had their store-house for acorns. Every morning a regular tag game came off be-

1. Cooper, Bull. Nutt. Ornith. Club, IV, 1879, p. 86.

2. Nat. Hist. S. C. Co., p. 56.

3. Belding, *op. cit.*, p. 55.

4. Grinnell, Condor, III, 1901, p. 12.

tween the woodpeckers and a pair or two of California and Blue-fronted Jays. The woodpeckers would go away for acorns; then in would slip a bluejay to steal an acorn, one being left on guard. The guard would screech when he saw the woodpecker coming and off the jays would fly until another chance came for them to slip in. Sometimes a jay was caught in the act and in the fight which followed it would lose a great many feathers. Kaeding found it common and undoubtedly breeding. Fiske records taking *Melanerpes carolinus* at Santa Cruz, but I consider the record very doubtful.

37. *Colaptes auratus* (Linn.). Flicker.
One taken in April, 1885, by Fiske.

38. *Colaptes cafer collaris* (Vig.). Red-shafted Flicker.
Emerson.—Common all over the ranges. Several of the yellow form were seen. Kaeding.—Very abundant. Fresh eggs were taken June 1. Skirm.—Common; after breeding it frequents orchards and feeds on fruit. A clutch of eggs is five or six, rarely seven.¹

39. *Phalænoptilus nuttalli californicus* Ridgw. Dusky Poor-will.
Emerson.—The lonely note of this sprite was heard in the openings in the spring months. Kaeding.—Not common, only one noted. Skirm.—Very rare in this vicinity. I have seen but five individuals since I came here. Ingersoll found the eggs in 1883; they were on the bare ground; color, pure white.²

40. *Chordeiles* sp? Nighthawk.
Kaeding.—Nighthawks were seen often but none secured. I am not prepared to name the form upon authentic grounds; very probably it will prove to be *C. a. texensis*.

41. *Chætura vauxi* (Towns.). Vaux Swift.
August 30, 1891, I saw a number of swifts flying over the river near town, which I supposed to be of this variety.³ Emerson.—Was noticed in large numbers in September and October, always at dusk, through the Soquel canyon. I believe they breed there. Kaeding.—For the first two weeks in May hardly a day passed without one or two flocks of these swifts being seen. On May 14, for about three hours, the air was full of feeding swifts, passing due north. Ovaries and testes were undeveloped as late as May 18. Cooper.—Arrives May 4; leaves October 5.⁴

42. *Aeronautes melanoleucus* (Baird). White-throated Swift.
Emerson saw this swift with *C. vauxi*, but in less numbers, and Kaeding noted a breeding colony.

43. *Calypte anna* (Less.). Anna Hummer.
This species is abundant about the town of Santa Cruz. Both Emerson and Kaeding record it as common.

1. Belding, *op. cit.*, p. 74.

2. *Ibid.*, p. 75.

3. Nat. Hist. Santa Cruz Co., p. 57.

4. Proc. Nat. Mus., 1880, p. 250.

44. *Selasphorus rufus* (Gmel.). Rufous Hummer.

Emerson.—Seen here and there, more particularly in the openings, where flowers were plentiful. Upon Loma Prieta among the sage and mountain lilac, they were common. Kaeding.—A few were taken June 1.

45. *Selasphorus alleni* Hensh. Allen Hummer.

Emerson.—Found along the river and creek banks. As the males shot by, they seemed to leave a flame of fire from their bright, jewelled throats. Kaeding.—A few taken June 1.

46. *Tyrannus verticalis* Say. Arkansas Kingbird.

Emerson considers this species not common and Kaeding found it not uncommon and breeding. Fiske gives it as not common, arriving about April 1.

47. *Tyrannus vociferans* Swains. Cassin Kingbird.

Fiske gives this bird as rare. Cooper says that they winter in small flocks at Santa Cruz.¹

48. *Myiarchus cinerascens* (Lawr.). Ash-throated Flycatcher.

Emerson found them around old woodpecker holes. Kaeding found them to be one of the commonest breeding birds, inhabiting open glades of oak timber and nesting as usual in the hollows of trees. Fiske gives its date of arrival at Santa Cruz as May 1.

49. *Sayornis saya* (Bonap.). Say Phoebe.

Emerson and Kaeding give this species as occasionally seen, but not common. Skirm gives it as quite common in fall and winter.²

50. *Sayornis nigricans semiatra* (Vigors).³ Black Phoebe.

Emerson.—Seen at every bridge. Kaeding.—Fairly common, breeds. McGregor and Fiske.—We found this an abundant resident.

51. *Nuttallornis*⁴ *borealis* (Swains.). Olive-sided Flycatcher.

Emerson.—I have a set of eggs in my collection taken by Ready on the San Lorenzo River, between Felton and Santa Cruz. Kaeding.—Common; breeds in tall firs and redwoods along the ridges. McGregor and Fiske.—We found this large pewee a rather rare summer resident.

52. *Horizopus richardsoni* (Swains.).⁵ Western Wood Pewee.

Emerson.—Seen all through the mountains. Kaeding.—Scarce; breeding late in May.

53. *Empidonax difficilis* Baird. Western Flycatcher.

Emerson.—Not common at any place through the mountains. Kaeding.—Scarce; breeding late in May. Skirm.—Breeds at Santa Cruz.

54. *Otocoris alpestris chrysolæma* (Wagl.). Mexican Horned Lark.

This lark nests in the vicinity of Santa Cruz. In fall old and young collect in immense flocks, from which I have killed thirty at one shot. Emerson.—Seen on several occasions in open fields or flats along the river.

1. Belding, *op. cit.*, p. 92.

2. Belding, *op. cit.*, p. 95.

3. Nelson, *Auk*, XVII; 1900, p. 125.

4. Oberholser, *Auk*, XVI; 1899, p. 331.

5. Oberholser, *Auk*, XVI, 1899, p. 333.

55. *Pica nuttalli* Aud. Yellow-billed Magpie.

Regarding this species, Dr. C. L. Anderson of Santa Cruz writes me: "Has not been seen in this county, as far as I know, for twenty-five years. I saw a few myself the first year of my residence here about 1870. I cannot say it resides here now." The magpie probably occurs within the county on the San Benito River, below Sargents.

56. *Cyanocitta stelleri carbonacea* Grinnell.¹ Coast Jay.

This form has been recorded usually as *frontalis*, though Kaeding was inclined to refer it to *stelleri* and Fisher gives it as *stelleri* from Monterey.² I have long considered it distinct, but had no good examples of *stelleri* for comparison. Fortunately Grinnell has been able to point out the differences and name the race. Fiske.—The Coast Jay is a resident of the redwoods. A nest with three eggs found May 21, 1890, was very large, built in the fork of a tan-bark oak, fifteen feet from the ground. The exterior of the nest was of twigs and small roots, intermixed with mud; the lining was of root fibres. Kaeding.—Common; breeds. A comparison between the jays of the Coast Range and of the Sierra Nevada show the birds of the coast to be decidedly referable to the form *stelleri*, and not *frontalis* as is commonly supposed. While far from typical of *C. stelleri*, the prevailing characters are of that race and are more pronounced in birds from Marin county than in those from Monterey county. Emerson.—Common all through the forest ranges. Very shy; has a habit of alighting on the lower limbs of the trees, then gradually going to the top from one limb to another.

57. *Aphelocoma californica* (Vig.). California Jay.

Emerson.—Not as common in the forest as the preceding, but like them great robbers of woodpeckers' store of acorns. Kaeding.—Very common; young out of the nest May 10.

58. *Corvus corax sinuatus* (Wagl.). Raven.

Emerson gives the raven as rarely seen and Skirm gives it as rare.³

59. *Corvus americanus* Aud. Crow.

Recorded from the southeastern part of the county by Fiske. Kaeding saw but one. It was seen but once by Emerson, who says, on the authority of Cooper, that it was quite common at Santa Cruz in 1866 in the willows along the river bottoms.

60. *Agelaius gubernator californicus* Nelson. Bicolored Blackbird.

Kaeding found the red-wing not common but breeding. Skirm gives it as a common resident. Cooper says: "According to my observations this species inhabits chiefly the interior of the State, Santa Cruz being the only point on the coast where I have seen them."⁴

61. *Agelaius tricolor* (Aud.). Tricolored Blackbird.

Emerson.—This and the preceding are common about swamp holes

1. *Condor*, II; 1900, p. 127.

2. *N. A. Fauna*, No. 7, p. 68.

3. Belding, *op. cit.*, p. 112.

4. Belding, *op. cit.*, p. 121.

and the mouth of the San Lorenzo River. Skirm.—Common summer resident.¹

62. *Sturnella magna neglecta* (*Aud.*). Western Meadowlark.

Emerson.—Common about the clearings and meadows. Kaeding.—Common in grain fields; breeds.

63. *Icterus bullocki* (*Swains.*). Bullock Oriole.

Seen about the ranches and clearings, where there were scattered live oaks. Kaeding.—Breeds commonly. Fiske.—Abundant summer resident arriving about April 1. Skirm gives the following dates of first arrivals: April 3, 1881; April 17, 1882; April 16, 1883.²

64. *Scolecophagus cyanocephalus* (*Wagl.*). Brewer Blackbird.

Emerson.—Seen only about gardens and ranches. Kaeding.—Breeds commonly. Skirm.—Very common.³

65. *Coccythraustes vespertinus montanus* (*Ridgw.*). Western Evening Grosbeak.

Recorded by McGregor and Fiske as a rare winter visitant, very irregular in appearance. Ingersoll.—November 5, 1885, eight or ten seen, and Ready tells me he saw a large flock on San Lorenzo River, Nov. 1.⁴

66. *Carpodacus purpureus californicus* *Baird.* California Purple Finch.

Emerson.—Is found only along the river banks. Its loud whistling note easily distinguishes it from the house finch. Kaeding.—The purple finch is by far the more abundant of the two *Carpodaci*, breeding commonly, and being very much in evidence with its loud, sweet song. Skirm—Tolerably common summer resident.⁵ Wm. A. Cooper⁶ found this finch breeding in the wooded river bottoms and hills back of the town. Two sets, of four and five eggs respectively, found May 30, 1875, were incubated a few days. May 3, 1876, a nest with four fresh eggs was found.

67. *Carpodacus mexicanus obscurus* (*McCall*).⁷ House Finch.

In March Hoover and I found this bird in great flocks near Santa Cruz. Emerson.—This is a common, cheery fellow heard everywhere. Kaeding.—Very common; breeding.

68. *Loxia curvirostra stricklandi* *Ridgw.* Mexican Crossbill.

Emerson.—This bird is rarely seen and then but three or four together. In skins taken by Mr. Geo. Ready I saw so difference from those taken in the high Sierra.

69. *Astragalinus tristis salicamans* (*Grinnell*). Willow Goldfinch.

Emerson.—Not common at any time. Seen in scattered flocks about the clearings with the following. Kaeding.—Not common.

70. *Astragalinus psaltria* (*Say*). Arkansas Goldfinch.

Emerson.—Noted more about the gardens than other places. Kaeding.—Not common. Skirm.—Common summer resident.⁸

1. Belding *op. cit.* p. 122.

2. *Ibid.* p. 126.

3. *Ibid.* p. 129.

4. *Ibid.* p. 130.

5. *Ibid.* p. 131.

6. Bull. Nutt. Ornith. Club, III; 1878, pp. 8-10.

7. Oberholser, *Auk.*, XVI; 1899, p. 186.

8. Belding, *op. cit.*, p. 137.

71. *Astragalinus lawrencei* (Cass.). Lawrence Goldfinch.

Emerson.—Noticed one near the Big Tree Grove at Felton. Nesting in live oaks May 18, 1889. McGregor and Fiske.—Abundant summer resident about Santa Cruz.

72. *Spinus pinus* (Wils.). Pine Siskin.

A pair of siskins was taken in March by Hoover and I. Kaeding.—Throughout all of May siskins were abundant in small flocks. The ovaries were developed. Emerson.—On reaching the large pine grove at the top of the ridge up from the river bottom of the San Lorenzo near Felton, my companion and I noticed a siskin near the roadside gathering bits of dead, dry grass. Soon it flew, with its mate following, to the end of a long pine limb where there was a nest some forty feet up and ten feet or more from the body of the tree.

73. *Ammodramus sandwichensis alaudinus* (Bonap.). Western Savanna Sparrow.

Kaeding.—A few seen June 1.

74. *Ammodramus sandwichensis bryanti* Ridgw. Bryant Marsh Sparrow.

In March Hoover and I found this bird in flocks with the Western Savanna Sparrow and I have taken numerous specimens in late summer, from the marshes along the San Lorenzo River where it undoubtedly breeds as both young and worn adults were secured. Emerson.—Not uncommon about the fields south of Santa Cruz.

75. *Chondestes grammacus strigatus* (Swains.). Western Lark Sparrow.

Found breeding near Santa Cruz by McGregor and Fiske. Emerson.—Noticed near Felton, around habitations. Kaeding.—Not common; breeds.

76. *Zonotrichia leucophrys nuttalli* Ridgw.¹ Nuttall Sparrow.

This and the golden-crown we found abundant in March. The species breeds about Santa Cruz. Emerson.—Noticed sparingly all through the mountains, but it was more plentiful near the coast about thick bushes. Skirm.—Common; stays the whole year in the low brush along the beach; begins to breed about April 25; eggs from three to four; raises two, possibly three broods in a season.²

77. *Zonotrichia coronata* (Pall.). Golden-crowned Sparrow.

Emerson observed this species once in November, 1884, at Wright Station.

78. *Zonotrichia albicollis* (Gmel.). White-throated Sparrow.

Breninger records taking a male peabody at Santa Cruz on January 1, 1894, and seeing another later.³

79. *Spizella socialis arizonæ* Coues. Western Chipping Sparrow.

Emerson.—Observed only about the gardens and small orchards near the mountain residences. Kaeding.—Fairly common; breeds. Skirm.—Tolerably common summer resident.⁴

1. Ridgway, *Auk XVI*; 1899, p. 36.

2. Belding, *op. cit.*, p. 151.

3. Bull. Cooper Ornith. Club, I; 1899, p. 93.

4. Belding, *op. cit.*, p. 155.

80. **Junco hyemalis pinosus** (*Loomis*). Point Pinos Junco.

I believe the authority for this race should stand in parentheses as above and a line be added to the reference in the check-list:

Junco hyemalis pinosus A. O. U. COMM. 6TH SUP.

Fiske took a nest containing four fresh eggs on May 17, 1891, which was placed on the ground under a vine. The nest was of dry grass, lined with hair and a few feathers. Hoover and I saw several juncos late in March above the Big Creek power house and about the dam. Hoover took the species at Santa Cruz in July. Emerson.—I take this to be the breeding Junco of this range of mountains. I see no difference between these birds and those from the type locality. It is not a common bird at any place in the mountains. Downy and fully feathered young were seen on May 13, 1889, and a nest of three well incubated eggs taken was placed on the ground in a slight hollow at the foot of a bunch of grass. The nesting site was on a steep hillside above an old logging road. The nest was composed of redwood and other leaves, lined with fine dead grass and a few cow hairs and compactly built. Both birds came close about me, the female being very much concerned about her treasures, and coming within two feet of my hand. The eggs are similar to others of this genus in color, being greenish-white, marked all over with reddish-brown, much like eggs of the Field Sparrow. I have shot at Haywards in early July young in nesting plumage, but know of no place nearer than twenty-five miles where they are likely to be found breeding. Kaeding.—Very common. Young birds were flying by May 25 and fresh eggs were found on June 1. All my specimens and some taken by Slevin below Monterey are undoubtedly referable to *pinosus*. Cooper.—Resident in mountains. Nests at foot of Santa Cruz Mountains, May 1; at 3000 feet altitude nested May 30, 1864.¹

81. **Amphispiza belli** (*Cass.*). Bell Sparrow.

Emerson.—Seen once around the summit of Loma Prieta in the thick chemise. No doubt it nests there.

82. **Melospiza melodia samuelis** (*Baird*). Samuels Song Sparrow.

Rather abundant near the coast in the marshy localities where it is resident, I think. Secured by myself and Mr. Hoover. Emerson.—Met with near the coast. The species of this genus will always be difficult to separate, for no defined line can be laid down on account of the peculiar formation of the coast country. Typical *samuelis* is found only on the salt marshes, while inland and higher up it approaches *heermanni*.²

83. **Melospiza melodia rufina** (*Bonap.*). Sooty Song Sparrow.

"Mr. Bailey took a specimen of this subspecies at Boulder Creek, California, on October 13, 1891, and stated that it was common there."³

1. Proc. Nat. Mus., 1880, p. 246.

2. Some of the winter song sparrows found in the Santa Cruz Mountains may best be referred to *heermanni*. My series from the coast, however, show no approach to that race. In reply to my request that he again examine his birds, Emerson says: "I find that the Santa Cruz bird is var. *samuelis*, and believe all from that county may be considered the same until more material is in hand."

3. *N. A. Fauna*, No. 7, p. 100.

84. *Melospiza melodia morphna* Oberh.¹ Rusty Song Sparrow.

Emerson—I saw one in October, 1884 at the summit of the mountains above Los Gatos creek.

85. *Passerella iliaca unalascensis* (Gmel.). Gmelin Sparrow.

Emerson.—I met several of these silent sparrows scratching in the dead leaves among the thick brush. They were very tame, coming around where we ate our meals.

86. *Pipilo maculatus falcifer* McGregor.²

Emerson records *oregonus* as not often seen among the timber, but as common on the edge of brambles. Fiske and I record *megalonyx* as an abundant resident. Skirm.—Clutch usually four eggs; common; their first clutch is laid in the latter part of April on the ground; their second clutch invariably in bushes from six inches to three feet from the ground.³ Cooper—Nested in the Santa Cruz Mountains at 3000 feet altitude on May 28, 1864.⁴

A series of seventy-five spotted Pipilos from nearly the whole length of California shows great variation. Many examples with very short tail spots are taken around San Francisco Bay and are usually referred to *oregonus*. I am inclined to think that a more careful examination will show this identification to be erroneous. The tail spots of four Oregon male birds average .77 of an inch. This is a little less than the average of California coast birds, seven of which from Palo Alto average .85 of an inch. The chestnut in Oregon birds is darker than in our birds and this is especially noticeable on the under tail coverts. The most striking and constant difference, however, is in the claws, those of *oregonus* being short and weak, the chord of hind claw measuring but about .40 of an inch. In Palo Alto birds the same measurement reaches .50 or .55 of an inch, one extreme example being .62. Neither can San Francisco Bay birds be correlated with *megalonyx*, as the white tail blotch of the latter measures about 1.14 inches. Consideration of these facts led me to give the San Francisco Bay form a new name, which will include in all probability the Santa Cruz birds.

87. *Pipilo fuscus crissalis* (Vig.). California Towhee.

From examination of fall brown towhees recently collected at Palo Alto it appears that my Battle Creek birds were in the fresh fall plumage, then unknown to me. Therefore the name *carolæ*⁵ should be relegated to synonymy. Emerson.—Like the former variety it keeps more to the brush and clearings about habitations; always noticed in pairs. Kaeding.—The two towhees are common and both breed. Fresh eggs were taken up to May 22. Cooper.—Nests from March 17 to May 8.⁶

88. *Zamelodia melanocephala capitalis* (Ridgw.).⁷ Black-headed Grosbeak.

Emerson.—Common about all the streams. Seems to prefer the wil-

1. Oberholser, *Auk*, XVI; 1899, p. 183.

2. *Condor*, II; 1900, p. 43.

3. *Ornith. and Ool.*, IX; 1884, p. 149.

4. *Proc. Nat. Mus.*, 1880, p. 248.

5. *Pipilo fuscus carolæ* McGregor. Bull. Cooper Ornith. Club, I; 1899, p. 11.

6. *Proc. Nat. Mus.*, 1880; p. 249.

7. McGregor, *Condor*, III; 1901, p. 41. Grinnell, *Ibid*, p. 44.

lows. Eggs were taken May 11, 1889. In October, 1889, one came to drink at a brooklet at the summit before sun-up. No doubt it was migrating, as during that month many other summer resident birds were noted only in the higher ranges, such as swallows, flycatchers, warblers, vireos, hummingbirds, sparrows, kinglets and Russet-backed Thrush. Kaeding.—Not common; breeds. Cooper.—Arrives April 12.¹

89. *Guiraca cærulea lazula* (*Lesson*). Western Blue Grosbeak.

Emerson.—One was noted along the San Lorenzo river, where I am told it nests. Cooper.—Arrives April 12.²

90. *Cyanospiza amœna* (*Say*). Lazuli Bunting.

Emerson.—Seen all along the clearings on the edge of the brush and brambles—its favorite nesting site. Kaeding.—Not common; breeds. McGregor and Fiske.—Abundant summer resident near Santa Cruz, nesting from June to the middle of August. Cooper.—Arrives April 12; nests May 2; leaves in October.³

91. *Piranga ludoviciana* (*Wils.*). Western Tanager.

Emerson.—One was seen on September 12, 1884, a male, at the summit of the range; two more on May 11, 1889, male and female, same locality. Kaeding.—Seen off and on during May; not common but probably breeds. McGregor and Fiske.—An irregular summer resident.

92. *Progne subis hesperia* *Brewst.* Western Martin.

Kaeding.—Common, breeding in dead oaks. Fiske.—A common summer visitor near Santa Cruz.

93. *Petrochelidon lunifrons* (*Say*). Cliff Swallow.

Fiske and I collected numerous specimens from a colony which plastered their nests on the sea cliff near the light-house. Kaeding found them breeding very abundantly and Emerson says they were common about all barn-yards. Skirm.—Common summer resident. First seen March 28, 1881; March 17, 1882; April 1, 1883.⁴ Cooper.—Arrives April 10; nests April 20 to July 5.⁵

94. *Hirundo erythrogaster* *Bodd.* Barn Swallow.

Both Emerson and Kaeding found this species common and breeding. Skirm gives it as a common summer resident. First arrivals: March 26, 1881; March 14, 1882; March 20, 1883.⁶ Cooper.—Arrives March 21; leaves September 15.⁷

95. *Tachycineta bicolor* (*Vieill.*). Tree Swallow.

Emerson.—Nesting, as well as the violet-green, among the black oaks on May 11, 1889. Skirm.—Common summer resident.⁸

96. *Tachycineta thalassina* (*Swains.*). Violet-green Swallow.

Cooper saw a large flock at Santa Cruz October 5.⁹ Emerson.—Not so common as the former. Kaeding.—Common, moving north in small

1. Proc. Nat. Mus., 1880; p. 248.

2 & 3. Proc. Nat. Mus., 1880; p. 248.

4. Belding, *op. cit.*, p. 185.

6. *Ibid.*, p. 187.

5 & 7. Proc. Nat. Mus., 1880; p. 246.

8. Belding, *op. cit.*, p. 189.

9. *Ibid.*, p. 192.

flocks. Skirm.—Common summer resident, arriving March 28, 1881, and March 21, 1882.¹ Cooper.—Arrives March 19; leaves October 5.²

97. *Stelgidopteryx serripennis* (*Aud.*). Rough-winged Swallow.

McGregor and Fiske.—Recorded by us as a rare summer resident found in company with the Bank Swallow. Ingersoll.—Eggs taken at Santa Cruz.³

98. *Clivicola riparia* (*Linn.*). Bank Swallow.

In 1891 Fiske and I took eggs of this swallow near Seabright. Eggs have also been collected by Ingersoll.⁴ Emerson noticed it along the high banks of Soquel Creek.

99. *Ampelis cedrorum* (*Vieill.*). Cedar Waxwing.

Emerson.—Has been seen around Santa Cruz. I believe that it may breed in the mountains, as young have been taken in Sonoma county. It is common about Haywards every spring, feeding on the pepper berries and in time there is no question but that it will nest near habitation as the country becomes more settled. McGregor and Fiske.—The waxwing is an irregular fall and winter visitant about Santa Cruz. Skirm.—Large flocks sometimes come here, but stay only a short time.⁵

100. *Lanius ludovicianus gambeli* *Ridgw.* California Shrike.

Emerson.—Noticed only about farm places. Kaeding.—Fairly common, breeding. Skirm.—Common.⁶

101. *Vireo gilvus* (*Vieill.*). Warbling Vireo.

Emerson.—One was seen September 12, 1884, at the summit of the mountains. Common along the Soquel and San Lorenzo streams. Kaeding.—Quite common, breeding. Skirm.—Common summer resident.⁷

102. *Vireo solitarius cassini* (*Xantus*). Cassin Vireo.

Emerson.—One was seen September 12, 1884, at the summit of the mountains along the willows in the early morning. McGregor and Fiske.—Not uncommon in summer.

103. *Vireo huttoni* *Cass.* Hutton Vireo.

Hoover collected specimens of these three vireos in early summer. Ingersoll tells me he took eggs of this species near Santa Cruz. Emerson.—I found this species quite common wherever there was oak timber. Kaeding.—Quite common, breeding. W. A. Cooper records a nest found April 7, 1874, placed ten feet from the ground containing three eggs incubated about five days. March 30, 1875, he took another nest eight feet from the ground containing four eggs. Two more nests were respectively twenty-five and thirty feet from the ground.⁸

1. Belding, *op. cit.*, p. 191.

2. Proc. Nat. Mus., 1880, p. 246.

3. Belding, *op. cit.*, p. 193.

4. *Ibid.*, p. 194.

5. *Ibid.*, p. 196.

6. *Ibid.*, p. 198.

7. *Ibid.*, p. 200.

8. Bull. Nutt. Ornith. Club, III; 1878, p. 68.

104. *Helminthophila celata lutescens* (*Ridgw.*). Lutescent Warbler.
Kaeding.—Fairly common, breeding in cavities of banks or in ferns along small streams. Fresh eggs were taken May 6 and June 1. Emerson.—Noticed all through the mountains and canyons. Skirm.—A common summer resident on the San Lorenzo River, where they nest in wild blackberry bushes.¹
105. *Dendroica æstiva Morcomi* *Coale*. Yellow Warbler.
Taken at Santa Cruz by Hoover. Kaeding.—Very common, breeding. Emerson.—One was seen in a migration wave September 12, 1884, with the three species next following. Cooper.—First seen April 12, 1865.²
106. *Dendroica auduboni* (*Towns.*). Audubon Warbler.
Emerson.—Common in the fall and spring migrations. Kaeding.—A few were seen throughout the month, undoubtedly late migrants. Ingersoll records a flock seen October 1, 1885.³ Cooper.—Arrives September 25; leaves April 15.⁴
107. *Dendroica nigrescens* (*Towns.*). Black-throated Gray Warbler.
108. *Dendroica townsendi* (*Towns.*). Townsend Warbler.
In a letter to Coues, Wm. A. Cooper writing from Santa Cruz, says of this species: "My first specimen, taken November 3, 1878, was feeding in company with *Parus rufescens*, *Vireo huttoni*, *Psaltriparus minimus*, and *Regulus*, in willows, alders, and sycamores on the bank of a river. November 14 I shot eight specimens, and could readily have obtained thrice the number, as I saw fully a hundred feeding in a similar location. * * * January 1, 1879, I shot my last specimen, not having been out since."⁵
109. *Dendroica occidentalis* (*Towns.*). Hermit Warbler.
Fiske records taking the eggs of this warbler from a nest in blackberry vines on May 20, 1890. I consider this a mistake in identification. Emerson.—This and the two next preceding species were seen in the oaks feeding as they moved along.
110. *Seiurus noveboracensis notabilis* *Ridgw.* Grinnell Water-Thrush.
Ingersoll. September 25, 1885, I took a female at Santa Cruz and I have another female that was taken by Mr. J. R. Chalker who was with me hunting a few days before I shot mine.⁶
111. *Geothlypis tolmiei* (*Towns.*). Tolmie Warbler.
Emerson noted this form once at the summit on May 11, 1889.
112. *Geothlypis trichas arizela* *Oberh.*⁷
Emerson.—Seen at Santa Cruz among the rushes along the river in May, 1889. McGregor and Fiske.—Rare summer resident.
113. *Icteria virens longicauda* (*Lawr.*). Long-tailed Chat.
McGregor and Fiske.—Common summer resident near Santa Cruz.

1. Belding, *op. cit.*, p. 207.

2. Proc. Nat. Mus., 1880, p. 245.

3. Belding *op. cit.* p. 212.

4. Proc. Nat. Mus., 1880, p. 245.

5. Bull. Nutt. Ornith. Club, IV, 1879, p. 117.

6. Belding, *op. cit.*, p. 216.

7. Oberholser, *Auk*, XVI, 1899, p. 256.

Fiske took three incubated eggs July 9, 1891. Ingersoll reports it as a summer resident.¹ Kaeding considers it rare. Emerson.—Seen only once, May 12, 1889, near Boulder along the creek.

114. *Wilsonia pusilla pileolata* (Pall.). Pileolated Warbler.

Emerson noted this form in the migration wave of September 12, 1884, and Hoover took it in July. The Pileolated Warbler is recorded by Skirm as a quite common summer resident.²

115. *Anthus pensilvanicus* (Lath.). American Pipit.

This species is common about Santa Cruz in fall and spring. Emerson.—Common on the summit flats May 16, 1889.

116. *Cinclus mexicanus* Swains. American Dipper.

Emerson.—Common all down the Soquel canyon and on Boulder and Bear creeks. This bird is an interesting study. While under water its body looks as if covered with silver drops, like dew on a fuzzy mullein leaf. The bird seems to be able to cling to the rocks and to feed while under water and I noticed that they use their wings in moving beneath the water, as well as their feet. Their song notes are rather low, silvery and clear and very plaintive. Kaeding.—Common along streams. May 28, on a stream a mile and a quarter long, I found two nests just completed, one nest with eggs half incubated, one nest of very small young and one nest of young ready to fly. McGregor and Fiske.—The dipper is a common resident along the streams near Santa Cruz.

117. *Harporhynchus redivivus* (Gamb.). California Thrasher.

Emerson.—Common all through the higher ranges, more about Loma Prieta summit. Half fledged young were seen May 13, 1889. Kaeding.—The most abundant (sic) bird of the region; evidently breeds late in April, as all nests examined contained young. McGregor and Fiske.—The thrasher is a common resident about Santa Cruz.

118. *Salpinctes obsoletus* (Say). Rock Wren.

Emerson.—Seen only on a bare, rocky ridge-side above Bear Creek grade. Kaeding.—Two noted May 7.

119. *Catherpes mexicanus punctulatus* Ridgw. Dotted Canyon Wren.

Kaeding observed a few pairs breeding.

120. *Thryomanes bewicki spilurus* (Vig.). Vigor Wren.

Emerson.—Seen on several occasions among the thick brush and bramble heaps. Recorded as common by Skirm.³

121. *Troglodytes aedon parkmani* (Aud.). Parkman Wren.

Emerson.—Common among the oaks in May through the mountains and canyons.

122. *Anorthura hiemalis pacifica* (Baird). Western Winter Wren.

Emerson.—Rarely seen, then only in the deep, wet canyon and creek banks. A constant resident. Eggs have been taken by G. A. Ready of Santa Cruz. Its song is similar to that of the Water Ouzel in beauty.

1. Belding, *op. cit.*, p. 219.

2. *Ibid* p. 221.

3. *Ibid*, p. 231.

McGregor and Fiske.—The winter wren is a resident about Santa Cruz where we took an example.

123. *Cistothorus palustris paludicola* Baird. Tule Wren.

A rare summer resident. Fiske collected five well incubated eggs on July 8, 1891. No false nests were observed.

124. *Certhia familiaris occidentalis* Ridgw. California Creeper.

Hoover took a specimen near Santa Cruz in June and I shot at a creeper on Big Creek late in March. Kaeding records the creeper as not common. Emerson.—Rarely seen at any time throughout the range. Two specimens were taken Sept. 12, 1884, and others seen at the summit. An old nest was found behind a slit of bark of a redwood tree, some five feet from the ground, near the summit between Soquel and Wright's. The nest was composed of shredded redwood bark, soft and silky, lined with birds' feathers. Ready has taken their eggs near Santa Cruz.

125. *Sitta carolinensis aculeata* (Cass.). Slender billed Nuthatch.

Emerson.—Not common at any time. Noticed more in the oaks than in other trees.

126. *Sitta pygmæa* Vig. Pygmy Nuthatch.

Emerson.—This species is not as common throughout the locality visited as in the Monterey range, where it can be seen associating with the warblers, titmice, and chickadees. Ingersoll.—I saw about a dozen here. It is quite rare.¹

127. *Parus inornatus* Gamb. Plain Titmouse.

W. A. Cooper found a set of four eggs, incubated about five days, in a hollow oak limb, five feet from the ground. This set was taken near Watsonville April 4, 1877.² Emerson.—Seen in the vicinity of oaks, rain or shine.

128. *Parus rufescens barlowi* Grinnell.³ Barlow Chickadee.

The chickadee is an abundant resident near Santa Cruz where Fiske took fresh eggs April 12. Kaeding found it abundant about Ben Lomond where eggs collected May 6 were two-thirds incubated.

129. *Chamæa fasciata intermedia* Grinnell.⁴ Intermediate Wren-Tit.

Hoover found the wren-tit fairly common at Santa Cruz in July, and Kaeding reports it as breeding abundantly on Ben Lomond in May. Emerson saw it but rarely and then only in the thick bramble and bush.

130. *Psaltriparus minimus californicus* Ridgw. California Bush-Tit.

Fiske and I found the bush-tit to be an abundant summer resident about Santa Cruz where I have taken it in March, 1898. Kaeding found it very common on Ben Lomond. Emerson speaks of the species as common among the willow and wild lilac bushes, going in large flocks in the fall.

1. Belding, *op. cit.*, p. 239.

2. Bull. Nutt. Ornith. Club, III; 1878, p. 69.

3. *Condor*, II; 1900, p. 227.

4. *Ibid.*, p. 85.

131. *Regulus satrapa olivaceus* *Baird*. Western Golden-crowned Kinglet.
Emerson.—One was seen on Sept. 14, 1884, at the summit above the Soquel canyon among some willows.

132. *Regulus calendula* (*Linn.*). Ruby-crowned Kinglet.
Emerson.—Common at the summit after a hard frost in October, 1884.
Kaeding.—Quite a number seen all through May; reproductive organs of those examined were large.

133. *Hylocichla ustulata œdica* *Oberh.*
Fiske says this bird comes to Santa Cruz about April 20 and commences to nest about May 25. The young in first plumage was described by Oberholser from a specimen (No. 153944 U. S. Nat. Mus.) taken by me at Santa Cruz, July 27, 1891.¹ Kaeding found it common everywhere and eggs which he took on June 1 were three-fourths incubated. Emerson.—Seen several times at the summit between Sept. 12 and 20, 1884. On May 18, 1889, while going up to Bear Creek from Boulder a thrush was heard, in notes entirely different from *ustulatus*, and I have yet to hear anything like its song from any thrush in California. Just at dusk on the still evening air came a deep, whistling note. This may have been the Dwarf Hermit Thrush that W. A. Cooper has mentioned as breeding in the redwoods of Santa Cruz county.² Skirm.—Commenced nesting about May 15, 1884; three or four eggs, the latter the most I have found in any one of about one hundred and fifty nests.³ Ray.—June 11, 1895, *five* fresh eggs. Nest made almost entirely of redwood bark and placed among the out-growth of a redwood stump. Boulder Creek, Santa Cruz Co., Cal.⁴

134. *Hylocichla aonalaschkæ* (*Gmel.*). Dwarf Hermit Thrush.
Emerson.—One was seen on October 28, 1884. Kaeding.—A few seen during the first week of May.

135. *Merula migratoria propinqua* *Ridgw.* Western Robin.
The robin is a rare winter visitant at Santa Cruz. Kaeding saw a few early in May. Of this bird Emerson says: "Seen in the pines at the summit fourteen miles from Santa Cruz May 18, 1889, when it was heard in full song. I believe that it will be found nesting in these mountains."

136. *Hesperocichla nævia* (*Gmel.*). Varied Thrush.
The Oregon Robin is found at Santa Cruz some winters, there being no regularity in its appearance. Emerson saw one in the redwoods at the summit on October 28, 1884. Ingersoll reports it as first seen October 30, 1885.⁵ Cooper.—Arrives in October, leaves April 1.⁶ Bailey found it common at Boulder Creek in October.⁷

137. *Sialia mexicana occidentalis* (*Towns.*) Western Bluebird.
Emerson.—Not common on the mountains in the fall, but in May, 1889, it was seen about the oak trees, busy building and hunting for nest-

1. *Auk*, XVI; 1899, p. 24.

2. Belding. Proc. Cal. Acad. Sci. 2d. Ser., II, p. 65.

3. Belding, Ld. Bds. Pac. Dist., p. 252.

4. *Condor*, II; 1900, p. 126.

5. Belding, *op cit.*, p. 260.

6. Proc. Nat. Mus., 1880, p. 245.

7. *N. A. Fauna*, No. 7, p. 147.

ing sites. Kaeding.—Very common; fresh eggs taken every week in May.
Cooper.—Nested in Santa Cruz Mountains, at 3000 feet, April 20, 1874.¹

138. *Sialia arctica Swains.* Mountain Bluebird.

Emerson.—Rarely seen. Observed once on the bare ridge-side at the summit of Bear Creek canyon grade.

139. *Passer domesticus (Linn.)*. House Sparrow.

Common resident in all towns

1. Proc. Nat. Mus., 1880, p. 245.

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COOPER ORNITHOLOGICAL CLUB
OF CALIFORNIA.**

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COOPER ORNITHOLOGICAL CLUB
OF CALIFORNIA

Pacific Coast Avifauna

No. 3

CHECK-LIST OF CALIFORNIA BIRDS

— BY —

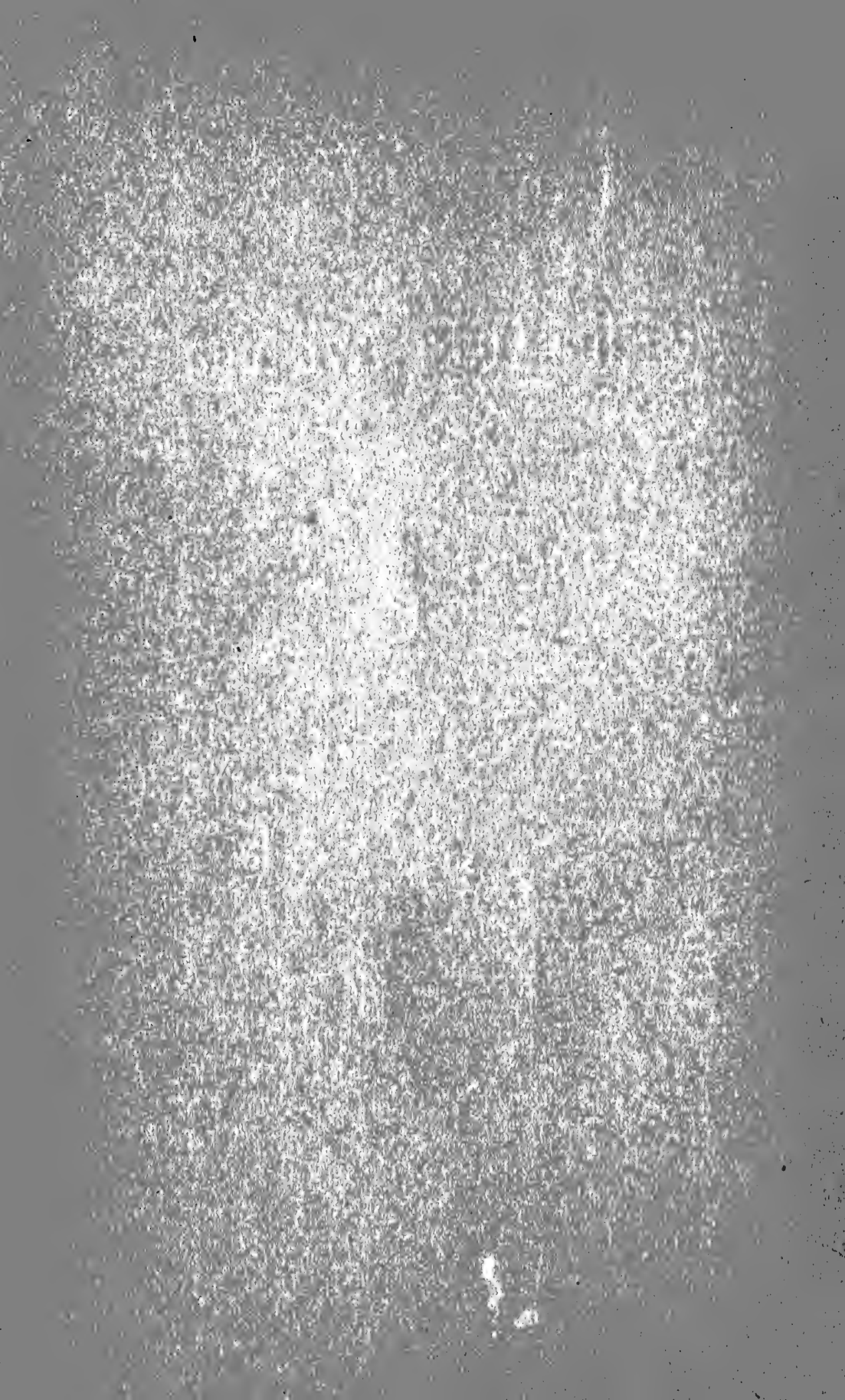
JOSEPH GRINNELL



SANTA CLARA, CALIFORNIA

PUBLISHED BY THE CLUB

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NOTE.

PACIFIC COAST AVIFAUNA No. 3 is the third 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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PREFACE.

In compiling the present list, the author has tried to be reasonably conservative as regards the admission of species in doubtful standing. In order to be worthy of a place on the State List an "accidental" must have been as a rule secured and preserved so that it can be re-identified whenever desirable. The more unusual and unexpected the alleged occurrence of a species, the better the evidence must be of such occurrence before it can be accepted as authentic.

For the sake of convenience the sequence of the American Ornithologists' Union Check-List is followed. But the nomenclature has in several cases been remodeled according to the best of the author's own knowledge. It is held that actual geographical continuity in range accompanying corresponding intergradation is the criterion for the application of trinomials. Hence nearly all insular and geographically isolated forms should be treated as species. "Slight degree of difference" and "intergradation through individual variation" are criteria which can only lead to endless confusion. It would also seem advisable to use the binomial in both cases until two forms are proven to be in geographical continuity. But this has not been undertaken here. "A binomial is preferable to a trinomial when there is any good excuse for its adoption" (Ridgway).

The author is heartily opposed as a rule to the further subdivision of genera, or the raising of subgenera to full generic rank. It is believed that a multiplicity of genera obscures the expression of relationship at least as much as it elucidates. Subgenera are serviceable in discriminating smaller groups, and, as it is not common to use such names in combination with specific and subspecific ones, they do not encumber every-day nomenclature as if of ^{generic} specific rank.

The first number preceding the accepted name of each species (in heavy-faced type) is the running number of this list. Each subspecies as well as species is given a regular consecutive number; for example 97, 98, 99 and 100 for *Branta canadensis canadensis*, *B. c. hutchinsi*, *B. c. occidentalis* and *B. c. minima*, not 97, 97 a, 97 b and 97 c, as would be the numeration according to the A. O. U. Check-List system. For a subspecies is believed to be just as "important" as a species.

The second number (in parenthesis) is that of the same species on the A. O. U. Check-List.

The "Synonyms" are all the other names besides the accepted one by which each species has been known in California literature; the synonyms, therefore, apply only to the species as occurring within this State. The Index contains both the accepted names and the synonyms, so that it should prove of service in the allocation of names used in the earlier published accounts of California birds.

The "Status" is intended to give in a condensed sentence the range, comparative abundance and season of occurrence of the species in question. The range is usually expressed by Zones and Faunal Areas which are outlined in the accompanying maps. This "Status," although drawn up with care, is intended chiefly

for the younger student of California birds. The faunist and student of distribution must verify the original records and plat each definite station for himself.

Finally, honest criticism of this publication is earnestly requested, to the end that its many errors may come to light, and that more extended and definite information may be forth-coming. The publication of a State List is not the goal of our study, but only a means for obtaining the greater knowledge of the future.

EXPLANATION OF DISTRIBUTION MAPS.

The accompanying maps are intended in the present connection only as aids in defining the ranges of our birds. Yet a few remarks as to the determination of the regions indicated may not be out of place.

It has been found that the most important factor governing the distribution of plants and animals is temperature; and that the next most important factor, on land, is humidity. Regions of uniform conditions in these respects each possess characteristic assemblages of plants and animals, and many of these are so sensitive that they are not found beyond the realm of such conditions. Plants, especially trees and shrubs, are most satisfactory indices of life areas because the individuals are fixed throughout their lives in one place. But some birds even though capable of extended locomotion seem to be quite as sensitive, while many other birds of more hardy constitutions are also restricted to narrow limits because they are dependent on certain endemic plants for food.

Life Zones are belts of uniform temperature (of the summer season, or season of growth in plants and reproduction in animals). Faunal areas are regions of uniform humidity of the atmosphere (also of the summer season). Lines separating two Zones are therefore theoretically isotherms, or lines connecting points of equal temperature; while lines separating Faunal Areas are isohumes, or lines connecting points of equal humidity. As the direction and extent of Zones are obviously dependent in the main on latitude and altitude, and the extent of Faunal Areas depend on adjacency of bodies of water, the coast-line running nearly north and south, it follows that Faunal Areas are subdivisions of Life Zones. It must be kept in mind that there is seldom an abrupt demarcation between adjacent Zones or Faunal Areas. The lines approximately indicate the middle of the region of mержence between two such areas.

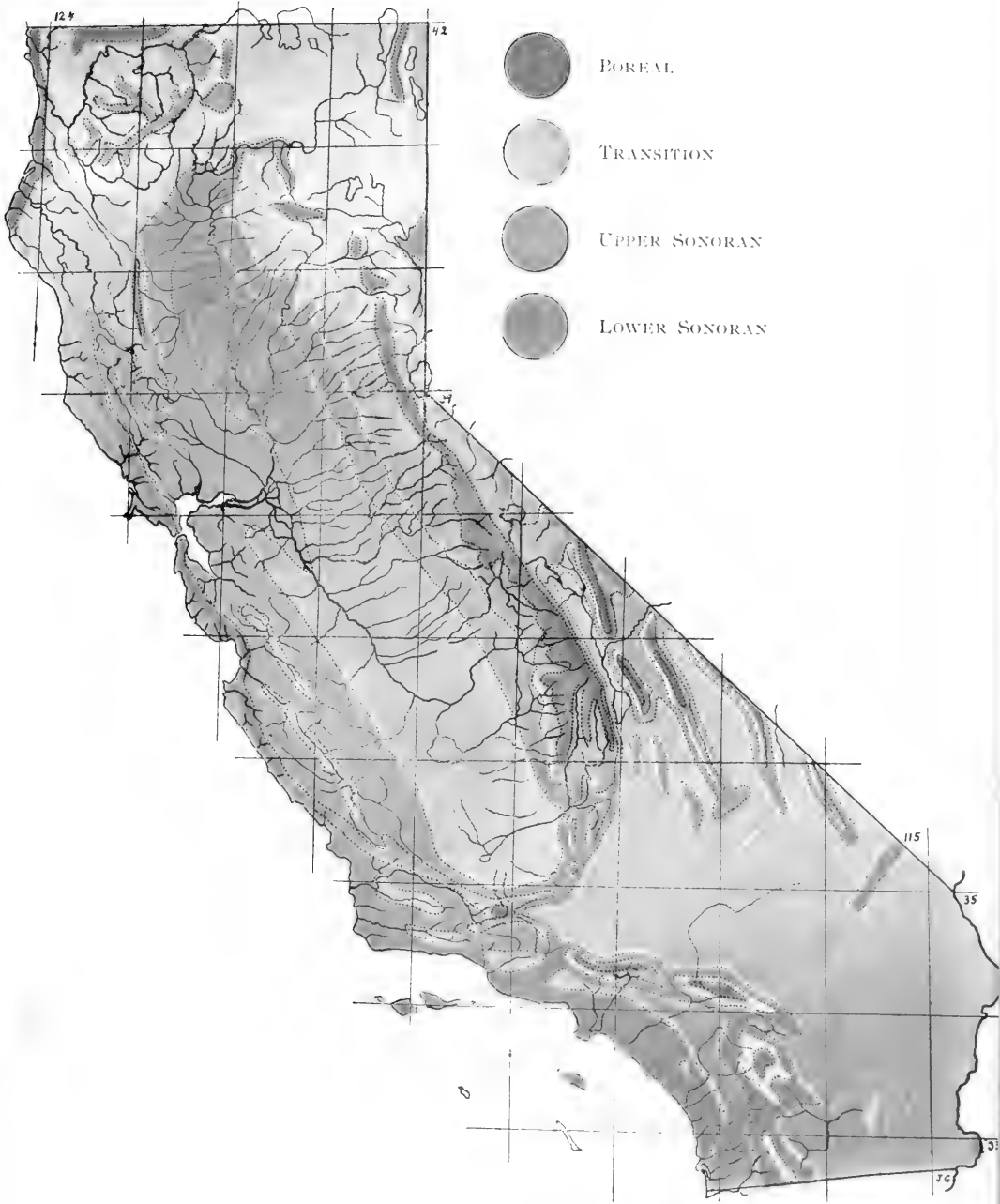
The areas differentially colored on the maps have been outlined as accurately as the information at hand permitted; still the boundary lines must be considered mainly provisional until the State is carefully surveyed zoogeographically.

The Life Zones of California have been distinguished as follows:

BOREAL	{	Alpine-Arctic
		Hudsonian
		Canadian
	{	Transition
AUSTRAL	{	Upper Sonoran
		Lower Sonoran

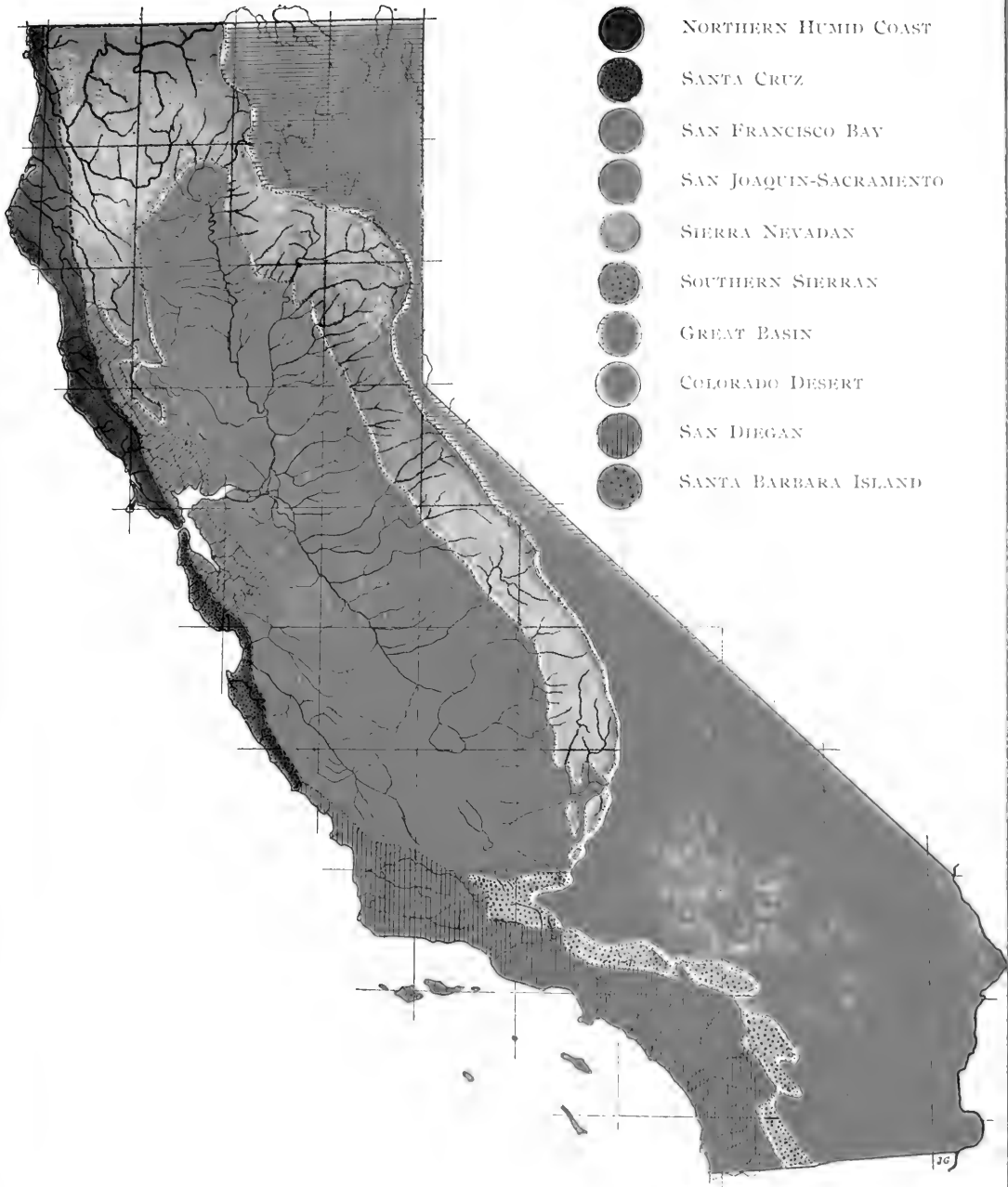
On the maps for reasons of convenience all of Boreal (including Alpine-Arctic, Hudsonian and Canadian) is colored green; Transition is colored blue; Upper Sonoran, yellow; and Lower Sonoran, red.

The Faunal and Sub-faunal Areas here recognized may be classified as follows:



LIFE ZONES OF CALIFORNIA
(Isothermic Areas)





FAUNAL AREAS OF CALIFORNIA
 (Isohumic Areas)

- HUMID COAST FAUNA { Northern Humid Coast Belt (*plain*)
(*Green*) { Santa Cruz District (*dotted*)
- CALIFORNIA' FAUNA { San Joaquin-Sacramento Basin (*plain*)
(*Yellow*) { San Francisco Bay Region (*obliquely lined*)
San Diegan District (*vertically lined*)
Santa Barbara Islands (*cross-marked*)
- SIERRAN FAUNA { Sierra Nevada (*plain*)
(*Blue*) { Southern Sierras (*dotted*)
- ARID INTERIOR FAUNA { Great Basin (*horizontally lined*)
(*Red*) { Colorado Desert (*plain*)

Nomenclatural uniformity cannot here be attempted. The faunal names selected are those believed to carry the clearest ideas of the regions meant to the amateur student of California birds.

ACKNOWLEDGEMENTS.

During the past nine years the Cooper Ornithological Club, through the activity of its members, has greatly extended our knowledge of the local distribution of bird-life in California. It is to the accurate records of these observers, as much as to all previous field work combined, that we owe the mass of data now available. It is the author's wish that the present brief resume may serve as a recognition of this initial period of activity, and set it off from one of much greater accomplishment sure to follow, for our field is far from exhausted.

In the compilation of this Check-List which is the result of two years' work on the part of the author, he has sought information from every possible source. Aside from published writings, he has not hesitated to seek for information directly from many persons. Invariably he has received cordial assistance wherever solicited.

I have in particular to acknowledge valuable help from Robert Ridgway of the National Museum in comparing specimens and looking up records. I am also indebted to Charles H. Gilbert of Stanford University for critical advice on points of nomenclature; to William R. Dudley and Walter K. Fisher of Stanford University for information in regard to the extent of Life Zones and Faunal Areas, and to the latter also for looking up literature and comparing specimens in Washington; to Leverett M. Loomis for the privilege of examining specimens and books in his charge at the California Academy of Sciences; and to F. S. Daggett, C. Barlow, J. Mailliard, W. O. Emerson, E. Heller, M. P. Anderson and other Cooper Club members for specimens and help in many ways whenever asked.

JOSEPH GRINNELL.

Stanford University, California,

April 25, 1902.

CHECK-LIST OF CALIFORNIA BIRDS.

- 1 (1) *Æchmophorus occidentalis* (Lawrence) Coues.

WESTERN GREBE.

SYN.—*Podiceps clarkii*; *Podiceps occidentalis*; *Æchmophorus occidentalis clarkii*.

STATUS—Fairly common winter visitant coastwise and to the larger bodies of water throughout the State; remains through the summer on the lakes of the northern Sierras (Eagle Lake) where it is known to breed.

- 2 (2) *Colymbus holbœlli* (Reinhardt) Ridgway.

HOLBØLL GREBE.

SYN.—*Podiceps cristatus*; *Podiceps cooperi*.

STATUS—Rare midwinter visitant along the seacoast south to Santa Barbara; San Francisco Bay.

- 3 (3) *Colymbus auritus* Linnæus.

HORNED GREBE.

SYN.—*Podiceps cornutus*; *Dytes auritus*.

STATUS—Rare midwinter visitant coastwise and on the larger lakes inland; recorded south to the Colorado River, Riverside and Santa Barbara.

- 4 (4) *Colymbus californicus* (Heermann) Grinnell.

AMERICAN EARED GREBE.

SYN.—*Podiceps californicus*; *Podiceps auritus* var. *californicus*; *Dytes auritus* var. *californicus*; *Dytes nigricollis californicus*; *Colymbus nigricollis californicus*; *Podicipes californicus*; *Colymbus nigricollis*.

STATUS—A common breeding species on many of the lakes of the interior, principally those of the Transition and Boreal Zones; in winter, generally distributed in favorable localities through the valleys; most abundant along the seacoast.

- 5 (6) *Podilymbus podiceps* (Linnæus) Lawrence.

PIED-BILLED GREBE.

SYN.—*Podilymbus lineatus*; *Podilymbus carolinensis*; *Podilymbus podicipes*.

STATUS—Fairly common breeding species locally west of the Sierras; more generally distributed during migration; comparatively few pass the entire winter in the southern part of the State coastwise.

- 6 (7) *Gavia imber* (Gunnerus) Allen.

COMMON LOON.

SYN.—*Colymbus glacialis*; *Colymbus torquatus*; *Urinator immer*; *Urinator imber*.

STATUS—Fairly common winter visitant to the fresh water lakes of the interior; occasional along the seacoast; breeds on the Boreal lakes of the northern Sierras.

- 7 (10) *Gavia pacifica* (Lawrence) Allen.

PACIFIC LOON.

SYN.—*Colymbus pacificus*; *Colymbus arcticus* var. *pacificus*; *Urinator pacificus*.

STATUS—Common winter visitant along the whole length of our coast; apparently confined to salt water.

- 8 (11) *Gavia lumme* (Gunnerus) Allen.

RED-THROATED LOON.

SYN.—*Colymbus septentrionalis*; *Urinator lumme*.

STATUS—Common winter visitant coastwise along the whole length of the State; confined chiefly to salt water.

- 9 (12) *Lunda cirrhata* (Pallas) Pallas.

TUFTED PUFFIN.

SYN.—*Mormon cirrhata*; *Fratercula cirrhata*.

STATUS—Breeds abundantly on the Farallone Islands, and in lesser number near Point Reyes, in Carmel Bay, on San Miguel Island and on Santa Barbara Island; not recorded south of the latter station; seems to be permanently resident on our coast, though more widely disseminated in winter.

- 10 (15) *Cerorhinca monocerata* (Pallas) Cassin.

RHINOCEROS AUKLET.

SYN.—*Uria occidentalis*; *Cerorhinca occidentalis*; *Cerorhinca suckleyi*; *Sagmatorrhina suckleyi*; *Cerorhyncha monocerata*.

STATUS—Fairly common winter visitant along our southern seacoast; said to have formerly bred on the Farallone Islands.

- 11 (16) *Ptychoramphus aleuticus* (Pallas) Brandt.

CASSIN AUKLET.

SYN.—*Mergulus cassini*.

STATUS—Permanent resident along the coast well out at sea; breeds abundantly on Santa Barbara and San Miguel Islands and on the Farallones.

- 12 (17) *Cyclorhynchus psittaculus* (Pallas) Stejneger.

PAROQUET AUKLET.

STATUS—Known only from the record by L. M. Loomis of five specimens taken in December and January on the ocean and bay in the vicinity of San Francisco.

- 13 (21) *Synthliboramphus antiquus* (Gmelin) Brandt.

ANCIENT MURRELET.

STATUS—Recorded only from the ocean and bay in the vicinity of Monterey in mid-winter.

- 14 (23) *Brachyramphus marmoratus* (Gmelin) Brandt.

MARbled MURRELET.

STATUS—Common winter visitant on the ocean coastwise south to San Diego.

15 (25) *Brachyramphus hypoleucus* Xantus.

XANTUS MURRELET.

SYN.—*Eudomychura hypoleuca*; *Micruria hypoleuca*.

STATUS—Fairly common resident along the southern seacoast north to Monterey Bay; once found breeding on Santa Barbara Island.

16 (29) *Cephus columba* Pallas.

PIGEON GUILLEMOT.

SYN.—*Uria columba*.

STATUS—Common resident along the seaboard, breeding at numerous points along the coastline and islands south to Santa Catalina Island; south of the latter point it has not so far been recorded at any season.

17 (30 a) *Uria californica* (Bryant) Dall.

CALIFORNIA MURRE.

SYN.—*Uria troile*; *Uria ringvia*; *Uria lomvia*; *Uria brunnichi*; *Uria lomvia* var. *californica*; *Catarractes californicus*; *Uria lomvia arra*; *Lomvia troile californica*; *Lomvia californica*; *Lomvia troile*; *Uria troile californica*.

STATUS—Permanent resident off the central and northern coast; not yet recorded south of Santa Monica; breeds abundantly on the Farallone Islands.

18 (35) *Megalestris skua* (Brunnich) Ridgway.

SKUA.

SYN.—*Stercorarius catarractes*; *Stercorarius skua*; *Buphagus skua*.

STATUS—Known only from a specimen recorded first by G. N. Lawrence, and still extant, obtained "off the coast of California, near Monterey."

19 (36) *Stercorarius pomarinus* (Temminck) Vieillot.

POMARINE JAEGER.

STATUS—Ascertained by L. M. Loomis to be a common late summer and fall migrant along the coast off Monterey.

20 (37) *Stercorarius parasiticus* (Linnæus) Schäffer.

PARASITIC JAEGER.

STATUS—Common migrant coastwise; and through the winter in smaller numbers along our southern coast.

21 (38) *Stercorarius longicaudus* Vieillot.

LONG-TAILED JAEGER.

STATUS—But one record, that by L. M. Loomis of an adult male secured off Monterey, August 23, 1894.

22 (40 a) *Rissa pollicaris* (Ridgway) Stejneger.

PACIFIC KITTIWAKE.

SYN.—*Rissa kotzebuei*; *Rissa tridactyla kotzebuei*; *Rissa tridactyla pollicaris*.

STATUS—Rare winter visitant coastwise; casual inland; recorded from San Francisco Bay, Nicasio, San Diego, Monterey and Paso Robles.

- 23 (42) *Larus glaucus* Brunnich.

GLAUCOUS GULL.

SYN.—*Larus hutchinsi*.

STATUS—Rare winter visitant coastwise; recorded only from San Francisco Bay, the Farallone Islands and Monterey Bay.

- 24 (44) *Larus glaucescens* Naumann.

GLAUCOUS-WINGED GULL.

STATUS—Common winter visitant along our whole coast; especially numerous on San Francisco Bay.

- 25 (49) *Larus occidentalis* Audubon.

WESTERN GULL.

SYN.—*Larus argentatus* var. *occidentalis*.

STATUS—Abundant permanent resident coastwise, occasionally straying inland (Los Angeles, Sacramento River); breeds at many points on the coast and islands.

- 26 (51 a, 52) *Larus argentatus* Brunnich.

HERRING GULL.

SYN.—*Larus smithsonianus*; *Larus vegæ*; *Larus cachinnans*; *Larus argentatus smithsonianus*.

STATUS—Common winter visitant along our whole coast; occasional inland (Los Angeles).

- 27 (53) *Larus californicus* Lawrence.

CALIFORNIA GULL.

STATUS—Commonly distributed in winter throughout the State, occurring on lakes and streams inland as well as along the seacoast; breeds on lakes east of the Sierras (Eagle Lake).

- 28 (54) *Larus delawarensis* Ord.

RING-BILLED GULL.

STATUS—Fairly common winter visitant along the southern coast of the State north to San Francisco Bay; also in fall and winter on the larger lakes of the interior (Lake Tahoe; Owens Lake).

- 29 (55) *Larus brachyrhynchus* Richardson.

SHORT-BILLED GULL.

SYN.—*Larus canus* var. *brachyrhynchus*.

STATUS—Common winter visitant along our whole seacoast.

- 30 (56) *Larus canus* Linnæus.

MEW GULL.

STATUS—Fairly common winter visitant coastwise (San Francisco Bay, Monterey Bay and southward).

- 31 (57)
- Larus heermanni*
- Cassin.

HEERMANN GULL.

SYN.—*Blasipus heermanni*; *Blasipus belcheri*.

STATUS—Common but irregular resident along our whole coast, straggling up the Sacramento River; although occurring in greater or less numbers throughout the year, no breeding colony has been discovered north of Lower California.

- 32 (60)
- Larus philadelphia*
- (Ord) Gray.

BONAPARTE GULL.

SYN.—*Chroicocephalus philadelphia*.

STATUS—Common migrant coastwise; sparingly through the winter on the larger lakes inland as well as along the coast.

- 33 (62)
- Xema sabinei*
- (Sabine) Leach.

SABINE GULL.

SYN.—*Larus sabini*.

STATUS—Rare spring and fall migrant; recorded only from San Francisco Bay, Monterey Bay and Mono Lake.

- 34 (64)
- Sterna caspia*
- Pallas.

CASPIAN TERN.

SYN.—*Sterna tschegrava*; *Hydroprogne caspia*.

STATUS—Rare winter visitant coastwise; recorded definitely only from Stockton, San Francisco and San Diego.

- 35 (65)
- Sterna maxima*
- Boddært.

ROYAL TERN.

SYN.—*Sterna regia*; *Sterna cayanensis*; *Thalasseus regius*.

STATUS—Common coastwise at all seasons; not recorded north of San Francisco Bay; said to have been found breeding on San Miguel Island.

- 36 (66)
- Sterna elegans*
- Gambel.

ELEGANT TERN.

SYN.—*Thalasseus elegans*; *Sterna galericulata*.

STATUS—Fairly common fall and winter visitant coastwise north to San Francisco Bay.

- 37 (69)
- Sterna forsteri*
- Nuttall.

FORSTER TERN.

STATUS—Common breeding species on the lakes in the interior (Lake Tahoe, Eagle and Elsinore Lakes); common migrant coastwise, and a few pass the winter in the southern coast district.

- 38 (71)
- Sterna paradisæa*
- Brunnich.

ARCTIC TERN.

SYN.—*Sterna pikei*; *Sterna macrura*.

STATUS—Rare migrant coastwise; definitely recorded only from Monterey Bay.

- 39 (74) *Sterna antillarum* (Lesson) Coues.

LEAST TERN.

SYN.—*Sterna superciliaris* var. *antillarum*.

STATUS—Common summer visitant to the extreme southern seacoast; breeds locally north to Ballona Beach, Los Angeles County.

- 40 (77) *Hydrochelidon surinamensis* (Gmelin) Bonaparte.

BLACK TERN.

SYN.—*Sterna nigra*; *Hydrochelidon nigra*; *Hydrochelidon fissipes*; *Hydrochelidon plumbea*; *Hydrochelidon lariformis*; *Hydrochelidon nigra surinamensis*.

STATUS—Common summer visitant to fresh bodies of water inland; breeds at Eagle Lake, Lake Tahoe, Tulare Lake, Elsinore Lake, and San Jacinto Lake.

- 41 (81) *Diomedea nigripes* Audubon.

BLACK-FOOTED ALBATROSS.

SYN.—*Diomedea fuliginosa*; *Phaebetria fuliginosa* (?)

STATUS—Common on the adjacent ocean through the entire year.

- 42 (82) *Diomedea albatrus* Pallas.

SHORT-TAILED ALBATROSS.

SYN.—*Diomedea brachyura*.

STATUS—Fairly common on the ocean throughout the year.

- 43 (86 b) *Fulmarus glupischa* (Stejneger) Salvin.

PACIFIC FULMAR.

SYN.—*Fulmarus pacificus*; *Fulmarus glacialis*; *Fulmarus glacialis glupischa*.

STATUS—Common but irregular fall and winter visitant on the ocean.

- 44 (86.1) *Fulmarus rodgersi* Cassin.

RODGERS FULMAR.

SYN.—*Fulmarus glacialis rodgersi*; *Fulmarus glacialis columba*.

STATUS—Irregular fall and winter visitant on the ocean; recorded also from San Francisco Bay.

- 45 (—) *Puffinus bulleri* Salvin.

BULLER SHEARWATER.

STATUS—Known only from the female specimen obtained by L. M. Loomis on Monterey Bay, November 6, 1896.

- 46 (91) *Puffinus creatopus* Coues.

PINK-FOOTED SHEARWATER.

STATUS—Common summer and fall visitant coastwise, though probably breeding in the southern hemisphere; not recorded north of San Francisco.

- 47 (93)
- Puffinus opisthomelas*
- Coues.

BLACK-VENTED SHEARWATER.

SYN.—*Puffinus gavia*.

STATUS—Common summer visitant on the ocean; said to have been found breeding on Santa Barbara Island, but this seems doubtful.

- 48 (95)
- Puffinus griseus*
- (Gmelin) Finsch.

DARK-BODIED SHEARWATER.

SYN.—*Nectris fuliginosus*; *Puffinus fuliginosus*; *Puffinus stricklandi*.

STATUS—Abundant summer visitant and migrant on the ocean; probably breeds in the southern hemisphere.

- 49 (96)
- Puffinus tenuirostris*
- (Temminck) Temminck & Schlegel.

SLENDER-BILLED SHEARWATER.

STATUS—Common midwinter visitant on the ocean (off San Diego and Monterey in 1895).

- 50 (97)
- Puffinus cinereus*
- (Gmelin) Jacquinot & Pucheran.

BLACK-TAILED SHEARWATER.

SYN.—*Puffinus cinereus*; *Adamastor cinereus*; *Puffinus melanurus*; *Procellaria hæsitata*.

STATUS—Known only from the record by G. N. Lawrence of a specimen, still extant, obtained off Monterey.

- 51 (102)
- Daption capensis*
- (Linnæus) Stephens.

PINTADO PETREL.

SYN.—*Procellaria capensis*.

STATUS—Known only from the record by G. N. Lawrence of a specimen from "off Monterey."

- 52 (105)
- Oceanodroma furcata*
- (Gmelin) Reichenbach.

FORKED-TAILED PETREL.

STATUS—Of irregular occurrence on the ocean (June, February, August); recorded south to San Pedro.

- 53 (106)
- Oceanodroma leucorhoa*
- (Vieillot) Stejneger.

LEACH PETREL.

SYN.—*Thalassidroma leachi*; *Oceanites oceanica*; *Cymochorea leucorhoa*.

STATUS—Apparently a permanent resident on the adjacent ocean; recorded south to Long Beach; found breeding on South Farallon Island, and the coast of Mendocino County.

- 54 (105.2)
- Oceanodroma kaedingi*
- Anthony.

KAEDING PETREL.

STATUS—Known only from the records by A. W. Anthony of its occurrence on the ocean off southern California.

- 55 (107) *Oceanodroma melania* (Bonaparte) Stejneger.

BLACK PETREL.

SYN.—*Procellaria melania*; *Thalassidroma melania*; *Cymochorea melania*; *Oceanodroma townsendi*.

STATUS—Fairly common resident on the ocean off the southern part of the State; recorded north to Santa Barbara Island; breeds on Los Coronados Islands off San Diego.

- 56 (108) *Oceanodroma homochroa* (Coues) Ridgway.

ASHY PETREL.

SYN.—*Cymochorea homochroa*.

STATUS—Fairly common in summer on the adjacent ocean; breeds on the Farallones and San Miguel Island.

- 57 (108.1) *Oceanodroma socorroensis* Townsend.

SOCORRO PETREL.

STATUS—Fairly common, according to A. W. Anthony, off San Diego in summer, and breeding on Los Coronados Islands.

- 58 (120 c) *Phalacrocorax auritus albociliatus* (Ridgway) Grinnell.

FARALLONE CORMORANT.

SYN.—*Phalacrocorax dilophus albociliatus*; *Graculus dilophus*; *Phalacrocorax dilophus*; *Phalacrocorax dilophus cincinatus*; *Phalacrocorax dilophus* var. *floridanus*; *Phalacrocorax cincinatus*; *Phalacrocorax townsendi*; *Carbo townsendi*; *Carbo dilophus*.

STATUS—Common resident coastwise and on the larger bodies of water inland; breeds at numerous points on the islands and coast as well as in the interior (Eagle Lake, Clear Lake).

- 59 (122) *Phalacrocorax penicillatus* (Brandt) Heermann.

BRANDT CORMORANT.

SYN.—*Carbo penicillatus*; *Graculus penicillatus*.

STATUS—Abundant resident along our whole coast; breeds at many points on the mainland coast and the islands.

- 60 (123 b) *Phalacrocorax pelagicus resplendens* (Audubon) Ridgway.

BAIRD CORMORANT.

SYN.—*Graculus bairdi*; *Graculus violaceus*; *Phalacrocorax violaceus resplendens*; *Graculus violaceus* var. *bairdi*; *Phalacrocorax resplendens*; *Phalacrocorax pelagicus robustus*; *Phalacrocorax violaceus*; *Phalacrocorax palagicus*.

STATUS—Common resident along our whole seacoast; breeds at many points on the coast and islands.

- 61 (125) *Pelecanus erythrorhynchos* Gmelin.

AMERICAN WHITE PELICAN.

SYN.—*Pelecanus trachyrhynchus*; *Pelecanus molinae*.

STATUS—Common migrant through the interior valleys, many wintering in the southern part of the State; breeds abundantly at lakes east of the Sierras (Eagle Lake).

- 62 (127)
- Pelecanus californicus*
- Ridgway.

CALIFORNIA BROWN PELICAN.

SYN.—*Pelecanus fuscus*; *Pelecanus fuscus californicus*.

STATUS—Common resident along our whole seacoast; not known to breed north of Los Coronados Islands.

- 63 (128)
- Fregata aquila*
- (Linnæus) Reichenbach.

MAN-O'-WAR BIRD.

SYN.—*Tachypetes aquilus*.

STATUS—Rare and irregular winter visitant, north to Humboldt Bay; most frequent along our southern seacoast; straggling inland (North Pasadena, Los Angeles, Santa Clara).

- 64 (129)
- Merganser americanus*
- (Cassin) Stejneger.

AMERICAN MERGANSER.

SYN.—*Mergus americanus*; *Mergus merganser americanus*.

STATUS—Fairly common locally in summer about the lakes and streams of the Sierras, where it is known to breed.

- 65 (130)
- Merganser serrator*
- (Linnæus) Shäffer.

RED-BREASTED MERGANSER.

SYN.—*Mergus serrator*.

STATUS—Common winter visitant along our whole seacoast; less numerous at suitable points in the interior (Owens Lake, Lake Tahoe).

- 66 (131)
- Lophodytes cucullatus*
- (Linnæus) Reichenbach.

HOODED MERGANSER.

SYN.—*Mergus cucullatus*.

STATUS—Fairly common in fall and winter on the lakes and streams of the interior.

- 67 (132)
- Anas boschas*
- Linnæus.

MALLARD.

STATUS—Common resident in suitable localities throughout the State; breeds at many points in the interior.

- 68 (135)
- Chaulelasmus streperus*
- (Linnæus) Bonaparte.

GADWALL.

SYN.—*Anas strepera*.

STATUS—Fairly common resident chiefly in the interior valleys, recorded as breeding in Los Angeles County and in the Sacramento Valley.

- 69 (136)
- Mareca penelope*
- (Linnæus) Selby.

WIDGEON.

SYN.—*Anas penelope*.

STATUS—Several specimens recorded as found in winter in the San Francisco markets; also recorded from Eureka.

- 70 (137) *Mareca americana* (Gmelin) Stephens.

BALDPATE.

SYN.—*Anas americana*; *Mareca penelope*, part.

STATUS—Abundant winter visitant in suitable localities throughout the State.

- 71 (138) *Nettion crecca* (Linnæus) Kaup.

EUROPEAN TEAL.

SYN.—*Anas crecca*.

STATUS—Recorded only by J. G. Cooper who states it to have been "found not rarely in California."

- 72 (139) *Nettion carolinensis* (Gmelin) Baird.

GREEN-WINGED TEAL.

SYN.—*Anas carolinensis*; *Querquedula carolinensis*.

STATUS—Abundant winter visitant in suitable localities throughout the State.

- 73 (140) *Querquedula discors* (Linnæus) Stephens.

BLUE-WINGED TEAL.

SYN.—*Anas discors*.

STATUS—Rare winter visitant; recorded from Stockton, San Diego, Agua Caliente, Little Owens Lake, Weaverville, Napa, Los Angeles, El Monte.

- 74 (141) *Querquedula cyanoptera* (Vieillot) Cassin.

CINNAMON TEAL.

SYN.—*Anas cyanoptera*; *Pterocyanea cæruleata*; *Pterocyanea discors*.

STATUS—Common summer visitant to the southern and interior portions of the State; breeds numerously in the San Diegan district, in the San Joaquin-Sacramento Valley and east of the Sierras much further north.

- 75 (142) *Spatula clypeata* (Linnæus) Boie.

SHOVELLER.

SYN.—*Rynchaspis clypeata*.

STATUS—Abundant winter visitant on freshwater throughout the State; a few remain through the summer and have been found breeding (Gorman Station, Haywards).

- 76 (143) *Dafila acuta* (Linnæus) Bonaparte.

PINTAIL.

SYN.—*Dafila caudacuta*.

STATUS—Abundant winter visitant to suitable localities throughout the State; recorded as remaining through the summer in small numbers and breeding (Los Angeles County).

- 77 (144) *Aix sponsa* (Linnæus) Bonaparte.

WOOD DUCK.

STATUS—Common resident on the streams and lakes of the interior, especially along the San Joaquin and Sacramento River valleys, where it has been recorded as nesting; also at Lake Tahoe.

78 (146) *Aythya americana* (Eyton) Baird.

REDHEAD.

SYN.—*Nyroca americana*; *Nyroca ferina*; *Nyroca erythrocephala*; *Aythya erythrocephala*; *Æthya americana*; *Fuligula ferina* var. *americana*.

STATUS—Common resident in suitable localities throughout the State; recorded as breeding at numerous points in the interior valleys.

79 (147) *Aythya vallisneria* (Wilson) Boie.

CANVAS-BACK.

STATUS—Common winter visitant in suitable localities throughout the State.

80 (148) *Aythya marila* (Linnæus) Boie.

SCAUP DUCK.

SYN.—*Fulix marila*; *Fuligula marila*; *Aythya marila nearctica*.

STATUS—Fairly common winter visitant on salt and brackish water coastwise; south to San Diego Bay.

81 (149) *Aythya affinis* (Eyton) Stejneger.

LESSER SCAUP DUCK.

SYN.—*Fuligula mariloides*; *Fuligula affinis*; *Fulix affinis*.

STATUS—Fairly common winter visitant coastwise and on the larger bodies of water inland.

82 (150) *Aythya collaris* (Donovan) Ridgway.

RING-NECKED DUCK.

SYN.—*Fuligula collaris*; *Fulix collaris*.

STATUS—Judging from the scarcity of records, this species is of rather rare occurrence, and appears only in midwinter; recorded from Lake Tahoe, Pacific Grove and Los Angeles County.

83 (151) *Clangula americana* Bonaparte.

AMERICAN GOLDEN-EYE.

SYN.—*Clangula clangula americana*; *Bucephala clangula*; *Glaucionetta clangula americana*; *Bucephala americana*; *Bucephala clangula* var. *americana*; *Clangula glaucion americana*.

STATUS—Common winter visitant along our whole seacoast; confined chiefly to salt water though there are also a few records from the interior.

84 (152) *Clangula islandica* (Gmelin) Bonaparte.

BARROW GOLDEN-EYE.

SYN.—*Bucephala islandica*; *Glaucionetta islandica*.

STATUS—Rare winter visitant; known only from specimens procured in the San Francisco markets.

- 85 (153) *Clangula albeola* (Linnæus) Stephens.

BUFFLE-HEAD.

SYN.—*Bucephala albeola*; *Charitonetta albeola*.

STATUS—Common winter visitant throughout the State, but more particularly on salt and brackish water coastwise.

- 86 (154) *Harelda hyemalis* (Linnæus) Brehm.

OLD-SQUAW.

SYN.—*Harelda glacialis*; *Clangula hyemalis*.

STATUS—Rather rare midwinter visitant; recorded at intervals along the seacoast south to San Diego Bay; more frequent northerly.

- 87 (155) *Histrionicus histrionicus* (Linnæus) Boucard.

HARLEQUIN DUCK.

SYN.—*Histrionicus torquatus*; *Histrionicus minutus*; *Cosmonetta histrionica*.

STATUS—Fairly common in summer along certain streams of the west slope of the Sierras, where it is known to breed; occurs also as a visitant along the seacoast (Monterey).

- 88 (162) *Somateria spectabilis* (Linnæus) Leach.

KING EIDER.

STATUS—Known only from the record by H. W. Henshaw of a specimen taken in winter off Blackpoint, San Francisco.

- 89 (163) *Oidemia americana* Swainson.

AMERICAN SCOTER.

STATUS—Rather rare winter visitant coastwise; recorded south to Santa Catalina Island.

- 90 (165) *Oidemia deglandi* Bonaparte.

WHITE-WINGED SCOTER.

SYN.—*Oidemia fusca*; *Melanetta velvetina*.

STATUS—Common winter visitant along our whole seacoast; a few, probably non-breeders, remain through the summer.

- 91 (166) *Oidemia perspicillata* (Linnæus) Stephens.

SURF SCOTER.

SYN.—*Pelionetta trowbridgei*; *Pelionetta perspicillata*; *Ædemia perspicillata* var. *trowbridgei*.

STATUS—Abundant winter visitant along our whole seacoast; a few remain through the summer but are not known to breed.

- 92 (167) *Erismatura jamaicensis* (Gmelin) Salvadori.

RUDDY DUCK.

SYN.—*Erismatura rubida*.

STATUS—Common resident in suitable localities throughout the State; breeds at numerous lakes and ponds in the interior.

- 93 (169) *Chen hyperborea hyperborea* (Pallas) Boie.

LESSER SNOW GOOSE.

SYN.—*Anser hyperboreus*; *Anser albatius*; *Chen albatius*; *Chen hyperborea nivalis*.

STATUS—Abundant winter visitant south through the interior valleys to Orange County.

- 94 (169.1) *Chen caerulescens* (Linnæus) Gundlach.

BLUE GOOSE.

STATUS—Known only from the record by L. Belding of two specimens shot near Stockton "about February 1," 1892.

- 95 (170) *Chen rossi* (Cassin) Ridgway.

ROSS SNOW GOOSE.

SYN.—*Anser rossi*.

STATUS—Fairly common winter visitant through the interior valleys; southernmost record, Newport, Orange County.

- 96 (171 a) *Anser gambeli* Hartlaub.

AMERICAN WHITE-FRONTED GOOSE.

SYN.—*Anser erythropus*; *Anser albifrons*; *Bernicla gambeli*; *Anser albifrons gambeli*.

STATUS—Abundant winter visitant in suitable localities throughout the State.

- 97 (172) *Branta canadensis canadensis* (Linnæus) Bannister.

CANADA GOOSE.

STATUS—Seems to be a fairly common midwinter visitant to the interior portions of the State; recorded south to Bixby, Los Angeles County.

- 98 (172 a) *Branta canadensis hutchinsi* (Richardson) Coues.

HUTCHINS GOOSE.

SYN.—*Anser hutchinsi*; *Bernicla hutchinsi*.

STATUS—Abundant winter visitant in suitable localities throughout the State.

- 99 (172 b) *Branta canadensis occidentalis* (Baird) Ridgway.

WHITE-CHEEKED GOOSE.

SYN.—*Branta canadensis*, part; *Bernicla canadensis*; *Branta occidentalis*.

STATUS—Fairly common winter visitant to interior portions of the State; remains through the summer, and recorded as breeding, on lakes northeast of the Sierras (Klamath Lakes, Lake Tahoe).

- 100 (172 c) *Branta canadensis minima* (Ridgway) Ridgway.

CAKCLING GOOSE.

SYN.—*Bernicla leucoparia*; *Branta hutchinsi* var. *leucoparia*; *Branta minima*.

STATUS—Common winter visitant through the interior valleys, south to Ventura County.

- 101 (174) *Branta nigricans* (Lawrence) Bannister.

BLACK BRANT.

SYN.—*Bernicla brenta*; *Bernicla nigricans*.

STATUS—Common midwinter visitant along our whole seacoast.

- 102 (176) *Philacte canagica* (Sevastianoff) Bannister.

EMPEROR GOOSE.

STATUS—Rare winter visitant; recorded from Humboldt Bay, Gridley and San Francisco market.

- 103 (178) *Dendrocygna fulva* (Gmelin) Burmeister.

FULVOUS TREE-DUCK.

STATUS—Common summer visitant to the San Joaquin-Sacramento Valley where it is recorded as breeding; occurs at suitable localities during spring and fall in the southern half of the State; not recorded north of Marysville.

- 104 (180) *Olor columbianus* (Ord) Stejneger.

WHISTLING SWAN.

SYN.—*Cygnus americanus*.

STATUS—Rare winter visitant to the larger lakes and streams of the interior; not recorded south of Ventura County.

- 105 (181) *Olor buccinator* (Richardson) Wagler.

TRUMPETER SWAN.

SYN.—*Cygnus buccinator*.

STATUS—Fairly common midwinter visitant to the larger freshwater bodies; not recorded south of Los Angeles County.

- 106 (187) *Plegadis guarauna* (Linnæus) Ridgway.

WHITE-FACED GLOSSY IBIS.

SYN.—*Falcinellus cayanensis*; *Ibis mexicanus*; *Ibis ordi*; *Ibis thalassinus*.

STATUS—Common summer visitant to the interior of the State north to Sutter County; straggling to the Farallones; breeds at several points in the San Diegan district.

- 107 (188) *Tantalus loculator* Linnæus.

WOOD IBIS.

STATUS—Irregular visitant to the southern portions of the state; recorded north to Haywards; not known to breed.

- 108 (190) *Botaurus lentiginosus* (Montagu) Stephens.

AMERICAN BITTERN.

SYN.—*Botaurus minor*; *Ardea minor*.

STATUS—Common resident in suitable localities throughout the State; breeds at many points in the interior valleys.

- 109 (191)
- Ardetta exilis*
- (Gmelin) Gundlach.

LEAST BITTERN:

SYN.—*Ardea exilis*; *Ardeola exilis*; *Botaurus exilis*.

STATUS—Fairly common summer visitant to the interior valleys; known to breed in Los Angeles County.

- 110 (194)
- Ardea herodias herodias*
- Linnæus.

GREAT BLUE HERON.

STATUS—Abundant resident in suitable localities throughout the State; breeds at many points in the interior.

- 111 (196)
- Ardea egretta*
- Gmelin.

AMERICAN EGRET.

SYN.—*Herodias egretta*; *Herodias alba egretta*; *Herodias egretta* var. *californica*; *Ardea occidentalis*.

STATUS—Formerly of common occurrence in suitable localities throughout the State; now notably scarce.

- 112 (197)
- Ardea candidissima*
- Gmelin.

SNOWY HERON.

SYN.—*Garzetta candidissima*.

STATUS—Fairly common in summer in the interior valleys.

- 113 (201 b)
- Ardea virescens anthonyi*
- Mearns.

ANTHONY GREEN HERON.

SYN.—*Ardea virescens*; *Butorides virescens*.

STATUS—Common migrant throughout the State; breeds along the larger streams of the interior valleys.

- 114 (202)
- Nycticorax nævius*
- (Boddært) Gray.

BLACK-CROWNED NIGHT HERON.

SYN.—*Nycticorax nycticorax nævius*; *Nycticorax nycticorax*; *Nyctiardea grisea nævia*; *Nycticorax griseus nævius*; *Nyctiardea gardeni*.

STATUS—Abundant resident throughout the State; breeds at many points.

- 115 (206)
- Grus mexicana*
- (Muller) Vieillot.

SANDHILL CRANE.

SYN.—*Grus canadensis*, part; *Grus canadensis mexicana*.

STATUS—Common migrant and winter visitant to the interior valleys; a few pass the summer in the alpine meadows of the northern Sierras, where they are said to breed.

- 116 (210, part)
- Rallus obsoletus*
- Ridgway.

CALIFORNIA CLAPPER RAIL.

SYN.—*Rallus elegans*, part; *Rallus elegans* var. *obsoletus*.

STATUS—Resident on the salt marshes around San Francisco Bay, where it breeds abundantly; Humboldt Bay?

- 117 (210, part) *Rallus levipes* Bangs.

SOUTHERN CALIFORNIA CLAPPER RAIL.

SYN.—*Rallus elegans*, part; *Rallus obsoletus*, part.

STATUS—Common resident on the salt marshes of the Southern California coast from Santa Barbara southeast to Newport Bay.

- 118 (212) *Rallus virginianus* Linnæus.

VIRGINIA RAIL.

STATUS—Common resident in suitable localities throughout the State; recorded as breeding at several points in the interior valleys.

- 119 (214) *Porzana carolina* (Linnæus) Baird.

SORA.

STATUS—Common resident in favorable localities throughout the State; recorded as nesting in freshwater marshes of the interior valleys.

- 120 (215) *Porzana noveboracensis* (Gmelin) Baird.

YELLOW RAIL.

SYN.—*Ortygops noveboracensis*.

STATUS—Of rather rare occurrence in fall and winter in the vicinity of San Francisco Bay; recorded also from Humboldt Bay.

- 121 (216) *Porzana jamaicensis* (Gmelin) Baird.

BLACK RAIL.

SYN.—*Creciscus jamaicensis*.

STATUS—Seems to be a fairly common resident in favorable localities; many fall records from the vicinity of San Francisco Bay.

- 122 (219) *Gallinula galeata* (Lichtenstein) Bonaparte.

FLORIDA GALLINULE.

SYN.—*Gallinula chloropus galeata*.

STATUS—Fairly common resident of the interior valleys, north to Sacramento; several records of breeding in freshwater marshes.

- 123 (221) *Fulica americana* Gmelin.

AMERICAN COOT.

STATUS—Abundant resident in suitable localities throughout the State; breeds at numerous points.

- 124 (222) *Crymophilus fulicarius* (Linnæus) Stejneger.

RED PHALAROPE.

SYN.—*Phalaropus fulicarius*.

STATUS—Common during migration along the coast; occasional inland.

- 125 (223)
- Phalaropus lobatus*
- (Linnæus) Salvadori.

NORTHERN PHALAROPE.

SYN.—*Phalaropus hyperboreus*; *Lobipes lobatus*.

STATUS—Abundant migrant along the seacoast, appearing also on the lakes of the interior.

- 126 (224)
- Steganopus tricolor*
- Vieillot.

WILSON PHALAROPE.

SYN.—*Phalaropus wilsoni*; *Phalaropus tricolor*.

STATUS—Fairly common summer visitant along the eastern border of the State (Lassen County, Owens Valley, Death Valley, Colorado Valley); recorded west of the Sierras only from Riverside; breeds at Lake Tahoe.

- 127 (225)
- Recurvirostra americana*
- Gmelin.

AMERICAN AVOCET.

SYN.—*Recurvirostra occidentalis*.

STATUS—Common summer visitant to many points in the interior of the State, where it breeds; winters numerously in the southern counties.

- 128 (226)
- Himantopus mexicanus*
- (Muller) Ord.

BLACK-NECKED STILT.

SYN.—*Himantopus nigricollis*.

STATUS—Common summer visitant in suitable localities through Upper and Lower Sonoran, where it has been recorded as breeding north to Sutter County west of the Sierras; north to Rhett Lake east of the Sierras.

- 129 (230)
- Gallinago delicata*
- (Ord) A. O. U. Committee.

WILSON SNIPE.

SYN.—*Gallinago wilsoni*; *Scolopax wilsoni*; *Gallinago media*; *Gallinago media wilsoni*.

STATUS—Common winter visitant in suitable localities throughout the State; remains through the summer and breeds in the Boreal valleys of the northern Sierras.

- 130 (232)
- Macrorhamphus scolopaceus*
- (Say) Lawrence.

LONG-BILLED DOWITCHER.

SYN.—*Scolopax grisea*; *Macrorhamphus griseus*; *Scolopax noveboracensis*; *Macrorhamphus griseus scolopaceus*.

STATUS—Fairly common winter visitant to the interior valleys.

- 131 (234)
- Tringa canutus*
- Linnæus.

KNOT.

STATUS—Casual migrant; detected so far only at Humboldt Bay and on the Alameda County shore of San Francisco Bay (May 10, 1896).

- 132 (239)
- Tringa maculata*
- Vieillot.

PECTORAL SANDPIPER.

SYN.—*Actodromas maculata*.

STATUS—Rare migrant; known only from the record by J. G. Cooper of its occurrence at San Francisco Bay.

- 133 (240)
- Tringa fuscicollis*
- Vieillot.

WHITE-RUMPED SANDPIPER.

STATUS—Known only from the record by W. E. Bryant of a female specimen taken near Oakland, October 8, 1883.

- 134 (241)
- Tringa bairdi*
- (Coues) Sclater.

BAIRD SANDPIPER.

SYN.—*Heteropygia bairdi*.

STATUS—Rare migrant; recorded by J. Mailliard from Monterey; three skins listed in Volume XXIV of the "Catalogue of Birds" as from "California."

- 135 (242)
- Tringa minutilla*
- Vieillot.

LEAST SANDPIPER.

SYN.—*Tringa wilsoni*; *Actodromas minutilla*; *Limonites minutilla*.

STATUS—Abundant migrant and winter visitant in suitable localities throughout the State.

- 136 (243 a)
- Tringa pacifica*
- (Coues) Grinnell.

RED-BACKED SANDPIPER.

SYN.—*Tringa alpina pacifica*; *Pelidna alpina americana*; *Pelidna americana*; *Tringa alpina*; *Tringa alpina* var. *americana*.

STATUS—Common winter visitant coastwise; occurs in the interior during migration.

- 137 (247)
- Ereunetes occidentalis*
- Lawrence.

WESTERN SANDPIPER.

SYN.—*Tringa semipalmata*; *Ereunetes petrificatus*; *Ereunetes pusillus*; *Ereunetes pusillus occidentalis*.

STATUS—Abundant migrant coastwise; less numerous in spring and fall through the interior.

- 138 (248)
- Calidris arenaria*
- (Linnæus) Leach.

SANDERLING.

SYN.—*Tringa arenaria*.

STATUS—Common migrant and winter visitant along the seacoast.

- 139 (249)
- Limosa fedoa*
- (Linnæus) Sabine.

MARBLED GODWIT.

STATUS—Fairly common migrant along the coast; said to remain through the winter in small numbers.

- 140 (254)
- Totanus melanoleucus*
- (Gmelin) Vieillot.

GREATER YELLOW-LEGS.

SYN.—*Gambetta melanoleuca*.

STATUS—Common migrant throughout the State; some pass the winter in the southern coast district, and a few have been found through the summer, but there is no definite breeding record.

- 141 (255) *Totanus flavipes* (Gmelin) Vieillot.

YELLOW-LEGS.

SYN.—*Gambetta flavipes*.

STATUS—Seems to be a rather rare migrant through the interior; there are two records of its occurrence on the seacoast in winter.

- 142 (256 a) *Helodromas solitarius cinnamomeus* (Brewster) A. O. U. Comm.

WESTERN SOLITARY SANDPIPER.

SYN.—*Totanus solitarius*; *Rhyacophilus solitarius*; *Totanus solitarius cinnamomeus*.

STATUS—Fairly common migrant throughout the State.

- 143 (258 a) *Symphemia semipalmata inornata* Brewster.

WESTERN WILLET.

SYN.—*Totanus semipalmatus*; *Symphemia semipalmata*.

STATUS—Common migrant coastwise; occasional through the winter on the tide marshes.

- 144 (259) *Heteractitis incanus* (Gmelin) Stejneger.

WANDERING TATTLER.

SYN.—*Heteroscelus brevipes*; *Heteroscelus incanus*.

STATUS—Common winter visitant along rocky ocean shores.

- 145 (263) *Actitis macularia* (Linnæus) Naumann.

SPOTTED SANDPIPER.

SYN.—*Totanus macularius*; *Tringoides macularius*.

STATUS—Common migrant throughout the State; remains through the summer and breeds along streams and lakes in the Sierras; recorded through the winter along our southern seacoast.

- 146 (264) *Numenius longirostris* Wilson.

LONG-BILLED CURLEW.

STATUS—Common through the winter coastwise and in the interior valleys west of the Sierras; recorded as passing the summer in large numbers and breeding in the Pitt River region in the northwestern corner of the State.

- 147 (265) *Numenius hudsonicus* Latham.

HUDSONIAN CURLEW.

STATUS—Abundant migrant coastwise, occurring also at the larger lakes inland.

- 148 (270) *Squatarola squatarola* (Linnæus) Cuvier.

BLACK-BELLIED PLOVER.

SYN.—*Charadrius squatarola*; *Charadrius helveticus*; *Squatarola helvetica*.

STATUS—Common migrant coastwise; occasional through the interior valleys.

- 149 (272) *Charadrius dominicus* Muller.

AMERICAN GOLDEN PLOVER.

SYN.—*Pluvialis virginiana*; *Charadrius virginicus*.

STATUS—Migrant coastwise; so far, detected but rarely.

- 150 (273) *Ægialitis vocifera* (Linnæus) Bonaparte.

KILLDEER.

SYN.—*Oxyechus vociferus*; *Charadrius vociferus*.

STATUS—Abundant resident; breeds in suitable localities throughout the State.

- 151 (274) *Ægialitis semipalmata* Bonaparte.

SEMIPALMATED PLOVER.

SYN.—*Ægialeus semipalmatus*.

STATUS—Fairly common migrant along the seacoast.

- 152 (276) *Ægialitis dubia* (Scopoli) Swinhoe.

LITTLE RING PLOVER.

SYN.—*Ægialitis microrhyncha*; *Ægialitis curonica*.

STATUS—Known only from the record by R. Ridgway of a specimen taken at San Francisco.

- 153 (278) *Ægialitis nivosa* Cassin.

SNOWY PLOVER.

SYN.—*Charadrius cantianus*; *Ægialitis cantiana*; *Ægialitis cantiana nivosa*; *Ægialitis alexandrina nivosa*.

STATUS—Common resident of our southern seacoast; recorded north to Cape Mendocino; also at Owens Lake; breeds north at least to Pescadero.

- 154 (280) *Ægialitis wilsonia* (Ord) Bonaparte.

WILSON PLOVER.

STATUS—Known only from the specimen secured by A. M. Ingersoll at Pacific Beach, San Diego County, June 29, 1894.

- 155 (281) *Ægialitis montana* (Townsend) Cassin.

MOUNTAIN PLOVER.

SYN.—*Padasocys montanus*; *Eudromias montanus*; *Charadrius montanus*; *Ægialitis asiaticus* var. *montanus*.

STATUS—Common in winter on the interior plains west of the Sierras; south to Santa Ana.

- 156 (282) *Aphriza virgata* (Gmelin) Gray.

SURF BIRD.

STATUS—Apparently of rather rare occurrence as a migrant; recorded from the Santa Barbara and Farallone Islands, Santa Barbara and Monterey.

- 157 (283.1)
- Arenaria morinella*
- (Linnæus) Palmer.

RUDDY TURNSTONE.

SYN.—*Strepsilas interpres*; *Arenaria interpres*.

STATUS—Fairly common migrant coastwise.

- 158 (284)
- Arenaria melanocephala*
- (Vigors) Stejneger.

BLACK TURNSTONE.

SYN.—*Strepsilas melanocephalus*.

STATUS—Of common occurrence throughout the year on exposed ocean shores; although individuals remain all summer, they are not known to breed.

- 159 (286.1)
- Hæmatopus frazari*
- Brewster.

FRAZAR OYSTER-CATCHER.

SYN.—*Hæmatopus palliatus*.

STATUS—Rare summer visitant to our extreme southern seacoast; recorded only from San Diego, Santa Barbara Island and the coast of Ventura County.

- 160 (287)
- Hæmatopus bachmani*
- Audubon.

BLACK OYSTER-CATCHER.

SYN.—*Hæmatopus ater*; *Hæmatopus niger*; *Hæmatopus townsendi*.

STATUS—Common resident of exposed rocky shores along our whole seacoast; recorded as breeding at several points.

- 161 (292)
- Oreortyx pictus pictus*
- (Douglas) Baird.

PAINTED PARTRIDGE.

SYN.—*Oreortyx pictus plumiferus*, part; *Callipepla picta*, part.

STATUS—Common resident south through the Humid Coast Transition; Rare in the Santa Cruz Mountains, but more common in the Santa Lucia Mountains in southern Monterey County.

- 162 (292 a)
- Oreortyx pictus plumiferus*
- (Gould) Ridgway.

MOUNTAIN PARTRIDGE.

SYN.—*Oreortyx pictus*, part; *Callipepla picta*, part; *Ortyx plumifera*; *Oreortyx pictus confinis*; *Ortyx picta*.

STATUS—Abundant resident of arid Transition almost throughout the State.

- 163 (294)
- Lophortyx californicus californicus*
- (Shaw & Nodder) Bonaparte.

CALIFORNIA PARTRIDGE.

SYN.—*Callipepla californica*, part; *Ortyx californica*, part; *Lophortyx californicus valli-colus*, part; *Lophortyx californicus brunnescens*.

STATUS—Abundant resident of the humid coast belt, south to southern Monterey County, including the San Francisco Bay region.

- 164 (294 a) *Lophortyx californicus vallicolus* (Ridgway) Elliot.

VALLEY PARTRIDGE.

SYN.—*Lophortyx californicus*, part; *Callipepla californica*, part; *Ortyx californica*, part; *Callipepla californica vallicola*.

STATUS—Abundant resident of arid Upper Sonoran almost throughout the State, ranging locally down into Lower Sonoran and up into Transition; in general, the interior valleys west of the Sierras and east of the humid coast belt.

- 165 (295) *Lophortyx gambeli* Gambel.

GAMBEL PARTRIDGE.

SYN.—*Callipepla gambeli*; *Callipepla gambeli deserticola*.

STATUS—Common resident of Lower Sonoran southeast of the Sierras; in general, the desert region north to Death Valley and east to Hesperia and San Geronio Pass.

- 166 (297 a) *Dendragapus obscurus fuliginosus* (Ridgway) Ridgway.

SOOTY GROUSE.

SYN.—*Dendragapus obscurus*; *Dendragapus fuliginosus*; *Tetrao obscurus*; *Canace obscura*.

STATUS—Common resident of timbered Transition and Boreal, east of the humid coast belt, and south through the Sierras to Mount Pinos.

- 167 (300 c) *Bonasa umbellus sabinei* (Douglas) Coues.

OREGON RUFFED GROUSE.

SYN.—*Tetrao sabini*; *Bonasa sabinei*; *Bonasa umbellus*.

STATUS—Fairly common resident of the humid coast Boreal from Cape Mendocino northward.

- 168 (308 a) *Pediocetes phasainellus columbianus* (Ord) Coues.

COLUMBIAN SHARP-TAILED GROUSE.

SYN.—*Tetrao phasainellus*; *Tetrao columbianus*; *Pediocetes columbianus*.

STATUS—Fairly common resident in the northeastern corner of the State; that is, of the arid Upper Sonoran east of the Sierras (Upper Pitt River region).

- 169 (309) *Centrocercus urophasianus* (Bonaparte) Swainson.

SAGE GROUSE.

SYN.—*Tetrao urophasianus*.

STATUS—Common resident of the arid Great Basin region east of the Sierras; recorded at many points along our eastern border south casually to the Majave River.

- 170 (312) *Columba fasciata* Say.

BAND-TAILED PIGEON.

SYN.—*Columba monilis*.

STATUS—Abundant but irregular winter visitant to favorable localities throughout the State; recorded as summering and breeding sparingly at several points south to Mt. Wilson, Los Angeles County.

- 171 (316)
- Zenaidura macroura*
- (Linnæus) Ridgway.

MOURNING DOVE.

SYN.—*Columba carolinensis*; *Ectopistes carolinensis*; *Zenaidura carolinensis*.

STATUS—Common summer visitant almost throughout the State; remains through the winter irregularly in the valleys east of the Sierras and southerly.

- 172 (319)
- Melopelia leucoptera*
- (Linnæus) Bonaparte.

WHITE-WINGED DOVE.

STATUS—Rare visitant to the southeastern corner of the State; recorded from the lower Colorado near Yuma, and from "Twenty-nine Palms," Mojave Desert, the latter perhaps doubtful.

- 173 (320 a)
- Columbigallina passerina pallescens*
- (Baird) Ferrari-Perez.

MEXICAN GROUND DOVE.

SYN.—*Chamæpelina passerina*; *Columbigallina passerina*.

STATUS—Rare and irregular visitant; recorded from Monterey, Fort Yuma, San Francisco, San Gabriel and Pescadero.

- 174 (324)
- Gymnogyps californianus*
- (Shaw & Nodder) Lesson.

CALIFORNIA VULTURE.

SYN.—*Cathartes californianus*; *Sarcoramphus californianus*; *Cenops californiana*; *Pseudogryphus californianus*.

STATUS—Fairly common resident in the southern half of the State, chiefly in mountainous regions; recorded north to Tehama County.

- 175 (325)
- Cathartes aura*
- (Linnæus) Spix.

TURKEY VULTURE.

SYN.—*Rhinogryphus aura*; *Cenops aura*.

STATUS—Common summer visitant almost throughout the State, breeding at many points, chiefly in Upper Sonoran; occurs through the winter irregularly in the southern counties.

- 176 (328)
- Elanus leucurus*
- (Vieillot) Bonaparte.

WHITE-TAILED KITE.

SYN.—*Elanus dispar*; *Elanus glaucus*.

STATUS—Fairly common resident of Upper Sonoran valleys west of the Sierras; recorded north to Red Bluff and south to Alamitos, Los Angeles County.

- 177 (331)
- Circus hudsonius*
- (Linnæus) Vieillot.

MARSH HAWK.

SYN.—*Circus uliginosus*; *Circus cyaneus* var. *hudsonius*.

STATUS—Abundant winter visitant in the lowlands everywhere; remains through the summer and breeds on the interior marshes; reported as nesting south to the vicinity of San Diego.

- 178 (332) *Accipiter velox rufilatus* Ridgway.

WESTERN SHARP-SHINNED HAWK.

SYN.—*Accipiter velox*; *Accipiter fuscus*.

STATUS—Common winter visitant throughout the State below Boreal; remains through the summer and breeds in small numbers in Transition and Boreal.

- 179 (333) *Accipiter cooperi* (Bonaparte) Gray.

COOPER HAWK.

SYN.—*Accipiter cooperi mexicanus*; *Accipiter mexicanus*; *Nisus cooperi*; *Astur cooperi*; *Nisus cooperi* var. *mexicanus*.

STATUS—Fairly common resident almost throughout the State.

- 180 (334 a) *Accipiter atricapillus striatulus* Ridgway.

WESTERN GOSHAWK.

SYN.—*Astur atricapillus*; *Astur palumbarius* var. *striatulus*.

STATUS—Rather rare resident in the northern part of the State; recorded south in winter to Paicines, and in summer through the Sierras to Kaweah River.

- 181 (337 b) *Buteo borealis calurus* (Cassin) Ridgway.

WESTERN RED-TAILED HAWK.

SYN.—*Buteo borealis*; *Buteo calurus*; *Buteo montanus*.

STATUS—Abundant resident almost throughout the State.

- 182 (339 b) *Buteo lineatus elegans* (Cassin) Ridgway.

RED-BELLIED HAWK.

SYN.—*Buteo lineatus*; *Buteo elegans*.

STATUS—Common resident below Boreal; breeds chiefly in the Upper Sonoran interior valleys.

- 183 (340) *Buteo abbreviatus* Cabanis.

ZONE-TAILED HAWK.

SYN.—*Buteo zonocercus*.

STATUS—Known only from the specimen, still extant, taken by J. G. Cooper near San Diego, March, 1862.

- 184 (342) *Buteo swainsoni* Bonaparte.

SWAINSON HAWK.

SYN.—*Buteo insignatus*; *Buteo obsoletus*; *Buteo harlani*; *Buteo oxypterus*.

STATUS—Common spring and summer visitant to the interior valleys west of the Sierras; breeds numerously in the San Joaquin-Sacramento Valley and in the San Diegoan district.

- 185 (347 a) *Archibuteo sancti-johannis* (Gmelin) Gray.

AMERICAN ROUGH-LEGGED HAWK.

SYN.—*Archibuteo lagopus*; *Archibuteo lagopus sancti-johannis*.

STATUS—Rather rare winter visitant south through the central part of the State.

- 186 (348)
- Archibuteo ferrugineus*
- (Lichtenstein) Gray.

FERRUGINOUS ROUGH-LEG.

SYN.—*Falco ferrugineus*; *Buteo californica*.

STATUS—Fairly common resident in the interior west of the Sierras; north through the Sacramento Valley and south into San Diego County.

- 187 (349)
- Aquila chrysaetos*
- (Linnæus) Sprüngli.

GOLDEN EAGLE.

SYN.—*Aquila canadensis*; *Aquila chrysaetus canadensis*.

STATUS—Common resident chiefly in mountainous localities throughout the State.

- 188 (352)
- Haliaeetus leucocephalus leucocephalus*
- (Linnæus) Boie.

BALD EAGLE.

STATUS—Common resident and breeding species among the Santa Barbara Islands; also occurs locally along our whole seacoast, and as an occasional visitant inland along the larger streams and lakes.

- 189 (355)
- Falco mexicanus*
- Schlegel.

PRAIRIE FALCON.

SYN.—*Falco polyagrus*; *Falco lanarius*; *Falco mexicanus* var. *polyagrus*.

STATUS—Fairly common resident of the valleys and foothill regions throughout the State east of the humid coast belt; breeds chiefly in Upper Sonoran.

- 190 (356)
- Falco anatum anatum*
- Bonaparte.

DUCK HAWK.

SYN.—*Falco peregrinus anatum*; *Falco nigriceps*; *Falco peregrinus*; *Falco communis* var. *nævius*; *Falco communis* var. *anatum*.

STATUS—Fairly common resident locally throughout the State, though chiefly coastwise.

- 191 (357)
- Falco columbarius columbarius*
- Linnæus.

PIGEON HAWK.

SYN.—*Hypotriorchis columbarius*; *Æsalon columbarius*; *Falco lithofalco*.

STATUS—Fairly common resident; recorded chiefly during the winter months from interior valleys.

- 192 (357 a)
- Falco columbarius suckleyi*
- Ridgway.

BLACK MERLIN.

SYN.—*Falco lithofalco* var. *suckleyi*.

STATUS—Rather rare winter visitant into the northern part of the State.

- 193 (358)
- Falco richardsoni*
- Ridgway.

RICHARDSON MERLIN.

SYN.—*Falco columbarius* var. *richardsoni*.

STATUS—Known only from the record by H. W. Henshaw of a specimen secured at Walker Basin, August 28, 1875.

- 194 (360 a) *Falco sparverius deserticolus* Mearns.

DESERT SPARROW HAWK.

SYN.—*Tinnunculus sparverius*; *Cerchneis sparverius*; *Falco sparverius*.

STATUS—Abundant resident throughout the State.

- 195 (364) *Pandion carolinensis* (Gmelin) Bonaparte.

AMERICAN OSPREY.

SYN.—*Pandion haliaetus carolinensis*; *Pandion haliaetus*.

STATUS—Breeds commonly on the Santa Barbara Islands; also locally along our whole seacoast; occurs during migration on the larger streams and lakes of the interior.

- 196 (365) *Strix pratincola* Bonaparte.

AMERICAN BARN OWL.

SYN.—*Strix flammea pratincola*; *Strix flammea americana*; *Aluco flammeus americanus*; *Strix perlata*.

STATUS—Common resident of the Sonoran Zone in all suitable localities; recorded north in the Sacramento Valley to Woodland.

- 197 (366) *Asio wilsonianus* (Lesson) Coues.

AMERICAN LONG-EARED OWL.

SYN.—*Otus wilsonianus*; *Otus vulgaris wilsonianus*; *Asio americanus*.

STATUS—Common resident of the Sonoran Zone almost throughout the State; breeds at many points in the interior valleys.

- 198 (367) *Asio accipitrinus* (Pallas) Newton.

SHORT-EARED OWL.

SYN.—*Strigiceps uliginosus*; *Brachyotus palustris*; *Brachyotus cassini*; *Otus brachyotus*.

STATUS—Common winter visitant to unwooded districts throughout the State; known to remain through the summer and breed sparingly on certain coast marshes.

- 199 (369) *Syrnium occidentale* Xantus.

SPOTTED OWL.

SYN.—*Syrnium nebulosum*; *Strix occidentalis*.

STATUS—Fairly common resident of the San Diegan district from Fort Tejon south; mostly in the foothills; recorded also from Big Trees, Calaveras County.

- 200 (370) *Scotiaptex cinerea* (Gmelin) Swainson.

GREAT GRAY OWL.

SYN.—*Ulula cinerea*; *Syrnium cinereum*.

STATUS—Rare midwinter visitant into the north end of the State; recorded from Chico and the "Sacramento Valley."

- 201 (372) *Cryptoglaux acadica acadica* (Gmelin) Richmond.

SAW-WHET OWL.

SYN.—*Strix frontalis*; *Nyctale albifrons*; *Nyctala acadica*.

STATUS—Perhaps a fairly common winter visitant to the northern half of the State; there are eleven records, the southernmost in the Sierras being from the San Jacinto mountains, and in the coast belt, from Monterey.

- 202 (373 c) *Megascops asio bendirei* (Brewster) Stejneger.

CALIFORNIA SCREECH OWL.

SYN.—*Scops asio*; *Megascops asio*; *Ephialtes asio*; *Ephialtes choliba*; *Scops trichopsis*; *Scops asio* var. *mccalli*; *Scops asio bendirei*.

STATUS—Abundant resident in wooded regions almost throughout the State.

- 203 (374) *Megascops flammeolus flammeolus* (Kaup) Stejneger.

FLAMMULATED SCREECH OWL.

SYN.—*Scops flammeolus*.

STATUS—Recorded twice: a specimen secured at Fort Crook by J. Feilner and one at Big Trees by L. Belding.

- 204 (374 a) *Megascops flammeolus idahoensis* Merriam.

DWARF SCREECH OWL.

SYN.—*Megascops flammeolus*, part.

STATUS—Known only from three specimens recorded from the San Bernardino Mountains, one of which was obtained by M. F. Gilman on San Geronio Peak, May 26, 1893.

- 205 (375 c) *Bubo virginianus saturatus* Ridgway.

DUSKY HORNED OWL.

SYN.—*Bubo virginianus subarcticus*, part.

STATUS—Common resident of the humid coast belt south to Monterey; casual in the Sierra Nevada (El Dorado County).

- 206 (375 d) *Bubo virginianus pacificus* Cassin.

PACIFIC HORNED OWL.

SYN.—*Bubo virginianus subarcticus*, part; *Bubo virginianus*; *Bubo virginianus* var. *arcticus*; *Bubo magellanicus*; *Bubo virginianus atlanticus*.

STATUS—Common resident of wooded regions west and south of the humid coast belt almost throughout the State.

- 207 (376) *Nyctea nyctea* (Linnæus) Lichtenstein.

SNOWY OWL.

STATUS—Rare midwinter visitant; recorded by C. S. Thompson from Santa Cruz, and by D. A. Cohen from Sonoma and Alameda Counties.

- 208 (378) *Speotyto cunicularia hypogæa* (Bonaparte) Coues.

BURROWING OWL.

SYN.—*Strix cunicularia*; *Speotyto cunicularia*; *Athene socialis*; *Athene cunicularia*; *Athene hypogæa*; *Speotyto cunicularia obscura*.

STATUS—Abundant resident of unwooded valleys almost throughout the State, except humid coast belt.

- 209 (379) *Glaucidium gnoma gnoma* Wagler.

PYGMY OWL.

SYN.—*Athene infuscata*; *Glaucidium passerinum* var. *californicum*, part; *Glaucidium gnoma californicum*, part.

STATUS—Common resident of the arid interior mountain regions from Mount Shasta south to the San Bernardino Mountains; recorded from many points in the Sierras.

- 210 (379 a) *Glaucidium gnoma californicum* (Sclater) A. O. U. Committee.

CALIFORNIA PYGMY OWL.

SYN.—*Glaucidium gnoma*, part; *Glaucidium californicum*; *Glaucidium passerinum* var. *californicum*, part; *Glaucidium infuscatum*.

STATUS—Common resident of the humid coast Transition south through the Santa Cruz district to Monterey.

- 211 (381) *Micropallas whitneyi* (Cooper) Sennett.

ELF OWL.

SYN.—*Micrathene whitneyi*.

STATUS—Known only from the records by R. Ridgway of a specimen taken in Kern County and by L. M. Loomis of one said to have been secured near San Bernardino; the latter has been questioned.

- 212 (385) *Geococcyx californianus* (Lesson) Baird.

ROAD-RUNNER.

SYN.—*Leptostoma longicauda*; *Geococcyx viaticus*; *Geococcyx mexicanus*.

STATUS—More or less common resident below Transition almost throughout the State; recorded north through the Sacramento Valley to Battle Creek and Copper City; not recorded in the coast belt north of Marin County.

- 213 (387 a) *Coccyzus americanus occidentalis* Ridgway.

CALIFORNIA CUCKOO.

SYN.—*Coccyzus americanus*; *Coccyzus erythrophthalmus*.

STATUS—Fairly common summer visitant to the interior valleys; seems to be confined to willow bottoms during the nesting season.

- 214 (390) *Ceryle alcyon* (Linnæus) Bonaparte.

BELTED KINGFISHER

SYN.—*Alcedo alcyon*.

STATUS—Common resident along the streams of the interior; more abundant and generally distributed during migration; numerous in winter along our southern seacoast.

- 215 (393 c)
- Dryobates villosus harrisi*
- (Audubon) Ridgway.

HARRIS WOODPECKER.

STATUS—Common resident in the extreme northern part of the humid coast belt; south in winter through this belt as far as Monterey.

- 216 (393 d)
- Dryobates villosus hyloscopus*
- (Cabanis) Brewster.

CABANIS WOODPECKER.

SYN.—*Dryobates villosus harrisi*, part; *Picus harrisi*; *Picus villosus*; *Picus villosus harrisi*; *Dendrocopus harrisi*.

STATUS—Common resident in suitable localities almost throughout the State, but chiefly in Transition south and east of the northern humid coast belt.

- 217 (394 b)
- Dryobates pubescens leucurus*
- (Hartlaub) Fisher.

BATCHELDER WOODPECKER.

SYN.—*Dryobates pubescens oreæcus*; *Dryobates pubescens homorus*.

STATUS—Occurs in winter at least, along the eastern border of the State; recorded from Quincy, Kernville and Fort Tejon.

- 218 (394 a, part)
- Dryobates pubescens turati*
- (Malherbe) Fisher.

WILLOW WOODPECKER.

SYN.—*Dryobates pubescens*; *Picus pubescens gairdneri*; *Dryobates pubescens gairdneri*, part; *Picus gairdneri*; *Picus meridionalis*; *Dendrocopus gairdneri*; *Picus turati*.

STATUS—Common resident in suitable localities almost throughout the State; breeds chiefly in Upper Sonoran west of the Sierras.

- 219 (394 a, part)
- Dryobates pubescens gairdneri*
- (Audubon) Ridgway.

GAIRDNER WOODPECKER.

STATUS—Occurs only in the extreme northern part of the humid coast belt (Del Norte and Siskiyou Counties).

- 220 (396)
- Dryobates scalaris bairdi*
- (Malherbe) Ridgway.

TEXAS WOODPECKER.

SYN.—*Picus scalaris*, part; *Dryobates scalaris*; *Dendrocopus scalaris*.

STATUS—Fairly common resident in the deserts of the southeastern corner of the State; recorded west to Hesperia and San Geronio Pass.

- 221 (396 a)
- Dryobates lucasanus*
- (Xantus) Grinnell.

SAINT LUCAS WOODPECKER.

SYN.—*Dryobates scalaris lucasanus*.

STATUS—Recorded only as found breeding by W. W. Price and E. Heller in the vicinity of Whitewater on the Colorado Desert.

- 222 (397)
- Dryobates nuttalli*
- (Gambel) Ridgway.

NUTTALL WOODPECKER.

SYN.—*Picus scalaris*, part; *Picus nuttalli*; *Picus scalaris* var. *nuttalli*; *Dendrocopus nuttalli*.

STATUS—Common resident of Upper Sonoran west of the Sierras and east of the humid coast belt; recorded from San Diego north to Red Bluff and Yreka.

- 223 (399) *Xenopicus albolarvatus* (Cassin) Malherbe.

WHITE-HEADED WOODPECKER.

SYN.—*Picus albolarvatus*; *Leuconerpes albolarvatus*; *Melanerpes albolarvatus*.

STATUS—Common resident of the Transition and lower Boreal Zones along the whole length of the Sierras from the Cuyamaca Mountains in San Diego County to Mount Shasta.

- 224 (400, part) *Picoides tenuirostris* (Bangs) Sharpe.

SIERRA THREE-TOED WOODPECKER.

SYN.—*Picoides arcticus*; *Picoides arcticus tenuirostris*.

STATUS—Fairly common resident of the Boreal Zone along the northern Sierras; recorded south to Pyramid Peak and Lake Tahoe.

- 225 (402 a) *Sphyrapicus varius nuchalis* Baird.

RED-NAPED SAPSUCKER.

SYN.—*Picus varius*; *Sphyrapicus nuchalis*.

STATUS—Fairly common winter visitant to the southern part of the State, reaching the coast district as far north as Palo Alto and San Geronimo; recorded as passing the summer and breeding in the northeastern corner of the State (Modoc and Lassen Counties).

- 226 (403, part) *Sphyrapicus varius ruber* (Gmelin) Ridgway.

RED-BREASTED SAPSUCKER.

SYN.—*Picus ruber*, part; *Melanerpes ruber*; *Sphyrapicus ruber*, part.

STATUS—Fairly common winter visitant south through the humid coast belt to Monterey.

- 227 (403, part) *Sphyrapicus varius daggetti* Grinnell.

SIERRA SAPSUCKER.

SYN.—*Picus ruber*, part; *Sphyrapicus varius ruber*, part; *Sphyrapicus ruber*, part.

STATUS—Common in summer in the Boreal Zone along almost the whole length of the Sierras, at least from Mount Shasta to the San Bernardino Mountains; in winter irregularly distributed westward through the intervening valleys to the coast.

- 228 (404) *Sphyrapicus thyroideus* (Cassin) Baird.

WILLIAMSON SAPSUCKER.

SYN.—*Picus thyroideus*; *Sphyrapicus williamsoni*; *Melanerpes rubrigularis*.

STATUS—Common resident of the Boreal Zone along the Sierras from Mount Shasta to the San Jacinto Mountains; in winter straggling westward (Santa Cruz, Los Angeles).

- 229 (405 a) *Ceophlæus pileatus abieticola* Bangs.

NORTHERN PILEATED WOODPECKER.

SYN.—*Ceophlæus pileatus*; *Hylotomus pileatus*; *Dryocopus pileatus*; *Dryotomus pileatus*.

STATUS—Fairly common resident of timbered areas in the northern part of the State; recorded in the Sierras south to Kings River Canyon, and in the coast belt to Eel River.

- 230 (407 a)
- Melanerpes formicivorus bairdi*
- Ridgway.

CALIFORNIA WOODPECKER.

SYN.—*Picus formicivorus*; *Melanerpes melanopogon*; *Melanerpes formicivorus*.

STATUS—Abundant resident in suitable localities west of the Sierras.

- 231 (408)
- Melanerpes torquatus*
- (Wilson) Bonaparte.

LEWIS WOODPECKER.

SYN.—*Asyndesmus torquatus*; *Picus torquatus*.

STATUS—In summer breeds commonly in certain localities along the Sierras south to Fort Tejon, and in Salinas and San Benito Valleys; in winter spread pretty generally throughout the State.

- 232 (411)
- Melanerpes uropygialis*
- (Baird) Ridgway.

GILA WOODPECKER.

SYN.—*Centurus uropygialis*.

STATUS—Resident in small numbers and breeds on the California side of the lower Colorado River in the vicinity of Fort Yuma.

- 233 (412 a)
- Colaptes auratus luteus*
- Bangs.

NORTHERN FLICKER.

SYN.—*Colaptes auratus*; *Colaptes cafer hybridus*; *Colaptes auratus* var. *hybridus*.STATUS—Pure *auratus* has been recorded many times in winter west of the Sierras and south as far as Warm Springs, San Diego County; "hybrids" are still more frequent.

- 234 (413)
- Colaptes cafer collaris*
- (Vigors) Ridgway.

RED-SHAFTED FLICKER.

SYN.—*Colaptes collaris*; *Colaptes mexicanus*; *Colaptes cafer*; *Colaptes auratus mexicanus*; *Colaptes cafer mexicanus*; *Colaptes ayresi*.

STATUS—Abundant resident in suitable localities throughout the State.

- 235 (413 a)
- Colaptes cafer saturator*
- (Ridgway) A. O. U. Committee.

NORTHWESTERN FLICKER.

STATUS—Winter visitant into the north end of the State, chiefly through the coast belt; recorded from Red Bluff and Humboldt County.

- 236 (418)
- Phalænoptilus nuttalli nuttalli*
- (Audubon) Ridgway.

POOR-WILL.

SYN.—*Antrostomus nuttalli*, part.

STATUS—Fairly common in summer along the whole eastern border of the State east of the Sierras; resident through the year among the desert ranges southeast of the Sierras.

- 237 (418 a)
- Phalænoptilus nuttalli nitidus*
- Brewster.

FRÖSTED POOR-WILL.

STATUS—Resident in the deserts of southeastern California north to Death Valley.

- 238 (418 b) *Phalænoptilus nuttalli californicus* Ridgway.

DUSKY POOR-WILL.

SYN.—*Antrostomus nuttalli*, part; *Phalænoptilus nuttalli*, part.

STATUS—Common summer visitant to the foothill regions west of the Sierras, chiefly Upper Sonoran; recorded north to Gridley, Butte County; remains through the winter in the southern part of the State.

- 239 (420) *Chordeiles virginianus virginianus* (Gmelin) Swainson.

NIGHTHAWK.

SYN.—*Chordeiles popetue*, part; *Chordeiles virginianus henryi*, part; *Chordeiles popetue* var. *henryi*.

STATUS—Common summer visitant to the Transition and Boreal Zones of the north end of the State and south through the Sierras; recorded during migration more generally through the western valleys.

- 240 (420 a) *Chordeiles virginianus henryi* (Cassin) Coues.

WESTERN NIGHTHAWK.

STATUS—Fairly common summer visitant to the desert regions southeast of the Sierras; recorded north to Mono Lake.

- 241 (421) *Chordeiles acutipennis texensis* (Lawrence) Ridgway.

TEXAS NIGHTHAWK.

SYN.—*Chordeiles texensis*; *Chordeiles virginianus henryi*, part; *Chordeiles popetue*, part; *Chordeiles virginianus*, part.

STATUS.—Abundant summer visitant throughout the Lower Sonoran Zone; recorded north to Bishop in Owens Valley, Stanislaus County, and Paicines in San Binito County.

- 242 (422) *Cypseloides niger borealis* (Kennerley) Drew.

BLACK SWIFT.

SYN.—*Cypseloides niger*; *Cypseloides borealis*; *Nephæceles niger*.

STATUS—Fairly common locally; occurs in summer irregularly throughout the State.

- 243 (424) *Chætura vauxi* (Townsend) DeKay.

VAUX SWIFT.

SYN.—*Acanthylis vauxi*.

STATUS—Fairly common summer visitant to the humid coast belt from the Santa Cruz Mountains northward; common migrant almost throughout the State.

- 244 (425) *Aeronautes melanoleucus* (Baird) Hartert.

WHITE-THROATED SWIFT.

SYN.—*Panyptila melanoleuca*; *Micropus melanoleucus*; *Cypselus saxatilis*.

STATUS—Fairly common summer visitant to mountainous regions west of the humid coast belt; also along the seacoast north to Santa Cruz; remains nearly through the winter in the southern part of the State.

- 245 (429) *Trochilus alexandri* Bourcier & Mulsant.

BLACK-CHINNED HUMMINGBIRD.

STATUS—Abundant summer visitant to the southern part of the State and north through the interior valleys to the McCloud River; breeds chiefly in Upper Sonoran.

- 246 (430) *Calypte costæ* (Bourcier) Gould.

COSTA HUMMINGBIRD.

SYN.—*Trochilus costæ*; *Atthis costæ*; *Selasphorus costæ*.

STATUS—Common summer visitant to the Lower Sonoran Zone in the southern part of the State both east and west of the Sierras; recorded north through Owens Valley, and rarely to San Francisco and Oakland.

- 247 (431) *Calypte anna* (Lesson) Gould.

ANNA HUMMINGBIRD.

SYN.—*Trochilus anna*; *Ornismya anna*; *Atthis anna*; *Selasphorus anna*; *Mellisuga anna*; *Trochilus ictercephalus*; *Calliphlox anna*.

STATUS—Abundant resident of Upper Sonoran west of the Sierras; in late summer found up through Boreal; recorded north to Mount Shasta and Yreka.

- 248 (431.1) *Selasphorus floresii* Gould.

FLORESI HUMMINGBIRD.

SYN.—*Trochilus floresii*; *Selasphorus rubromitratus*.

STATUS—Known only from the records by Bryant of a specimen obtained at San Francisco in 1885, and by Emerson of a male specimen secured by him at Haywards, February 20, 1901.

- 249 (432) *Selasphorus platycercus* (Swainson) Bonaparte.

BROAD-TAILED HUMMINGBIRD.

STATUS—Rather rare summer visitant to the Sierra Nevada (Lake Tahoe to Sequoia National Park); specimen recorded by R. C. McGregor taken at Oakland, May 8, 1890.

- 250 (433) *Selasphorus rufus* (Gmelin) Swainson.

RUFOUS HUMMINGBIRD.

SYN.—*Trochilus rufus*, part; *Selasphorus ruber*; *Calliphlox rufa*; *Selasphorus henshawi*.

STATUS—Abundant spring and fall migrant almost throughout the State; fairly common through the summer and breeds in the Boreal Zone of the central and northern Sierras.

- 251 (434) *Selasphorus alleni* Henshaw.

ALLEN HUMMINGBIRD.

SYN.—*Trochilus rufus*, part; *Selasphorus rufus*, part; *Trochilus alleni*.

STATUS—Common summer visitant to the humid coast belt from Monterey northward, including the San Francisco Bay Region; migrant through southern California; permanent resident on Santa Catalina and San Clemente Islands.

252 (436) *Stellula calliope* Gould.

CALLIOPE HUMMINGBIRD.

SYN.—*Trochilus calliope*; *Selasphorus calliope*; *Callothorax calliope*.

STATUS—Fairly common summer visitant along the whole length of the Sierras, breeding in Transition; occurs irregularly west to the coast during migration.

253 (444) *Tyrannus tyrannus tyrannus* (Linnæus) Jordan.

COMMON KINGBIRD.

STATUS—Rare summer visitant along the eastern border of the State east of the Sierras; a specimen recorded as taken by W. B. Judson at Santa Monica, August 31, 1895.

254 (447) *Tyrannus verticalis* Say.

ARKANSAS KINGBIRD.

STATUS—Abundant summer visitant below Transition nearly throughout the State.

255 (448) *Tyrannus vociferans* Swainson.

CASSIN KINGBIRD.

STATUS—Fairly common resident locally in the San Diegan district, where it breeds; winters regularly north to Santa Barbara, and recorded as breeding north to Paicines, San Benito Valley.

256 (454) *Myiarchus cinerascens cinerascens* (Lawrence) Sclater & Salvin.

ASH-THROATED FLYCATCHER.

SYN.—*Myiarchus crinitus* var. *cinerascens*; *Myiobius crinitus*; *Tyrannus crinitus*; *Myiarchus mexicanus*; *Tyrannula cinerascens*.

STATUS—Common summer visitant below Transition nearly throughout the State.

257 (456) *Sayornis phœbe* (Latham) Stejneger.

PHŒBE.

STATUS—Known only from the record by H. S. Swarth of a male specimen taken by him near San Fernando, Los Angeles County, February 14, 1901.

258 (457) *Sayornis saya* (Bonaparte) Baird.

SAY PHŒBE.

SYN.—*Sayornis pallida*; *Myiobius saya*; *Tyrannula saya*.

STATUS—Common winter visitant below Transition; fairly common through the summer and breeds east of the Sierras; also locally in small numbers west of the Sierras (Paicines, San Bernardino, Elsinore, San Diego).

259 (458) *Sayornis nigricans semiatra* (Vigors) Nelson.

BLACK PHŒBE.

SYN.—*Muscicapa semiatra*; *Tyrannula nigricans*; *Sayornis nigricans*; *Tyrannus nigricans*; *Myiobius nigricans*.

STATUS—Common resident below Transition west of the Sierras; occasional in summer east of the Sierras.

- 260 (459)
- Contopus borealis*
- (Swainson) Baird.

OLIVE-SIDED FLYCATCHER.

SYN.—*Tyrannus borealis*; *Tyrannus cooperi*; *Nuttallornis borealis*.

STATUS—Common summer visitant through Transition and lower Boreal; elsewhere during migration.

- 261 (462)
- Contopus richardsoni richardsoni*
- (Swainson) Baird.

WESTERN WOOD PEWEE.

SYN.—*Horizopus richardsoni*; *Tyrannula virens*; *Contopus virens* var. *richardsoni*; *Contopus richardsoni saturatus*.

STATUS—Common summer visitant through Upper Sonoran and Transition; elsewhere during migration.

- 262 (464)
- Empidonax difficilis*
- Baird.

WESTERN FLYCATCHER.

SYN.—*Empidonax flaviventris*; *Empidonax insulicola*; *Empidonax flaviventris difficilis*.

STATUS—Abundant summer visitant through Upper Sonoran and Transition west of the Sierras; occurs commonly elsewhere as a migrant.

- 263 (464.1)
- Empidonax cineritius*
- Brewster.

SAINT LUCAS FLYCATCHER.

STATUS—Known only from the record by A. W. Anthony of specimens taken in June, 1895, on Cuyamaca Peak, San Diego County.

- 264 (466)
- Empidonax trailli trailli*
- (Audubon) Baird.

TRAILL FLYCATCHER.

SYN.—*Empidonax pusillus*; *Myiobius pusilla*; *Tyrannula trailli*; *Empidonax trailli* var. *pusillus*.

STATUS—Common summer visitant through Upper Sonoran, nesting north through the interior valleys to Sacramento and Honey Lake; elsewhere during migration.

- 265 (468)
- Empidonax hammondi*
- (Xantus) Baird.

HAMMOND FLYCATCHER.

SYN.—*Tyrannula hammondi*.

STATUS—Common summer visitant through Transition and lower Boreal along the whole length of the Sierras; recorded as breeding from Mount Shasta south to San Jacinto Peak; elsewhere during migration.

- 266 (469)
- Empidonax wrighti*
- Baird.

WRIGHT FLYCATCHER.

SYN.—*Empidonax obscurus*, part.

STATUS—Fairly common summer visitant along the Sierras south to Mount Whitney; sparingly elsewhere during migration.

- 267 (469.1)
- Empidonax griseus*
- Brewster.

GRAY FLYCATCHER.

SYN.—*Empidonax obscurus*, part.

STATUS—Fairly common in summer in the Boreal Zone on the Sierra San Gabriel, Los Angeles County; winters in the San Diegoan District to the southward, west to Ventura.

- 268 (471)
- Pyrocephalus rubineus mexicanus*
- (Sclater) Coues.

VERMILLION FLYCATCHER.

SYN.—*Pyrocephalus rubineus*; *Pyrocephalus mexicanus*.

STATUS—Fairly common winter visitant to the southeastern part of the State, west through the San Diegoan district as far as Ventura.

- 269 (474c)
- Otocoris alpestris arenicola*
- Henshaw.

DESERT HORNED LARK.

SYN.—*Otocoris alpestris*, part.

STATUS—Common resident locally in the deserts of southeastern California east of the Sierran divide; recorded north to Mono Lake and west to Gorman Station.

- 270 (474 e)
- Otocoris alpestris chrysolæma*
- (Wagler) Stejneger.

MEXICAN HORNED LARK.

SYN.—*Otocoris alpestris*, part; *Eremophila alpestris chrysolæma*, part; *Eremophila cornuta*; *Otocoris alpestris rubea*, part; *Alauda alpestris*; *Phileremos cornutus*, part; *Otocorys chrysolæma*; *Otocoris rufa*.

STATUS—Common resident west of the Sierran divide in suitable places from San Diego north to Marin County and Stockton.

- 271 (474 f)
- Otocoris alpestris rubea*
- Henshaw.

RUDDY HORNED LARK.

SYN.—*Eremophila alpestris chrysolæma*, part; *Otocoris rubea*; *Otocoris alpestris*, part; *Alauda rufa*.

STATUS—Common resident in the upper Sacramento Valley from Red Bluff south in winter to Stockton; casually to San Geronimo, Marin County.

- 272 (474 g, part)
- Otocoris alpestris strigata*
- Henshaw.

STREAKED HORNED LARK.

SYN.—*Otocorys strigata*.

STATUS—Common winter visitant irregularly south through the Sacramento Valley to Stockton; casually to San Jose and Santa Barbara.

- 273 (474 i)
- Otocoris alpestris merrilli*
- Dwight.

DUSKY HORNED LARK.

SYN.—*Otocoris alpestris rubea*, part; *Otocoris alpestris leucolæma*.

STATUS—Common in summer in the northeastern corner of the State east of the Sierras; recorded south in winter irregularly to Lake Valley and Stockton.

- 274 (474 g, part)
- Otocoris insularis*
- (Townsend) Grinnell.

ISLAND HORNED LARK.

SYN.—*Otocoris alpestris insularis*; *Phileremos cornutus*, part; *Otocoris alpestris strigata*, part; *Otocoris alpestris rubea*, part.

STATUS—Common resident on the Santa Barbara Islands.

- 275 (475)
- Pica hudsonica*
- (Sabine) Bonaparte.

AMERICAN MAGPIE.

SYN.—*Pica pica*; *Pica melanoleuca* var. *hudsonica*; *Pica pica hudsonica*.

STATUS—Common resident along the eastern border of the State east of the Sierras; recorded north to Alturas and Shasta Valley and south to Mono Lake.

- 276 (476)
- Pica nuttalli*
- Audubon.

YELLOW-BILLED MAGPIE.

SYN.—*Pica melanoleuca nuttalli*; *Pica caudata* var. *nuttalli*; *Cleptes nuttalli*.

STATUS—Common resident locally in Sonoran west of the Sierra Nevada, north to Red Bluff and south to Santa Paula.

- 277 (478, part)
- Cyanocitta stelleri carbonacea*
- Grinnell.

COAST JAY.

SYN.—*Cyanocitta stelleri*, part; *Cyanocitta stelleri frontalis*, part; *Cyanura stelleri*, part.

STATUS—Common resident of Transition south through the humid coast belt to the Santa Lucia Mountains in Southern Monterey County; in winter wanders a short distance into the interior valleys to the eastward.

- 278 (478 a)
- Cyanocitta stelleri frontalis*
- (Ridgway) Boucard.

BLUE-FRONTED JAY.

SYN.—*Cyanocitta stelleri* part; *Cyanura stelleri*, part; *Cyanura stelleri frontalis*.

STATUS—Common resident of Transition along the whole length of the Sierras from Mount Shasta south through the Cuyamaca Mountains; occurs down into the valleys to the westward in winter.

- 279 (480)
- Aphelocoma woodhousei*
- (Baird) Ridgway.

WOODHOUSE JAY.

STATUS—Common resident along the desert ranges east of the Sierra Nevada; recorded south to the Coso Mountains and north to Chat, Lassen County.

- 280 (481)
- Aphelocoma californica californica*
- (Vigors) Cabanis.

CALIFORNIA JAY.

SYN.—*Cyanocitta californica*; *Cyanocorax californicus*; *Garrulus californicus*; *Cyanocitta floridana californica*; *Aphelocoma californica obscura*; *Garrulus ultramarinus*; *Aphelocoma floridana* var. *californica*.

STATUS—Abundant resident of Upper Sonoran west of the Sierras; ranges locally up into Transition.

- 281 (481.1) *Aphelocoma insularis* Henshaw.

SANTA CRUZ ISLAND JAY.

STATUS—Common resident on Santa Cruz Island.

- 282 (485) *Perisoreus obscurus obscurus* (Ridgway) Sharpe.

OREGON JAY.

STATUS—Fairly common resident in the humid coast Boreal in the extreme northwestern corner of the State; south to the vicinity of Mendocino, Mendocino County.

- 283 (485 a) *Perisoreus obscurus griseus* Ridgway.

GRAY JAY.

SYN.—*Perisoreus canadensis*; *Perisoreus obscurus*, part; *Perisoreus canadensis* var. *obscurus*.

STATUS—Fairly common resident of the Boreal Zone in the Northern Sierras; recorded from Mount Shasta south to Summit, Placer County.

- 284 (486) *Corvus corax sinuatus* (Wagler) Ridgway.

AMERICAN RAVEN.

SYN.—*Corvus corax*; *Corvus carnivorus*; *Corvus corax carnivorus*; *Corvus cataloll*; *Corvus cacaloll*.

STATUS—Common resident in southern California; especially numerous on the Santa Barbara Islands; rather rare north of the Tehachapi Mountains, though recorded north to Red Bluff and Humboldt Bay.

- 285 (487) *Corvus cryptoleucus* Couch.

WHITE-NECKED RAVEN.

STATUS—Resident in southern California; recorded west to Fort Tejon and San Fernando Valley.

- 286 (488) *Corvus americanus hesperis* Ridgway.

CALIFORNIA CROW.

SYN.—*Corvus americanus*; *Corvus frugivorus*; *Corvus caurinus*; *Corvus ossifragus*; *Corvus americanus* var. *caurinus*; *Corvus americana*.

STATUS—Common resident locally in the interior valleys as well as coastwise.

- 287 (491) *Nucifraga columbiana* (Wilson) Audubon.

CLARK NUTCRACKER.

SYN.—*Picicorvus columbianus*.

STATUS—Common resident in the pineries of the Sierras, chiefly in the Boreal Zone; recorded from Mount Shasta to the San Bernardino Mountains, and casually in winter west to Point Reyes.

- 288 (492) *Cyanocephalus cyanocephalus* (Wied) Stejneger.

PINYON JAY.

SYN.—*Gymnokitta cyanocephala*.

STATUS—Common resident of the desert ranges southeast of the Sierra Nevada as well as locally along the whole length of the Sierras from Mount Shasta south to the San Bernardino Mountains; in winter occurs irregularly westward toward the coast (Pasadena, Pacific Grove).

- 289 (494) *Dolichonyx oryzivorus* (Linnæus) Swainson.

BOBOLINK.

STATUS—Rare fall visitant; recorded from Monterey, Redwood City, and Mono Lake.

- 290 (495) *Molothrus ater ater* (Boddært) Gray.

COWBIRD.

SYN.—*Molothrus pecoris*; *Icterus pecoris*; *Molothrus ater obscurus*.

STATUS—Common winter visitant to the southeastern corner of the State; west to the Cuyamaca Mountains and north to Independence, Inyo County.

- 291 (497) *Xanthocephalus xanthocephalus* (Bonaparte) Jordan.

YELLOW-HEADED BLACKBIRD.

SYN.—*Xanthocephalus icterocephalus*; *Agelaius xanthocephalus*; *Xanthocephalus longipes*.

STATUS—Common resident locally in the interior valleys east of the humid coast belt.

- 292 (498, part) *Agelaius phœniceus neutralis* Ridgway.

SAN DIEGO RED-WINGED BLACKBIRD.

SYN.—*Agelaius phœniceus*, part.

STATUS—Common resident locally in the interior and southern parts of the State; breeds abundantly in the San Diegan district.

- 293 (498, part) *Agelaius phœniceus caurinus* Ridgway.

NORTHWESTERN RED-WINGED BLACKBIRD.

STATUS—Recorded by R. Ridgway from Mendocino County in May.

- 294 (498 a) *Agelaius phœniceus sonoriensis* Ridgway.

SONORAN RED-WINGED BLACKBIRD.

SYN.—*Agelaius phœniceus*, part; *Agelaius phœniceus longirostris*.

STATUS—Common resident along the lower Colorado River in the southeastern corner of the State.

- 295 (499) *Agelaius gubernator californicus* Nelson.

BICOLORED BLACKBIRD.

SYN.—*Agelaius phœniceus gubernator*; *Agelaius gubernator*.

STATUS—Abundant resident locally in the interior valleys west of the Sierras, north to Cahto and Marysville; recorded casually south and east to San Diego and Owens Lake.

- 296 (500) *Agelaius tricolor* (Audubon) Bonaparte.

TRICOLORED BLACKBIRD.

SYN.—*Icterus tricolor*; *Agelaius phoeniceus* var. *tricolor*.

STATUS—Common resident locally in the interior valleys west of the Sierras, north to Shasta, east to Lake Tahoe, and south to San Diego.

- 297 (501 b) *Sturnella magna neglecta* (Audubon) Allen.

WESTERN MEADOWLARK.

SYN.—*Sturnella neglecta*; *Sturnella hippocrepus*.

STATUS—Abundant resident in suitable localities almost throughout the State.

- 298 (504) *Icterus parisorum* Bonaparte.

SCOTT ORIOLE.

STATUS—Fairly common summer visitant through the desert regions southeast of the Sierras; recorded as breeding east to San Diego and Walker Pass, and north to the Panamint Mountains; casually during migration to San Bernardino and Los Angeles.

- 299 (505 a) *Icterus cucullatus nelsoni* Ridgway.

ARIZONA HOODED ORIOLE.

SYN.—*Icterus cucullatus*.

STATUS—Common summer visitant through the San Diegan district, northwest to Santa Barbara and east to Banning; one record beyond this district: Auburn, Placer County.

- 300 (508) *Icterus bullocki* (Swainson) Bonaparte.

BULLOCK ORIOLE.

SYN.—*Xanthornis bullocki*; *Yphantis bullocki*.

STATUS—Common summer visitant in suitable localities below Boreal; breeds chiefly in Upper Sonoran.

- 301 (510) *Scolecophagus cyanocephalus* (Wagler) Cabanis.

BREWER BLACKBIRD.

SYN.—*Quiscalus mexicanus*; *Scolecophagus mexicanus*; *Scolecophagus ferrugineus*; *Quiscalus purpureus*.

STATUS—Abundant resident below Boreal nearly throughout the State.

- 302 (514 a) *Coccothraustes vespertinus montanus* (Ridgway) Mearns.

WESTERN EVENING GROSBEAK.

SYN.—*Coccothraustes vespertinus*; *Hesperiphona vespertina*; *Hesperiphona vespertina montana*.

STATUS—Fairly common summer breeding bird in parts of the Boreal Zone on the Sierras from Mount Shasta south at least to the Yosemite Valley; recorded elsewhere in mid-winter irregularly to the coast and south as far as Pasadena.

303 (515 b) *Pinicola californica* (Price) Grinnell.

CALIFORNIA PINE GROSBEAK.

SYN.—*Pinicola canadensis*; *Pinicola enucleator*; *Pinicola enucleator californica*; *Pinicola enucleator* var. *canadensis*.

STATUS—Fairly common resident of the Boreal Zone on the central Sierra Nevada, north to Placer County and south to Fresno County.

304 (517 a) *Carpodacus purpureus californicus* Baird.

CALIFORNIA PURPLE FINCH.

SYN.—*Carpodacus purpureus*; *Erythrospiza purpurea*; *Carpodacus californicus*.

STATUS—Common resident of upper Sonoran and Transition west of the Sierras.

305 (518) *Carpodacus cassini* Baird.

CASSIN PURPLE FINCH.

STATUS—Common resident of the lower Boreal Zone along the Sierras, breeding from Mount Shasta south to Mount Waterman, Los Angeles County; also Inyo and White Mountains; casually in winter west to Los Angeles and San Jose.

306 (519) *Carpodacus mexicanus frontalis* (Say) Ridgway.

HOUSE FINCH.

SYN.—*Carpodacus frontalis*, part; *Erythrospiza frontalis*; *Carpodacus familiaris*; *Carpodacus rhodocolpus*; *Carpodacus frontalis rhodocolpus*; *Carpodacus mexicanus obscurus*.

STATUS—Abundant resident in suitable localities throughout the State; breeds chiefly below Transition.

307 (519 c) *Carpodacus clementis* Mearns.

SAN CLEMENTE HOUSE FINCH.

SYN.—*Carpodacus frontalis*, part; *Carpodacus mexicanus clementis*; *Carpodacus mexicanus frontalis*, part.

STATUS—Abundant resident on all of the Santa Barbara Islands.

308 (521 a, part) *Loxia curvirostra bendirei* Ridgway.

SIERRA CROSSBILL.

SYN.—*Loxia curvirostra*; *Curvirostra americana*; *Loxia americana*; *Loxia curvirostra* var. *americana*; *Loxia curvirostra stricklandi*; *Loxia curvirostra minor*.

STATUS—Fairly common in summer locally on the central Sierra Nevada south to Mount Whitney; also in the coast Transition in the vicinity of Monterey; recorded in winter irregularly in the interior south as far as Pasadena.

309 (524) *Leucosticte tephrocotis tephrocotis* Swainson.

GRAY-CROWNED LEUCOSTICTE.

STATUS—Resident in upper Boreal locally along the Sierra Nevada from Mount Shasta south to Mount Whitney; also on the White Mountains.

- 310 (528) *Acanthis linaria linaria* (Linnæus) Bonaparte & Schlegel.

REDPOLL.

STATUS—Known only from the record by J. M. Willard of its common occurrence in winter in the vicinity of Eagle Lake, Lassen County.

- 311 (529 b) *Astragalinus tristis salicamans* (Grinnell) Ridgway.

WILLOW GOLDFINCH.

SYN.—*Chrysomitris tristis*; *Carduelis tristis*; *Spinus tristis*; *Spinus tristis salicamans*; *Astragalinus tristis*.

STATUS—Abundant resident locally in the valleys west of the Sierras; breeds chiefly in Upper Sonoran; recorded from Shasta Valley to San Diego.

- 312 (530) *Astragalinus psaltria psaltria* (Say) Coues.

ARKANSAS GOLDFINCH.

SYN.—*Chrysomitris psaltria*; *Spinus psaltria*; *Carduelis psaltria*; *Chrysomitris psaltria* var. *arizonæ*; *Astragalinus psaltria arizonæ*; *Spinus psaltria arizonæ*.

STATUS—Abundant resident nearly throughout the State; breeds chiefly below Transition.

- 313 (531) *Astragalinus lawrencei* (Cassin) Coues.

LAWRENCE GOLDFINCH.

SYN.—*Carduelis lawrencei*; *Chrysomitris lawrencei*; *Spinus lawrencei*.

STATUS—Common but irregular summer visitant west of the Sierras north to Chico; occurs irregularly through the winter in the southern part of the State.

- 314 (533) *Spinus pinus pinus* (Wilson) Stejneger.

PINE SISKIN.

SYN.—*Linaria pinus*; *Chrysomitris pinus*.

STATUS—Common in summer locally along the high Sierras south through the San Bernardino Mountains; also in the Santa Cruz district south past Monterey; in winter, irregularly distributed west of the Sierras to the coast, south into San Diego County.

- 315 (540 a) *Poœetes gramineus confinis* Baird.

WESTERN VESPER SPARROW.

SYN.—*Emberiza graminea*; *Zonotrichia graminea*, part; *Poœetes gramineus*.

STATUS—Common winter visitant to southern California, recorded north to Paicines and Visalia west of the Sierras; recorded as summering in the valleys east of the Sierra Nevada.

- 316 (540 b) *Poœetes gramineus affinis* Miller.

OREGON VESPER SPARROW.

SYN.—*Zonotrichia graminea*, part; *Poœetes gramineus confinis*, part.

STATUS—Fairly common winter visitant south, west of the Sierras, into San Diego County.

- 317 (542) *Ammodramus sandwichensis sandwichensis* (Gmelin) Ridgway.

SANDWICH SPARROW.

SYN.—*Passerculus sandwichensis*, part.

STATUS—Rare midwinter visitant to the northern part of the State; recorded by R. C. McGregor from Battle Creek and Gridley.

- 318 (542 b) *Ammodramus sandwichensis alaudinus* (Bonaparte) Ridgway.

WESTERN SAVANNA SPARROW.

SYN.—*Passerculus sandwichensis*, part; *Passerculus savanna*; *Ammodramus sandwichensis savanna*; *Emberiza savanna*; *Passerculus sandwichensis alaudinus*, part; *Passerculus alaudinus*; *Passerculus savanna* var. *alaudinus*.

STATUS—Abundant winter visitant throughout the lower parts of the State; summers in the valleys east of the Sierra Nevada; recorded as breeding at Owens Lake.

- 319 (542 c) *Ammodramus sandwichensis bryanti* (Ridgway) Ridgway.

BRYANT MARSH SPARROW.

SYN.—*Passerculus sandwichensis*, part; *Passerculus anthinus*, part; *Passerculus sandwichensis alaudinus*, part; *Passerculus savanna* var. *anthinus*, part; *Passerculus sandwichensis bryanti*.

STATUS—Abundant resident on the marshes of San Francisco and Monterey Bays; south in winter along the coast as far as San Pedro.

- 320 (543) *Ammodramus beldingi* (Ridgway) Ridgway.

BELDING MARSH SPARROW.

SYN.—*Passerculus sandwichensis*, part; *Passerculus anthinus*, part; *Passerculus savanna* var. *anthinus*, part; *Passerculus beldingi*; *Ammodramus sandwichensis beldingi*.

STATUS—Abundant resident on the southern coast marshes from Port Harford south to National City.

- 321 (544) *Ammodramus rostratus rostratus* (Cassin) Cassin.

LARGE-BILLED MARSH SPARROW.

SYN.—*Passerculus rostratus*; *Emberiza rostrata*.

STATUS—Common winter visitant along our southern seacoast from Santa Barbara to San Diego; said to pass the summer and breed within our limits, but definite records are lacking.

- 322 (546 a) *Ammodramus savannarum bimaculatus* (Swainson) Grinnell.

WESTERN GRASSHOPPER SPARROW.

SYN.—*Emberiza passerina*; *Coturniculus passerinus*; *Coturniculus passerinus perpallidus*; *Ammodramus savannarum perpallidus*; *Coturniculus savannarum bimaculatus*.

STATUS—Fairly common resident locally in the lower country west of the Sierras; north to Sacramento and south into San Diego County; more generally distributed in winter.

- 323 (549.1) *Ammodramus caudacutus nelsoni* Allen.

NELSON SPARROW.

SYN.—*Ammodramus caudacutus becki*; *Ammodramus nelsoni*.

STATUS—Known only from the two specimens taken by R. H. Beck at Milpitas, Santa Clara County, on May 6, 1891, and January 31, 1896, respectively.

- 324 (552 a) *Chondestes grammacus strigatus* (Swainson) Ridgway.

WESTERN LARK SPARROW.

SYN.—*Chondestes grammaca*; *Zonotrichia grammaca*; *Emberiza grammaca*.

STATUS—Common resident of the Upper Sonoran Zone; most numerous in the interior valleys west of the Sierras.

- 325 (553) *Zonotrichia querula* (Nuttall) Gambel.

HARRIS SPARROW.

STATUS—Known only from the record by W. O. Emerson of a male specimen taken by him at Haywards, October 27, 1900.

- 326 (554) *Zonotrichia leucophrys leucophrys* (Forster) Swainson.

WHITE-CROWNED SPARROW.

SYN.—*Zonotrichia leucophrys intermedia*, part; *Zonotrichia leucophrys* var. *gambeli*, part.

STATUS—Common summer visitant along the higher Sierra Nevada from Mount Shasta south to Mount Whitney; occurs in southern California during migration.

- 327 (554 a) *Zonotrichia leucophrys gambeli* (Nuttall) Coues.

INTERMEDIATE SPARROW.

SYN.—*Zonotrichia leucophrys intermedia*, part; *Zonotrichia gambeli intermedia*; *Zonotrichia leucophrys*, part; *Zonotrichia intermedia*; *Zonotrichia gambeli*, part; *Fringilla leucophrys*; *Fringilla gambeli*.

STATUS—Abundant winter visitant throughout the State below Transition; elsewhere during migration.

- 328 (554 b) *Zonotrichia leucophrys nuttalli* Ridgway.

NUTTALL SPARROW.

SYN.—*Zonotrichia leucophrys gambeli*, part; *Zonotrichia leucophrys*, part; *Zonotrichia gambeli*, part.

STATUS—Common resident of the narrow humid coast belt south through the Santa Cruz district at least to Point Sur; in winter occurs a few miles further inland, and casually southward as far as Los Angeles.

- 329 (557) *Zonotrichia coronata* (Pallas) Baird.

GOLDEN-CROWNED SPARROW.

SYN.—*Fringilla aurocapilla*; *Zonotrichia aurocapilla*; *Zonotrichia atricapilla*.

STATUS—Common winter visitant almost everywhere west of the Sierras, south to San Diego.

- 330 (558) *Zonotrichia albicollis* (Gmelin) Swainson.

WHITE-THROATED SPARROW.

STATUS—Rather rare winter visitant west of the Sierras; thirteen specimens recorded, from Santa Rosa and Stockton south to Los Angeles.

- 331 (559 a) *Spizella monticola ochracea* Brewster.

WESTERN TREE SPARROW.

STATUS—Known only from the record of its capture by J. Feilner at Fort Crook in the northeastern corner of the State presumably in winter.

- 332 (560 a)
- Spizella socialis arizonæ*
- Coues.

WESTERN CHIPPING SPARROW.

SYN.—*Spizella socialis*; *Emberiza socialis*; *Spizella domestica arizonæ*.

STATUS—Common summer visitant nearly throughout the State, breeding from Upper Sonoran to Boreal; winters to a limited extent in the San Diegan district.

- 333 (562)
- Spizella breweri*
- Cassin.

BREWER SPARROW.

SYN.—*Emberiza pallida*; *Spizella pallida*; *Spizella pallida* var. *breweri*.

STATUS—Common summer visitant to the more arid foothill regions of the interior chiefly along the southern Sierras; more generally distributed during migration; recorded west of the Sierras to Santa Barbara and Sacramento; winters irregularly in the San Diegan district (Los Angeles County).

- 334 (565)
- Spizella atrogularis*
- (Cabanis) Baird.

BLACK-CHINNED SPARROW.

STATUS—Common summer visitant to the arid foothill regions of the southern Sierras and desert ranges, north to Owens Valley, Walker Basin, and Cahuenga Valley, Los Angeles County; recorded casually to Alameda and Monterey Counties.

- 335 (567)
- Junco hyemalis hyemalis*
- (Linnæus) Sclater

SLATE-COLORED JUNCO.

STATUS—Rather rare but seemingly regular winter visitant; the fifteen or more points of capture are pretty evenly distributed through the State south to San Diego.

- 336 (567 a)
- Junco hyemalis oregonus*
- (Townsend) Ridgway.

OREGON JUNCO.

SYN.—*Junco oregonus*, part; *Junco oregonus oregonus*.

STATUS—Common winter visitant to the northern part of the State west of the Sierra Nevada, south along the coast belt regularly to the San Francisco Bay region; recorded south casually as far as Pasadena in midwinter.

- 337 (567 b)
- Junco hyemalis shufeldti*
- Coale.

SHUFELDT JUNCO.

SYN.—*Junco oregonus shufeldti*.

STATUS—According to R. Ridgway, an occasional winter visitant to northern and eastern California (Humboldt Bay, Shasta County, etc.).

- 338 (567 c)
- Junco hyemalis thurberi*
- Anthony.

SIERRA JUNCO.

SYN.—*Junco oregonus*, part; *Junco hyemalis oregonus*, part; *Junco oregonus thurberi*; *Struthus oregonus*, part; *Fringilla hudsonia*.

STATUS—Common summer breeding species in the Transition and Boreal Zones along the whole length of the Sierras; scatters in winter nearly throughout the State.

- 339 (567 d) *Junco hyemalis pinosus* (Loomis) A. O. U. Committee.

POINT PINOS JUNCO.

SYN.—*Struthus oregonus*, part; *Fringilla hyemalis*; *Junco pinosus*; *Junco oregonus*, part; *Junco hyemalis oregonus*, part; *Junco oregonus pinosus*.

STATUS—Common resident of the Santa Cruz district, breeding from King Mountain, San Mateo County, south at least to Point Sur, Monterey County; wanders eastward in winter into the Santa Clara and San Benito Valleys.

- 340 (569) *Junco caniceps* (Woodhouse) Baird.

GRAY-HEADED JUNCO.

STATUS—Known only from the record of a female specimen taken by W. B. Judson near Pasadena, October 26, 1894.

- 341 (573 a) *Amphispiza bilineata deserticola* Ridgway.

DESERT BLACK-THROATED SPARROW.

SYN.—*Amphispiza bilineata*; *Poospiza bilineata*.

STATUS—Common summer visitant to the desert regions of southeastern California (Lower Sonoran); recorded north through Owens Valley to Alvord and west casually to Pasadena.

- 342 (574) *Amphispiza belli belli* (Cassin) Coues.

BELL SPARROW.

SYN.—*Emberiza belli*; *Amphispiza belli clementæ*; *Poospiza belli*, part.

STATUS—Common resident locally west of the Sierras (in Upper Sonoran); recorded north to Nicasio (Marin County), Sonoma and Consumnes River.

- 343 (574 a) *Amphispiza belli nevadensis* (Ridgway) Coues.

SAGE SPARROW.

SYN.—*Poospiza belli* var. *nevadensis*; *Poospiza belli*, part; *Amphispiza nevadensis*.

STATUS—Common resident in the desert regions of southeastern California, breeding in the arid Upper Sonoran and Transition east of the Sierras; recorded north to Mono Lake, and in winter west into the San Diegan district (Riverside, San Bernardino, and vicinity of Los Angeles).

- 344 (580) *Aimophila ruficeps ruficeps* (Cassin) Ridgway.

RUFOUS-CROWNED SPARROW.

SYN.—*Ammodramus ruficeps*; *Peucaea ruficeps*.

STATUS—Fairly common resident locally west of the Sierras from San Diego County north to Nicasio, Marin County, and Colfax, Placer County; breeds only in Upper Sonoran.

- 345 (581 a) *Melospiza cinerea fallax* (Baird) Ridgway.

DESERT SONG SPARROW.

SYN.—*Melospiza fallax*, part; *Melospiza melodia fallax*.

STATUS—Common resident in the extreme southeastern corner of the State along the valley of the lower Colorado River.

- 346 (581 b)
- Melospiza cinerea montana*
- (Henshaw) Ridgway.

MOUNTAIN SONG SPARROW.

SYN.—*Melospiza melodia montana*, part; *Melospiza fallax*, part; *Melospiza fasciata* var. *fallax*; *Melospiza fasciata montana*; *Melospiza melodia* var. *heermanni*, part; *Melospiza fasciata*.

STATUS—Common in summer along the eastern border of the State on the eastern slope of the Sierra Nevada from Mount Shasta to Mono Lake; descends in winter to the valleys to the west and south (Haywards, Palo Alto, Fort Tejon, Death Valley, etc.).

- 347 (581 k)
- Melospiza cinerea merrilli*
- (Brewster) Ridgway.

MERRILL SONG SPARROW.

SYN.—*Melospiza fasciata ingersolli*; *Melospiza melodia montana*, part.

STATUS—Winter visitant into northern California east of the humid coast belt; recorded south to Saint Helena, Battle Creek, and Enterprise; stated by R. Ridgway to breed in Shasta County.

- 348 (581 e, part)
- Melospiza cinerea morphna*
- (Oberholser) Ridgway.

RUSTY SONG SPARROW.

SYN.—*Melospiza melodia morphna*; *Melospiza fasciata guttata*, part; *Melospiza rufina*; *Melospiza fasciata rufina*.

STATUS—Winter visitant southwest of the Sierras as far as Fort Tejon; recorded from the Sierran foothills to the coast.

- 349 (581 e, part)
- Melospiza cinerea phæa*
- Fisher.

OREGON SONG SPARROW.

SYN.—*Melospiza fasciata guttata*, part.

STATUS—Common winter visitant south into the northern humid coast belt (Crescent City); casually to the San Francisco Bay region.

- 350 (581 d, part)
- Melospiza cinerea cleonensis*
- (McGregor) Ridgway.

MENDOCINO SONG SPARROW.

SYN.—*Melospiza fasciata samuelis*, part; *Melospiza melodia cleonensis*.

STATUS—Common resident in the northern humid coast belt (Del Norte, Humboldt and Mendocino Counties).

- 351 (581 d, part)
- Melospiza cinerea gouldi*
- (Baird) Grinnell.

MARIN SONG SPARROW.

SYN.—*Melospiza fasciata samuelis*, part; *Melospiza gouldi*; *Melospiza cinerea samuelis*, part.

STATUS—Common resident along the freshwater streams of Marin and Sonoma Counties.

- 352 (581 d, part)
- Melospiza cinerea samuelis*
- (Baird) Ridgway.

SAMUELS SONG SPARROW.

SYN.—*Ammodramus samuelis*; *Melospiza fasciata samuelis*, part; *Melospiza melodia samuelis*, part.

STATUS—Abundant resident on the salt marshes along the north side of San Francisco Bay from Larkspur, Marin County, to Vallejo, Solano County; also on the south side of San Pablo Bay, at Selby and Pinole, Contra Costa County.

- 353 (581 c, part) *Melospiza cinerea heermanni* (Baird) Ridgway.

HEERMANN SONG SPARROW.

SYN.—*Melospiza heermanni*, part; *Melospiza melodia heermanni*, part; *Melospiza fasciata heermanni*, part; *Zonotrichia guttata*.

STATUS—Abundant resident along the streams of the San Joaquin-Sacramento Basin from Battle Creek, Shasta County, south to Fort Tejon; west through the Suisun marshes to Benicia and Port Costa.

- 354 (581 d, part) *Melospiza cinerea santæcruis* (Grinnell) Grinnell.

SANTA CRUZ SONG SPARROW.

SYN.—*Melospiza melodia santæcruis*; *Melospiza cinerea samuelis*, part; *Melospiza melodia samuelis*, part; *Melospiza fasciata samuelis*, part; *Melospiza fasciata heermanni*, part; *Melospiza melodia heermanni*, part.

STATUS—Common resident along fresh water streams of the Santa Cruz district from San Francisco south to Sur River, Monterey County; also east through the Santa Clara Valley to the streams flowing west from the Mount Hamilton Range, and north to Berkeley.

- 355 (581 c, part) *Melospiza cinerea cooperi* (Ridgway) Ridgway.

SAN DIEGO SONG SPARROW.

SYN.—*Melospiza melodia cooperi*; *Melospiza heermanni*, part; *Melospiza fasciata samuelis*, part; *Melospiza fasciata heermanni*, part; *Melospiza melodia heermanni*, part; *Melospiza fasciata graminea*, part; *Melospiza fasciata cooperi*.

STATUS—Common resident in the San Diegan district, northwest at least to Santa Barbara.

- 356 (581 d, part) *Melospiza pusillula* (Ridgway) Grinnell.

SALT MARSH SONG SPARROW.

SYN.—*Melospiza fasciata pusillula*; *Melospiza melodia pusillula*; *Melospiza cinerea pusillula*; *Melospiza samuelis*; *Melospiza melodia gouldi*; *Melospiza fasciata samuelis*, part.

STATUS—Abundant resident on the salt marshes of the south arm of San Francisco Bay, from West Berkeley around to South San Francisco.

- 357 (581 h) *Melospiza graminea* (Townsend) Grinnell.

SANTA BARBARA SONG SPARROW.

SYN.—*Melospiza heermanni*, part; *Melospiza cinerea graminea*; *Melospiza fasciata graminea*, part.

STATUS—Common resident on Santa Barbara and Santa Cruz Islands.

- 358 (581 i) *Melospiza clementæ* (Townsend) Grinnell.

SAN CLEMENTE SONG SPARROW.

SYN.—*Melospiza fasciata clementæ*; *Melospiza melodia clementæ*; *Melospiza cinerea clementæ*; *Melospiza heermanni*, part.

STATUS—Common resident on San Clemente, San Miguel and Santa Rosa Islands.

- 359 (583) *Melospiza lincolni lincolni* (Audubon) Baird.

LINCOLN SPARROW.

SYN.—*Peucaea lincolni*.

STATUS—Common winter visitant to the lowlands of the southern and interior parts of the State; remains through the summer and breeds sparingly along the high Sierras from Mount Shasta, south to near Mount Whitney; occurs elsewhere as a migrant.

- 360 (583 a) *Melospiza lincolni striata* Brewster.

FORBUSH SPARROW.

SYN.—*Melospiza lincolni*, part.

STATUS—Fairly common winter visitant south through the coast belt to the San Francisco Bay region; also to the northward in the interior (Battle Creek and Saint Helena).

- 361 (585) *Passerella iliaca iliaca* (Merrem) Swainson.

FOX-COLORED SPARROW.

STATUS—Rare midwinter visitant west of the Sierras; definitely recorded from Oakland, Poway and Saticoy.

- 362 (585 a, part) *Passerella iliaca unalaschcensis* (Gmelin) Ridgway.

SHUMAGIN FOX SPARROW.

STATUS—Rare winter visitant into the San Diegan district (Pasadena, December 12).

- 363 (585 a, part) *Passerella iliaca insularis* Ridgway.

KADIAK FOX SPARROW.

SYN.—*Passerella iliaca townsendi*; *Passerella unalaschcensis*; *Passerella iliaca unalaschcensis*, part; *Passerella townsendi*; *Zonotrichia townsendi*.

STATUS—Common winter visitant west of the Sierras (excepting the Santa Cruz district), south to San Diego and Santa Catalina Island.

- 364 (585 a, part) *Passerella iliaca meruloides* (Vigors) Grinnell.

YAKUTAT FOX SPARROW.

SYN.—*Passerella iliaca annectens*; *Passerella iliaca unalaschcensis*, part; *Fringilla meruloides*.

STATUS—Common winter visitant south along the humid coast belt through the Santa Cruz district.

- 365 (585 a, part) *Passerella iliaca townsendi* (Audubon) Coues.

TOWNSEND FOX SPARROW.

STATUS—Winter visitant into the northern humid coast belt; recorded by R. Ridgway from Humboldt Bay and Bodega.

- 366 (585 a, part) *Passerella iliaca fuliginosa* Ridgway.

SOOTY FOX SPARROW.

SYN.—*Passerella iliaca unalaschcensis*, part.

STATUS—According to R. Ridgway, south in winter along the humid coast belt to San Francisco.

367 (585 c) *Passerella iliaca schistacea* (Baird) Allen.

SLATE-COLORED SPARROW.

SYN.—*Passerella schistacea*, part; *Passerella townsendi* var. *schistacea*.

STATUS—Fairly common in summer in the mountains along the eastern border of the State east of the Sierra Nevada, south to White Mountains; sparingly in winter in the valleys west of the Sierras (Murphys south to Poway).

368 (585 b) *Passerella iliaca megarhyncha* (Baird) Ridgway.

THICK-BILLED FOX SPARROW.

SYN.—*Passerella schistacea*, part; *Passerella megarhyncha*, part; *Passerella schistacea* var. *megarhyncha*, part.

STATUS—Common in summer along the Sierra Nevada (Boreal), breeding from Mount Shasta south to Mount Whitney; winters commonly in the San Diegan district north to Fort Tejon, casually to Marin County.

369 (585 d) *Passerella iliaca stephensi* Anthony.

STEPHENS FOX SPARROW.

SYN.—*Passerella megarhyncha*, part; *Passerella schistacea* var. *megarhyncha*, part; *Passerella iliaca megarhyncha*, part.

STATUS—Common in summer on the southern Sierras (Boreal), from the Tejon Mountains south to the San Jacinto Mountains; recorded in winter only from Santa Catalina Island.

370 (588 a+d) *Pipilo maculatus megalonyx* (Baird) Coues.

SPURRED TOWHEE.

SYN.—*Fringilla arctica*; *Pipilo arcticus*; *Pipilo megalonyx*, part; *Pipilo erythrophthalmus oregonus*; *Pipilo maculatus oregonus*, part; *Pipilo maculatus atratus*.

STATUS—Common resident of Upper Sonoran and Transition east and south of the humid coast belt nearly throughout the State (except Santa Barbara Islands).

371 (588 b, part) *Pipilo maculatus falcifer* McGregor.

SAN FRANCISCO TOWHEE.

SYN.—*Pipilo maculatus oregonus*, part; *Pipilo maculatus megalonyx*, part; *Pipilo oregonus*; *Pipilo megalonyx*, part.

STATUS—Common resident in the humid coast belt from Mendocino County south to southern Monterey County, including the San Francisco Bay region.

372 (588 b, part) *Pipilo maculatus oregonus* (Bell) Coues.

OREGON TOWHEE.

STATUS—Common resident in the northern coast belt (vicinity of Humboldt Bay and northward).

373 (588 c) *Pipilo clementæ* Grinnell.

SAN CLEMENTE TOWHEE.

SYN.—*Pipilo maculatus clementæ*; *Pipilo maculatus megalonyx*, part; *Pipilo maculatus oregonus*, part; *Pipilo megalonyx*, part.

STATUS—Common resident on San Clemente, Santa Cruz, Santa Rosa and Santa Catalina Islands.

- 374 (591 b+d)
- Pipilo crissalis crissalis*
- (Vigors) Gray.

CALIFORNIA TOWHEE.

SYN.—*Fringilla crissalis*; *Pipilo fuscus*, part; *Pipilo crissalis*, part; *Pipilo fuscus crissalis*, part; *Pipilo fuscus carolæ*; *Pipilo crissalis carolæ*.

STATUS—Abundant resident of the Upper Sonoran Zone west of the Sierra Nevada south to about latitude 35°; north to Shasta Valley.

- 375 (591 c)
- Pipilo crissalis senicula*
- (Anthony) Ridgway.

ANTHONY TOWHEE.

SYN.—*Pipilo fuscus senicula*; *Pipilo fuscus crissalis*, part; *Pipilo fuscus*, part; *Pipilo crissalis*, part.

STATUS—Abundant resident below Transition in the San Diegan district, north to southern end of Salinas Valley (Paso Robles).

- 376 (592)
- Pipilo aberti*
- Baird.

ABERT TOWHEE.

STATUS—Fairly common resident locally in the desert within the southeastern corner of the State, from Fort Yuma west to Salton and Indio.

- 377 (592.1)
- Oreospiza chlorura*
- (Audubon) Ridgway.

GREEN-TAILED TOWHEE.

SYN.—*Embernagra chlorura*; *Embernagra blandingiana*; *Pipilo chlorurus*; *Atlapetes chlorurus*.

STATUS—Common summer visitant along the higher Sierras and desert ranges from Mount Shasta south to the San Bernardino Mountains; winters sparingly in the southern part of the San Diegan District; casual during migration west of the Sierras to San Jose.

- 378 (594)
- Pyrhuloxia sinuata sinuata*
- Bonaparte.

ARIZONA PYRRHULOXIA.

STATUS—Recorded only from Fort Yuma on the California side of the lower Colorado River.

- 379 (595)
- Zamelodia ludoviciana*
- (Linnæus) Coues.

ROSE-BREADED GROSBEAK.

STATUS—Several specimens secured by C. H. Gilbert and party at Meyers, Humboldt County, July 1, 1897; portions of these specimens are still preserved and re-examination confirms the original record as made by R. B. McLain; also an immature male specimen is at hand secured by M. F. Gilman at Palm Springs, Riverside County, September 10, 1897.

- 380 (596)
- Zamelodia melanocephala*
- (Swainson) Coues.

BLACK-HEADED GROSBEAK.

SYN.—*Guiraca melanocephala*; *Zamelodia melanocephala capitalis*; *Zamelodia melanocephala microrhyncha*; *Habia melanocephala*; *Hedymeles melanocephalus*; *Hedymeles melanocephalus* var. *capitalis*; *Goniaphea melanocephala*.

STATUS—Common summer visitant nearly throughout the State below Boreal; breeds most abundantly in Upper Sonoran.

- 381 (597 a) *Guiraca cærulea lazula* (Lesson) Ridgway.

WESTERN BLUE GROSBEAK.

SYN.—*Guiraca cærulea*; *Guiraca cærulea eurhyncha*; *Coccyzus cæruleus*.

STATUS—Common summer visitant locally through the Lower Sonoran Zone, breeding north into Owens Valley and through the San Joaquin-Sacramento Basin to Marysville; casually to Pitt River and Santa Cruz in spring.

- 382 (599) *Cyanospiza amœna* (Say) Baird.

LAZULI BUNTING.

SYN.—*Spiza amœna*; *Passerina amœna*.

STATUS—Common summer visitant in suitable localities nearly throughout the State below Boreal.

- 383 (605) *Calamospiza melanocorys* Stejneger.

LARK BUNTING.

SYN.—*Calamospiza bicolor*.

STATUS—Of irregular occurrence in southern California; recorded as breeding in the vicinity of San Diego and during migration northwest to Newhall, Los Angeles County.

- 384 (607) *Piranga ludoviciana* (Wilson) Richardson.

WESTERN Tanager.

STATUS—Common summer visitant along the entire length of the Sierras, breeding chiefly in Transition; common during migration nearly throughout the State.

- 385 (611 a) *Progne subis hesperia* Brewster.

WESTERN MARTIN.

SYN.—*Progne subis*; *Progne purpurea*; *Progne chalybea*.

STATUS—Fairly common migrant and summer visitant locally, nesting chiefly in the Transition Zone.

- 386 (612) *Petrochelidon lunifrons* (Say) Cassin.

CLIFF SWALLOW.

SYN.—*Hirundo lunifrons*; *Hirundo fulva*; *Petrochelidon pyrrhonota*.

STATUS—Abundant summer visitant locally throughout the State.

- 387 (613, part) *Hirundo erythrogastra palmeri* Grinnell.

WESTERN BARN SWALLOW.

SYN.—*Hirundo erythrogastra*; *Chelidon erythrogaster*; *Hirundo horreorum*; *Hirundo rufa*.

STATUS—Common migrant and summer visitant in suitable localities nearly throughout the State; breeds most numerous coastwise and northerly.

- 388 (614) *Tachycineta bicolor* (Vieillot) Cabanis.

TREE SWALLOW.

SYN.—*Chelidon bicolor*; *Hirundo bicolor*; *Hirundo bicolor* var. *vespertina*.

STATUS—Common in summer in favorable localities west of the Sierras, breeding chiefly in Upper Sonoran; quite extensively distributed during spring and fall; winters regularly, but in small numbers.

- 389 (615) *Tachycineta lepida* Mearns.

VIOLET-GREEN SWALLOW.

SYN.—*Hirundo thalassina*; *Tachycineta thalassina*.

STATUS—Common in spring and fall throughout the State; passes the summer and breeds in the Transition Zone nearly throughout its extent.

- 390 (616) *Clivicola riparia* (Linnæus) Stejneger.

BANK SWALLOW.

SYN.—*Cotyle riparia*.

STATUS—Common summer visitant in suitable localities; more generally distributed during migration.

- 391 (617) *Stelgidopteryx ruficollis serripennis* (Audubon) Bangs.

ROUGH-WINGED SWALLOW.

SYN.—*Cotyle serripennis*; *Stelgidopteryx serripennis*.

STATUS—Fairly common summer visitant below Transition, mostly east and south of the humid coast belt.

- 392 (618) *Ampelis garrulus* (Linnæus) Linnæus.

BOHEMIAN WAXWING.

STATUS—Known to have occurred only in February, 1892, in the northeastern corner of the State, whence many were recorded from Susanville and Quincy.

- 393 (619) *Ampelis cedrorum* (Vieillot) Gray.

CEDAR WAXWING.

STATUS—Common winter visitant irregularly through Upper and Lower Sonoran, remaining as late as June, but not known to breed within the State.

- 394 (620) *Phainopepla nitens* (Swainson) Sclater.

PHAINOPEPLA.

SYN.—*Ptilogonyx nitens*.

STATUS—Common resident in the desert regions southeast of the Sierras, and in summer through the San Diegan district, breeding altogether in the Lower Sonoran Zone; recorded north casually to San Jose, Chico and Marysville.

- 395 (621, part) *Lanius borealis invictus* Grinnell.

NORTHWESTERN SHRIKE.

SYN.—*Lanius septentrionalis*; *Collurio borealis*; *Lanius borealis*.

STATUS—Fairly common midwinter visitant irregularly into northern California; recorded south to Nicasio, Marysville and Calaveras County.

- 396 (622 a) *Lanius ludovicianus excubitorides* (Swainson) Coues.

WHITE-RUMPED SHRIKE.

SYN.—*Lanius ludovicianus gambeli*, part; *Collyrio excubitoroides*, part.

STATUS—Common resident east of the Sierras chiefly below Transition, from Shasta Valley and Plumas County south to Fort Yuma and Indio; casually west of the Sierras in winter (Pasadena).

397 (622 b) *Lanius ludovicianus gambeli* Ridgway.

CALIFORNIA SHRIKE.

SYN.—*Collyrio excubitoroides*, part; *Lanius ludovicianus excubitorides*, part; *Collurio ludovicianus*, part; *Lanius ludovicianus*; *Lanius excubitorides*; *Collurio ludovicianus* var. *excubitoroides*; *Lanius elegans*, part.

STATUS—Common resident west of the Sierras chiefly below Transition; recorded from Red Bluff south to San Diego.

398 (622 c) *Lanius anthonyi* (Mearns) Grinnell.

ISLAND SHRIKE.

SYN.—*Lanius ludovicianus anthonyi*; *Lanius ludovicianus gambeli*, part; *Collyrio excubitoroides*, part; *Collurio ludovicianus*, part.

STATUS—Fairly common resident on San Clemente, Santa Catalina and Santa Cruz Islands.

399 (625) *Vireo flavoviridis* (Cassin) Baird.

YELLOW-GREEN VIREO.

STATUS—Known only from the record by W. W. Price of a specimen taken in the Santa Ana River bottom near Riverside, October 1, 1887.

400 (627, part) *Vireo gilvus swainsoni* (Baird) Coues.

WESTERN WARBLING VIREO.

SYN.—*Vireo gilvus*; *Vireo swainsoni*; *Vireosylva swainsoni*; *Vireosylva gilva swainsoni*; *Vireosylva gilva*.

STATUS—Common summer visitant, breeding through Upper Sonoran and Transition; generally distributed elsewhere during migration.

401 (629 a) *Vireo solitarius cassini* (Xantus) Henshaw.

CASSIN VIREO.

SYN.—*Vireo solitarius*; *Vireo cassini*; *Vireosylva solitaria*; *Lanivireo solitarius*; *Lanivireo solitarius* var. *cassini*; *Lanivireo cassini*.

STATUS—Common summer visitant through Transition, breeding chiefly along the Sierras; elsewhere during migration.

402 (629 b) *Vireo solitarius plumbeus* (Coues) Allen.

PLUMBEOUS VIREO.

STATUS—Known only from the record by H. W. Henshaw of a specimen secured in the Tejon Mountains, August 1, 1875.

403 (632) *Vireo huttoni huttoni* Cassin.

HUTTON VIREO.

SYN.—*Vireo huttoni obscurus*.

STATUS—Common resident through Upper Sonoran and Transition west of the Sierras, from Siskiyou County south to San Diego.

- 404 (633 a, part)
- Vireo pusillus albatrus*
- Grinnell.

CALIFORNIA LEAST VIREO.

SYN.—*Vireo belli*; *Vireo pusillus*; *Vireo belli pusillus*.

STATUS—Common summer visitant through Lower Sonoran, breeding north in the San Joaquin-Sacramento Valley to Sacramento.

- 405 (634)
- Vireo vicinior*
- Coues.

GRAY VIREO.

SYN.—*Vireo vicinior californicus*.

STATUS—Fairly common summer visitant to the foothills (Lower Sonoran ?) along the San Bernardino Mountains, north to Cajon Pass.

- 406 (636)
- Mniotilta varia*
- (Linnæus) Vieillot.

BLACK-AND-WHITE WARBLER.

STATUS—Rare migrant; three records: male taken by W. O. Emerson on Farallone Island, May 28, 1887; specimen taken by H. A. Gaylord at Pasadena, October 8, 1895; male taken by W. O. Emerson at Carmel River, Monterey County, September 8, 1901.

- 407 (645 a)
- Helminthophila rubricapilla gutturalis*
- (Ridgway) Ridgway.

CALAVERAS WARBLER.

SYN.—*Helminthophaga rubricapilla*; *Helminthophaga rubricapilla* var. *gutturalis*; *Helminthophila rubricapilla gutturalis*.

STATUS—Common summer visitant along the Sierra Nevada (Boreal) from Mount Shasta south to vicinity of Mount Whitney; fairly common migrant through the San Diegan district, north casually to Paicines, San Benito County.

- 408 (646)
- Helminthophila celata celata*
- (Say) Ridgway.

ORANGE-CROWNED WARBLER.

STATUS—Known only from the records by H. S. Swarth of its occurrence as a regular fall migrant at Los Angeles and Pasadena (September 17 to October 30).

- 409 (646 a)
- Helminthophila celata lutescens*
- (Ridgway) Brewster.

LUTESCENT WARBLER.

SYN.—*Helminthophaga celata*, part; *Helinaia celata*; *Vermivora celata*, part; *Helminthophaga celata* var. *lutescens*.

STATUS—Common summer visitant in suitable localities nearly throughout the State; most numerous as a migrant in the San Diegan district; winters sparingly.

- 410 (646 b)
- Helminthophila sordida*
- (Townsend) Grinnell.

DUSKY WARBLER.

SYN.—*Helminthophila celata sordida*; *Helminthophaga celata*, part; *Helminthophila celata lutescens*, part; *Vermivora celata*, part.

STATUS—Common resident on San Clemente, Santa Catalina, Santa Cruz and Santa Rosa Islands; fairly common late summer and fall visitant to the adjacent mainland (Los Angeles to San Bernardino).

411 (647) *Helminthophila peregrina* (Wilson) Ridgway.

TENNESSEE WARBLER.

STATUS—Known only from the record by J. Grinnell of a female specimen secured near Pasadena, September 27, 1897.

412 (652, part) *Dendroica æstiva morcomi* Coale.

WESTERN YELLOW WARBLER.

SYN.—*Dendroica æstiva*; *Sylvicola æstiva*.

STATUS—Common migrant and summer visitant nearly throughout the State; breeds most abundantly in the Upper Sonoran Zone.

413 (652 b) *Dendroica æstiva rubiginosa* (Pallas) Oberholser.

ALASKA YELLOW WARBLER.

STATUS—Occurs only as a spring and fall migrant; recorded from Mountain Springs, San Diego County, May 11, and at Haywards from September 14 to October 7.

414 (654) *Dendroica cærulescens cærulescens* (Gmelin) Baird.

BLACK-THROATED BLUE WARBLER.

STATUS—Known only from the record by W. E. Bryant of a specimen secured on the Farallone Islands in November, 1886.

415 (655, part) *Dendroica coronata hooveri* McGregor.

ALASKA MYRTLE WARBLER.

SYN.—*Dendroica coronata*.

STATUS—Common winter visitant through central California, west of the Sierras; recorded south to Santa Barbara Island and Los Angeles.

416 (656) *Dendroica auduboni* (Townsend) Baird.

AUDUBON WARBLER.

SYN.—*Sylvicola auduboni*.

STATUS—Abundant winter visitant below Transition; summers in Transition along the Sierras from Mount Shasta south to the San Bernardino Mountains.

417 (657) *Dendroica maculosa* (Gmelin) Baird.

MAGNOLIA WARBLER.

STATUS—Rare migrant; male specimen secured by J. Grinnell on Santa Barbara Island, May 15, 1897, and two female specimens taken by H. S. Swarth at Los Angeles, October 21, 1897, and October 5, 1901, respectively.

418 (665) *Dendroica nigrescens* (Townsend) Baird.

BLACK-THROATED GRAY WARBLER.

SYN.—*Sylvicola nigrescens*.

STATUS—Common summer visitant through Transition along the Sierras, breeding from the San Bernardino Mountains north to McCloud River, Shasta County; occurs elsewhere as a migrant.

- 419 (668)
- Dendroica townsendi*
- (Townsend) Baird.

TOWNSEND WARBLER.

STATUS—Common winter visitant to the Santa Cruz district, and sparingly elsewhere west of the Sierras; occurs more widely during migration.

- 420 (669)
- Dendroica occidentalis*
- (Townsend) Baird.

HERMIT WARBLER.

STATUS—Fairly common summer visitant through Transition along the Sierra Nevada from Mount Whitney to Mount Shasta; occurs regularly as a migrant through the San Diegan district and more sparingly elsewhere.

- 421 (672)
- Dendroica palmarum palmarum*
- (Gmelin) Baird.

PALM WARBLER.

STATUS—Known only from an immature male specimen secured by W. O. Emerson at Pacific Grove, October 9, 1896.

- 422 (675 a)
- Seiurus noveboracensis notabilis*
- (Ridgway) Ridgway.

ALASKA WATER-THRUSH.

STATUS—Known only from the record by L. Belding of two specimens secured by A. M. Ingersoll at Santa Cruz in September, 1885.

- 423 (680)
- Geothlypis tolmiei*
- (Townsend) Stone.

TOLMIE WARBLER.

SYN.—*Geothlypis macgillivrayi*; *Trichas tolmiei*; *Geothlypis philadelphia* var. *macgillivrayi*.

STATUS—Common summer visitant through Transition along the Sierras from the San Bernardino Mountains north to Mount Shasta, and sparingly in the coast belt (Los Gatos, etc.); elsewhere during migration.

- 424 (681 a)
- Geothlypis trichas occidentalis*
- Brewster.

WESTERN YELLOWTHROAT.

STATUS—Fairly common summer visitant along the eastern border of the State in suitable localities east of the Sierras.

- 425 (681 c, part)
- Geothlypis trichas arizela*
- Oberholser.

PACIFIC YELLOWTHROAT.

SYN.—*Geothlypis trichas occidentalis*, part; *Geothlypis trichas*, part; *Trichas delafieldi*.

STATUS—Common summer visitant in suitable localities west of the Sierra Nevada from about latitude 35° northward, excepting salt marshes of San Francisco Bay; abundant migrant south through the San Diegan district.

- 426 (681 c, part)
- Geothlypis trichas sinuosa*
- Grinnell.

SALT MARSH YELLOWTHROAT.

SYN.—*Geothlypis trichas occidentalis*, part.

STATUS—Common resident on the salt marshes of San Francisco Bay.

- 427 (681 c, part) *Geothlypis trichas scirpicola* Grinnell.

TULE YELLOWTHROAT.

SYN.—*Geothlypis trichas occidentalis*, part; *Trichas marylandica*; *Geothlypis trichas*, part.
 STATUS—Common resident in suitable localities through the San Diegan district, northwest to Santa Barbara.

- 428 (683 a) *Icteria virens longicauda* (Lawrence) Coues.

LONG-TAILED CHAT.

SYN.—*Icteria longicauda*; *Icteria viridis*.
 STATUS—Fairly common summer visitant in suitable localities, breeding chiefly in Upper Sonoran west of the Sierras.

- 429 (685 a) *Wilsonia pusilla pileolata* (Pallas) Coues.

PILEOLATED WARBLER.

SYN.—*Sylvania pusilla pileolata*; *Myiodioctes pusillus*; *Myiodioctes pusillus pileolatus*; *Sylvania pusilla*.
 STATUS—Common summer visitant in suitable localities, chiefly in Upper Sonoran; widely distributed during migration.

- 430 (687) *Setophaga ruticilla* (Linnæus) Swainson.

AMERICAN REDSTART.

STATUS—Known only from two definite records, that by W. O. Emerson of a male specimen secured at Haywards, June 20, 1881, and that by L. Belding of a male specimen observed at Marysville Buttes, June 6, 1884.

- 431 (697) *Anthus pensilvanicus* (Latham) Thienemann.

AMERICAN PIPIT.

SYN.—*Anthus ludovicianus*.
 STATUS—Common winter visitant throughout the lower portions of the State; detected by C. H. Merriam on Mount Shasta in summer.

- 432 (701) *Cinclus mexicanus* Swainson.

AMERICAN DIPPER.

SYN.—*Cinclus americanus*; *Hydrobata mexicana*.
 STATUS—Common resident along streams in Transition and Boreal.

- 433 (702) *Oroscoptes montanus* (Townsend) Baird.

SAGE THRASHER.

SYN.—*Mimus montanus*.
 STATUS—Fairly common resident locally southeast of the Sierras, breeding in Upper Sonoran and wintering in Lower Sonoran; recorded north to Sierra Valley, and west casually during migration to Santa Paula.

- 434 (703)
- Mimus polyglottos leucopterus*
- (Vigors) Mearns.

WESTERN MOCKINGBIRD.

SYN.—*Mimus polyglottos*; *Mimus caudatus*.

STATUS—Common resident throughout Lower Sonoran, north through Owens, San Joaquin and Salinas Valleys; recorded north casually to San Geronimo, Chico and Gridley; most numerous in the San Diegan district.

- 435 (704)
- Galeoscoptes carolinensis*
- (Linnæus) Cabanis.

CATBIRD.

SYN.—*Mimus carolinensis*.

STATUS—Known only from the record by C. H. Townsend of a specimen secured on the Farallone Islands, September 4, 1884.

- 436 (708)
- Toxostoma bendirei*
- (Coues) Richmond.

BENDIRE THRASHER.

SYN.—*Harporhynchus bendirei*.

STATUS—Known only from the deserts of southeastern California, whence it has been recorded from Agua Caliente and Warrens Wells.

- 437 (710)
- Toxostoma rediviva rediviva*
- (Gambel) Gambel.

CALIFORNIA THRASHER.

SYN.—*Harpes rediviva*; *Harporhynchus redivivus*, part.

STATUS—Common resident of the Upper Sonoran Zone west of the Sierra Nevada north of about latitude 35°; recorded north to Baird, Shasta County.

- 438 (710 a)
- Toxostoma rediviva pasadenensis*
- (Grinnell) Richmond.

PASADENA THRASHER.

SYN.—*Toxostoma rediviva*, part; *Harporhynchus redivivus*, part; *Harporhynchus redivivus pasadenensis*.

STATUS—Common resident below Transition in the San Diegan district.

- 439 (711)
- Toxostoma lecontei lecontei*
- Lawrence.

LECONTE THRASHER.

SYN.—*Harporhynchus lecontei*; *Harporhynchus redivivus lecontei*.

STATUS—Fairly common resident in the deserts of southeastern California (Lower Sonoran); recorded north to head of Owens Valley (Benton) and west to Onyx and Buena Vista Lake, Kern County.

- 440 (712)
- Toxostoma crissalis*
- Henry.

CRISSAL THRASHER.

SYN.—*Harporhynchus crissalis*.

STATUS—Resident locally in the Colorado Desert, from Fort Yuma northwest to Palm Springs.

- 441 (713) *Heleodytes brunneicapillus brunneicapillus* (Lafresne) Fisher.

CACTUS WREN.

SYN.—*Campylorhynchus brunneicapillus*; *Campylorhynchus couesi*; *Heleodytes brunneicapillus bryanti*.

STATUS—Common resident of Lower Sonoran in southern California on both sides of the Sierras, north to Ventura County, Kernville and Owens Valley.

- 442 (715) *Salpinctes obsoletus* (Say) Cabanis.

ROCK WREN.

SYN.—*Troglodytes obsoletus*.

STATUS—Common resident locally east of the humid coast belt, including the Farallones and part of the Santa Barbara Islands; more generally distributed in winter.

- 443 (—) *Salpinctes pulverius* (Grinnell) Grinnell.

SAN NICOLAS ROCK WREN.

SYN.—*Salpinctes obsoletus*, part; *Salpinctes obsoletus pulverius*.

STATUS—Common resident on San Nicolas and San Clemente Islands.

- 444 (717 a) *Catherpes mexicanus conspersus* Ridgway.

CANYON WREN.

STATUS—Fairly common resident among the desert ranges southeast of the Sierra Nevada, north to Mono Lake.

- 445 (717 b) *Catherpes mexicanus punctulatus* Ridgway.

DOTTED CANYON WREN.

SYN.—*Catherpes mexicanus conspersus*, part; *Catherpes mexicanus*; *Troglodytes mexicanus*.

STATUS—Fairly common resident locally west of the Sierran divide, chiefly along the west slope of the Sierras (Transition); sparingly in the coast ranges north to Mount Diablo and Mount Saint Helena.

- 446 (719 a, part) *Thryomanes bewicki spilurus* (Vigors) Ridgway.

VIGORS WREN.

SYN.—*Troglodytes spilurus*; *Troglodytes bewicki*, part; *Thryothorus bewicki spilurus*, part; *Thryothorus bewicki*, part.

STATUS—Common resident in the humid coast belt from southern Monterey County north to Mendocino County, east to include the San Francisco Bay region.

- 447 (719 a, part) *Thryomanes bewicki drymæcus* Oberholser.

SAN JOAQUIN WREN.

SYN.—*Thryomanes bewicki*, part; *Thryothorus bewicki*, part; *Thryothorus bewicki spilurus*, part; *Thryomanes bewicki spilurus*, part; *Thryothorus spilurus*, part; *Troglodytes bewicki* var. *spilurus*.

STATUS—Common resident through the San Joaquin-Sacramento basin, chiefly in Upper Sonoran and Transition, from the Tejon Mountains north to Shasta County, and west to the coast in the vicinity of Santa Barbara County; casual in winter to Barstow and Pasadena.

- 448 (719 d)
- Thryomanes bewicki charienturus*
- Oberholser.

SAN DIEGO WREN.

SYN.—*Troglodytes bewicki*, part; *Thryothorus bewicki*, part; *Thryothorus spilurus*, part; *Thryothorus bewicki spilurus*, part; *Thryothorus bewicki bairdi*, part.

STATUS—Common resident in Upper Sonoran and Transition in the San Diegan district, northwest to Ventura County, including Santa Catalina Island.

- 449 (719 b, part)
- Thryomanes bewicki eremophilus*
- Oberholser.

DESERT WREN.

SYN.—*Thryothorus bewicki bairdi*, part.

STATUS—Fairly common resident along the desert ranges southeast of the Sierra Nevada (White Mountains, Argus Range, etc.).

- 450 (719 a, part)
- Thryomanes nesophilus*
- (Oberholser) Grinnell.

SANTA CRUZ ISLAND WREN.

SYN.—*Thryomanes bewicki nesophilus*; *Thryomanes bewicki spilurus*, part; *Thryothorus bewicki bairdi*, part.

STATUS—Fairly common resident on Santa Cruz and Santa Rosa Islands.

- 451 (719.1)
- Thryomanes leucophrys*
- (Anthony) A. O. U. Committee.

SAN CLEMENTE WREN.

SYN.—*Thryothorus bewicki*, part; *Thryothorus bewicki bairdi*, part; *Thryomanes bewicki leucophrys*; *Thryothorus leucophrys*.

STATUS—Common resident on San Clemente Island.

- 452 (721 a)
- Troglodytes aedon parkmani*
- (Audubon) Coues.

PARKMAN WREN.

SYN.—*Troglodytes aedon*; *Troglodytes domesticus parkmani*; *Troglodytes parkmani*, part; *Troglodytes americanus*; *Troglodytes sylvestris*; *Troglodytes aedon aztecus*, part.

STATUS—Common summer visitant nearly throughout the State west of the Sierran divide; winters sparingly in the San Diegan district.

- 453 (721 b)
- Troglodytes aedon aztecus*
- Baird.

WESTERN HOUSE WREN.

SYN.—*Troglodytes parkmani*, part.

STATUS—Fairly common summer visitant to the desert ranges east of the Sierra Nevada and north to Mono Lake.

- 454 (722 a)
- Troglodytes hiemalis pacificus*
- Baird.

WESTERN WINTER WREN.

SYN.—*Troglodytes hiemalis*; *Anorthura hiemalis pacifica*; *Anorthura troglodytes pacifica*; *Troglodytes parvulus* var. *pacificus*.

STATUS—Common resident through the humid coast belt (Transition) south to Point Sur, Monterey County; also more sparingly in the northern Sierra Nevada south to Calaveras County; occurs more widely as a winter visitant; recorded south in midwinter as far as Mount Wilson, Los Angeles County.

- 455 (725 a) *Cistothorus palustris paludicola* Baird.

TULE WREN.

SYN.—*Cistothorus palustris*, part; *Troglodytes palustris*; *Telmatodytes palustris paludicola*.

STATUS—Common resident locally in suitable localities west of the Sierran divide; more widely distributed in the lowlands in winter.

- 456 (725 c) *Cistothorus palustris plesius* Oberholser.

WESTERN MARSH WREN.

SYN.—*Cistothorus palustris*, part; *Cistothorus palustris paludicola*, part.

STATUS—Common resident locally in suitable localities east of the Sierran divide, breeding at Eagle Lake, etc.

- 457 (726 c) *Certhia familiaris occidentalis* Ridgway.

CALIFORNIA CREEPER.

SYN.—*Certhia familiaris americana*, part.

STATUS—Fairly common resident in humid coast Transition south to the Santa Cruz Mountains.

- 458 (726 d) *Certhia familiaris zelotes* Osgood.

SIERRA CREEPER.

SYN.—*Certhia familiaris occidentalis*, part; *Certhia familiaris americana*, part; *Certhia mexicana*; *Certhia familiaris*; *Certhia americana*; *Certhia familiaris fusca*.

STATUS—Common resident in Transition and lower Boreal along the whole length of the Sierras; occurs west through the intervening valleys to the coast in winter.

- 459 (727 a) *Sitta carolinensis aculeata* (Cassin) Allen.

SLENDER-BILLED NUTHATCH.

SYN.—*Sitta carolinensis*; *Sitta aculeata*.

STATUS—Common resident of Transition everywhere, except in the humid coast belt; occurs sparingly in winter down into Sonoran.

- 460 (728) *Sitta canadensis* Linnæus.

RED-BREASTED NUTHATCH.

STATUS—Occurs irregularly as a common winter visitant to timbered districts nearly throughout the State; remains through the summer in Boreal on the Sierra Nevada.

- 461 (730) *Sitta pygmæa pygmæa* Vigors.

PYGMY NUTHATCH.

STATUS—Common resident locally in Transition; most abundant in the southern Sierras and in the Santa Cruz district.

- 462 (733) *Parus inornatus inornatus* Gambel.

PLAIN TITMOUSE.

SYN.—*Lophophanes inornatus*.

STATUS—Common resident in oak regions throughout Upper Sonoran west of the Sierras; recorded north to Battle Creek, Shasta County.

- 463 (733 a) *Parus inornatus griseus* Ridgway.

GRAY TITMOUSE.

STATUS—Fairly common resident in Upper Sonoran along the desert ranges southeast of the Sierra Nevada.

- 464 (738) *Parus gambeli* Ridgway.

MOUNTAIN CHICKADEE.

SYN.—*Parus montanus*.

STATUS—Common resident of Transition along the whole length of the Sierras from the Cuyamaca Mountains north to the Siskiyou Mountains; casual in winter down into Sonoran.

- 465 (741) *Parus rufescens rufescens* Townsend.

CHESTNUT-SIDED CHICKADEE.

STATUS—Common resident in the northern humid coast belt (Del Norte, Humboldt and Mendocino Counties); casually to Mount Shasta and Mount Saint Helena.

- 466 (741 a, part) *Parus rufescens neglectus* Ridgway.

MARIN CHICKADEE.

STATUS—Common resident in the humid coast belt of Marin and Sonoma Counties.

- 467 (741 a, part) *Parus rufescens barlowi* Grinnell.

SANTA CRUZ CHICKADEE.

SYN.—*Parus rufescens*, part; *Parus rufescens neglectus*, part.

STATUS—Common resident in the Santa Cruz district, from San Francisco (formerly) south to Sur River, Monterey County; east casually to Haywards.

- 468 (742 a) *Chamæa fasciata fasciata* (Gambel) Gambel.

PALLID WREN-TIT.

SYN.—*Parus fasciatus*; *Chamæa fasciata henshawii*.

STATUS—Common resident in Upper Sonoran west of the Sierras (excepting the humid coast belt) from San Diego north to the lower McCloud River, Shasta County.

- 469 (742, part) *Chamæa fasciata intermedia* Grinnell.

INTERMEDIATE WREN-TIT.

SYN.—*Chamæa fasciata*, part.

STATUS—Common resident in the humid coast belt from Carmel River, Monterey County, north through Marin and Sonoma Counties, and east to include the San Francisco Bay region.

- 470 (742, part) *Chamæa fasciata phæa* Osgood.

NORTHERN WREN-TIT.

SYN.—*Chamæa fasciata*, part.

STATUS—Fairly common resident in the northern humid coast belt (Del Norte, Humboldt and Mendocino Counties).

- 471 (743+743 a) *Psaltriparus minimus minimus* (Townsend) Bonaparte.

CALIFORNIA BUSH-TIT.

SYN.—*Psaltriparus minimus californicus*; *Parus minimus*; *Psaltria minima*; *Acredula minima*.

STATUS—Common resident below Boreal west of the Sierras; most abundant in oak regions.

- 472 (744) *Psaltriparus plumbeus* Baird.

LEAD-COLORED BUSH-TIT.

STATUS—Common resident along the desert ranges southeast of the Sierra Nevada (Pana-mint, White, Grapevine and Inyo Mountains).

- 473 (746) *Auriparus flaviceps* (Sundevall) Baird.

VERDIN.

SYN.—*Ægithalus flaviceps*; *Paroides flaviceps*; *Auriparus flaviceps ornatus*.

STATUS—Common resident locally in the deserts (Lower Sonoran) of southeastern California; recorded north to Resting Springs, Inyo County, and west to Barstow, Coahuilla Valley, etc.

- 474 (748 a) *Regulus satrapa olivaceus* Baird.

WESTERN GOLDEN-CROWNED KINGLET.

SYN.—*Regulus satrapa*.

STATUS—Common winter visitant south through the humid coast belt; of irregular occurrence in midwinter elsewhere west of the Sierras south as far as Mount Wilson, Los Angeles County; remains through the summer sparingly on the high Sierra Nevada south to vicinity of Mount Whitney.

- 475 (749) *Regulus calendula calendula* (Linnæus) Lichtenstein.

RUBY-CROWNED KINGLET.

STATUS—Abundant winter visitant throughout the State; remains through the summer and breeds in Boreal on the Sierras south to the San Jacinto Mountains.

- 476 (749 a) *Regulus calendula grinnelli* Palmer.

SITKA KINGLET.

STATUS—Fairly common winter visitant south through the humid coast belt as far as Monterey.

- 477 (751 a) *Polioptila cærulea obscura* Ridgway.

WESTERN GNATCATCHER.

SYN.—*Polioptila cærulea*; *Culicivora cærulea*.

STATUS—Common resident locally through Sonoran (excepting the humid coast belt); migrant northerly; recorded in summer north to Yreka.

478 (752) *Polioptila plumbea* Baird.

PLUMBEOUS GNATCATCHER.

SYN.—*Polioptila melanura*, part.

STATUS—Common resident locally in the deserts (Lower Sonoran) of southeastern California; recorded north to Resting Springs, Inyo County, and west to Palm Springs, Riverside County.

479 (753) *Polioptila californica* Brewster.

BLACK-TAILED GNATCATCHER.

SYN.—*Polioptila melanura*, part; *Culicivora atricapilla*.

STATUS—Common resident locally in Lower Sonoran in the San Diegoan district, northwest to Ventura.

480 (754) *Myadestes townsendi* (Audubon) Cabanis.

TOWNSEND SOLETAIRE.

SYN.—*Ptilogonys townsendi*.

STATUS—Common in summer along the Sierras (Boreal) locally from Mount Shasta south to the San Bernardino Mountains; more generally distributed in winter through Transition, and sparingly west to the coast.

481 (758+758 b) *Hylocichla ustulata ustulata* (Nuttall) Ridgway.

RUSSET-BACKED THRUSH.

SYN.—*Turdus ustulatus*; *Turdus nanus*, part; *Turdus swainsoni*; *Turdus swainsoni ustulatus*; *Turdus ustulatus swainsoni*; *Hylocichla ustulata ædica*.

STATUS—Common summer visitant in suitable localities through Upper Sonoran and Transition; occurs elsewhere during migration.

482 (759, part) *Hylocichla aonalaschkæ aonalaschkæ* (Gmelin) Ridgway.

DWARF HERMIT THRUSH.

SYN.—*Turdus minor*; *Turdus nanus*, part; *Turdus aonalaschkæ*, part; *Turdus aonalaschkæ auduboni*, part; *Turdus pallasi* var. *nanus*; *Turdus guttatus*.

STATUS—Abundant winter visitant throughout the State.

483 (759, part) *Hylocichla aonalaschkæ verecunda* Osgood.

COAST HERMIT THRUSH.

SYN.—*Hylocichla aonalaschkæ*, part; *Turdus aonalaschkæ*, part; *Turdus pallasi*; *Turdus nanus*, part.

STATUS—Common winter visitant south through the humid coast belt; casually to Los Angeles County.

484 (—) *Hylocichla aonalaschkæ slevini* Grinnell.

MONTEREY HERMIT THRUSH.

SYN.—*Turdus nanus*, part; *Turdus sequoiensis*, part; *Turdus aonalaschkæ sequoiensis*, part.

STATUS—Fairly common summer visitant locally in the southern humid coast belt from Point Sur, Monterey County, north to Sonoma County; migrant through the San Diegoan district (Pasadena).

- 485 (759 a, part) *Hylocichla aonalaschkæ sequoiensis* (Belding) Fisher.

SIERRA HERMIT THRUSH.

SYN.—*Turdus aonalaschkæ*, part; *Turdus auduboni*; *Turdus aonalaschkæ auduboni*, part; *Turdus sequoiensis*, part; *Turdus aonalaschkæ sequoiensis*, part; *Hylocichla aonalaschkæ sequoiensis*.

STATUS—Fairly common summer visitant to Boreal along the Sierras from Mount Shasta south to the San Bernardino Mountains.

- 486 (761 a) *Merula migratoria propinqua* (Ridgway) Ridgway.

WESTERN ROBIN.

SYN.—*Turdus migratorius*; *Turdus migratorius* var. *propinqua*.

STATUS—Common winter visitant nearly throughout the State; in summer, confined to the higher mountains in the interior, breeding south along the Sierras (Boreal) to the San Bernardino Mountains.

- 487 (762) *Merula confinis* (Baird) Ridgway.

SAINT LUCAS ROBIN.

STATUS—Known only from the record by W. O. Emerson of a female specimen secured at Haywards, January 2, 1880.

- 488 (763, part) *Hesperocichla nævia nævia* (Gmelin) Ridgway.

VARIED THRUSH.

SYN.—*Turdus nævius*, part; *Geocichla nævia*.

STATUS—Common winter visitant south through the humid coast belt; recorded in summer from the vicinity of Humboldt Bay (in humid Boreal).

- 489 (763, part) *Hesperocichla nævia meruloides* (Swainson) Grinnell.

NORTHERN VARIED THRUSH.

SYN.—*Turdus nævius*, part; *Hesperocichla nævia*, part.

STATUS—Common winter visitant west of the Sierras (except in the humid coast belt in general), south to southern Los Angeles County.

- 490 (767) *Sialia mexicana occidentalis* (Townsend) Ridgway.

WESTERN BLUEBIRD.

SYN.—*Sialia mexicana*; *Sialia occidentalis*; *Sialia mexicana anabelæ*.

STATUS—Common resident throughout Transition; breeds locally in Upper Sonoran; more generally distributed in winter down throughout Sonoran.

- 491 (768) *Sialia arctica* Swainson.

MOUNTAIN BLUEBIRD.

STATUS—Irregularly common winter visitant nearly throughout the State east of the humid coast belt; common in summer on the higher Sierra Nevada and ranges to the eastward, breeding from Mount Shasta south to the San Bernardino Mountains.

HYPOTHETICAL LIST.

NOTE:—This list consists of species which have been ascribed to California, but concerning which there is doubt either as to the evidence of their occurrence or as to their validity as species. Besides the thirty-three species here enumerated, some fifty others of still more doubtful standing have been credited to the State. But these were mostly recorded in the earlier writings, when "California" covered a much more extensive and indefinite area than now, and when matters of exact locality were not considered of so much importance. Many of these are west Mexican or even Central and South American species.

- 1 (5) *Colymbus dominicus brachypterus* Chapman.

SAN DOMINGO GREBE.

SYN.—*Colymbus dominicus*; *Podiceps dominicus*.

STATUS—Often quoted from W. Gambel as occurring in "Upper California"; no definite record.

- 2 (4, Hyp. List) *Creagrus furcatus* (Neboux) Bonaparte.

SWALLOW-TAILED GULL.

SYN.—*Xema furcata*.

STATUS—Known only from a specimen said to have been obtained by Dr. Neboux of the French frigate "Venus" at Monterey in November; the locality of capture has been doubted.

- 3 (70) *Sterna hirundo* Linnæus.

COMMON TERN.

STATUS—Said to occur as a migrant through the State, but record of locality and specimens are wanting.

- 4 (—) *Diomedea melanophrys* Boie.

SPECTACLED ALBATROSS.

STATUS—Record of occurrence "1060 miles west of Cape Mendocino", even if authentic, is somewhat beyond our limits.

- 5 (83) *Thalassogeron culminatus* (Gould) Ridgway.

YELLOW-NOSED ALBATROSS.

STATUS—A skull said to have been obtained on the California coast; also recorded off the coast of Oregon.

- 6 (84) *Phœbtria fuliginosa* (Gmelin) Reichenbach.

SOOTY ALBATROSS.

STATUS—A southern species ascribed to California because it is said to extend "north to the coast of Oregon"; no definite record for our State.

- 7 (85) *Ossifraga gigantea* (Gmelin) Reichenbach.

GIANT FULMAR.

SYN.—*Fulmarus giganteus*.

STATUS—Known only from the statement of J. G. Cooper that it was often seen in the summer of 1861 about the whale fishery in Monterey Bay; no confirmation.

- 8 (87) *Priocella glacialoides* (Smith) Ridgway.

SLENDER-BILLED FULMAR.

SYN.—*Fulmarus glacialoides*.

STATUS—A supposed skeleton found at Santa Catalina Island in 1863 by J. G. Cooper; also said to occur northward to the coast of Washington.

- 9 (113) *Phaethon æthereus* Linnæus.

RED-BILLED TROPIC BIRD.

STATUS—A skull said to have been found on the coast of Marin County about 1868.

- 10 (183) *Ajaia ajaja* (Linnæus) Reichenbach.

ROSEATE SPOONBILL.

SYN.—*Platea mexicana*; *Ajaja rosea*.

STATUS—Known only from the statement of W. Gambel in 1849 that "small flocks of this beautiful bird have several times extended up the coast even as far as San Francisco".

- 11 (204) *Grus americana* (Linnæus) Vieillot.

WHOOPING CRANE.

STATUS—Recorded as perhaps seen in spring and fall in Butte and Sutter Counties.

- 12 (205) *Grus canadensis* (Linnæus) Temminck.

LITTLE BROWN CRANE.

STATUS—Although it is almost certain that this species is a common spring and fall migrant through the State, specimens seem to be as yet lacking.

- 13 (216.1) *Porzana coturniculus* (Ridgway) Ridgway.

FARALLONE RAIL.

SYN.—*Porzana jamaicensis coturniculus*; *creciscus coturniculus*.

STATUS—Described from a single specimen said to have been obtained on the Farallone Islands; both locality of capture and status of specimen are in doubt.

- 14 (251) *Limosa hœmastica* (Linnæus) Coues.

HUDSONIAN GODWIT.

SYN.—*Limosa hudsonica*.

STATUS—Three specimens listed as from "California" in Volume XXIV of the "Catalogue of Birds"; no definite record of locality of capture.

- 15 (266) *Numenius borealis* (Forster) Latham.

ESKIMO CURLEW.

STATUS—The records of its occurrence at San Francisco and San Diego have both been questioned.

- 16 (335) *Parabuteo unicinctus harrisi* (Audubon) Ridgway.

HARRIS HAWK.

STATUS—While this species is almost certain to occur over the southern border of the State, definite record of capture seems to be still wanting.

- 17 (—) *Buteo solitarius* Cassin.

GRUBER HAWK.

SYN.—*Onychotes solitarius*; *Onychotes gruberi*.

STATUS—A Hawaiian species, a specimen of which is said to have been obtained in California.

- 18 (14, Hyp. List) *Buteo cooperi* Cassin.

COOPER HENHAWK.

STATUS—Known only from the unique specimen shot by J. G. Cooper near Mountain View, Santa Clara County, in November, 1855; its relationship is in doubt.

- 19 (362) *Polyborus cheriway* (Jacquin) Cabanis.

AUDUBON CARACARA.

SYN.—*Polyborus tharus*; *Polyborus tharus* var. *auduboni*; *Polyborus auduboni*.

STATUS—Known only from the record by A. L. Heermann that he saw one on the Colorado River near Fort Yuma.

- 20 (373 d) *Megascops asio kennicotti* (Elliot) Stejneger.

KENNICOTT SCREECH OWL.

STATUS—While this form may be confidently expected to occur in the northern humid coast belt, there is as yet no satisfactory record.

- 21 (391) *Ceryle americana septentrionalis* Sharpe.

TEXAS KINGFISHER.

SYN.—*Ceryle americana*; *Ceryle americana cabanisi*; *Ceryle cabanisi*.

STATUS—The records of occurrence on the lower Colorado River and in Poway Valley, San Diego County, are not satisfactory.

- 22 (406) *Melanerpes erythrocephalus* (Linnæus) Swainson.

RED-HEADED WOODPECKER.

STATUS—The record by W. Gambel of the common occurrence of this species in the oak timber near the Mission of San Gabriel (Los Angeles County) remains unconfirmed.

- 23 (414) *Colaptes chrysoides chrysoides* (Malherbe) Reichenbach.

GILDED FLICKER.

STATUS—Although doubtlessly occurring in the southeast corner of the State, a definite record seems to be as yet wanting.

- 24 (426) *Eugenes fulgens* (Swainson) Gould.

RIVOLI HUMMINGBIRD.

STATUS—The authenticity of the recent record of a specimen from San Geronio Pass has been questioned.

- 25 (16.2, Hyp. List) *Trochilus violajugulum* Jeffries.

VIOLET-THROATED HUMMINGBIRD.

STATUS—The type specimen from Santa Barbara remains unique; probably a hybrid.

- 26 (442) *Milvulus tyrannus* (Linnæus) Bonaparte.

FORK-TAILED FLYCATCHER.

STATUS—Recently attributed to California, but the nature of the evidence has not been ascertained.

- 27 (513) *Quiscalus major* Vieillot.

BOAT-TAILED GRACKLE.

STATUS—Known only from the statement by W. Gambel that it was occasionally seen as far north as Upper California.

- 28 (607.1) *Piranga rubriceps* Gray.

GRAY TANAGER.

STATUS—A specimen claimed to have been secured at Dos Pueblos, Santa Barbara County; locality very doubtful.

- 29 (610 a) *Piranga rubra cooperi* (Ridgway) Ridgway.

COOPER TANAGER.

SYN.—*Pyrranga æstiva cooperi*.

STATUS—Specimen said to have been obtained at Santa Barbara; probably does occur in spring over the southeastern border of the State, but satisfactory evidence is so far wanting.

- 30 (—) *Lanius robustus* (Baird) Gadow.

BAIRD SHRIKE.

SYN.—*Collurio elegans*; *Collurio ludovicianus* var. *robustus*; *Lanius elegans*.

STATUS—Type said to have come from "California", but locality in doubt.

- 31 (643) *Helminthophila luciae* (Cooper) Ridgway.

LUCY WARBLER.

SYN.—*Helminthophaga luciae*.

STATUS—Attributed to southern California, though there is no definite record nearer than Fort Mojave which is on the Arizona side of the Colorado River.

- 32 (664) *Dendroica graciae* Baird.

GRACE WARBLER.

STATUS—The record of a specimen said to have been shot near Santa Paula, Ventura County, has not been verified.

- 33 (735 b) *Parus atricapillus occidentalis* (Baird) Coues.

OREGON CHICKADEE.

SYN.—*Parus atricapillus*; *Parus occidentalis*.

STATUS—The several records so far made are all questionable; the species should, however, be confidently looked for in the northern humid coast belt.

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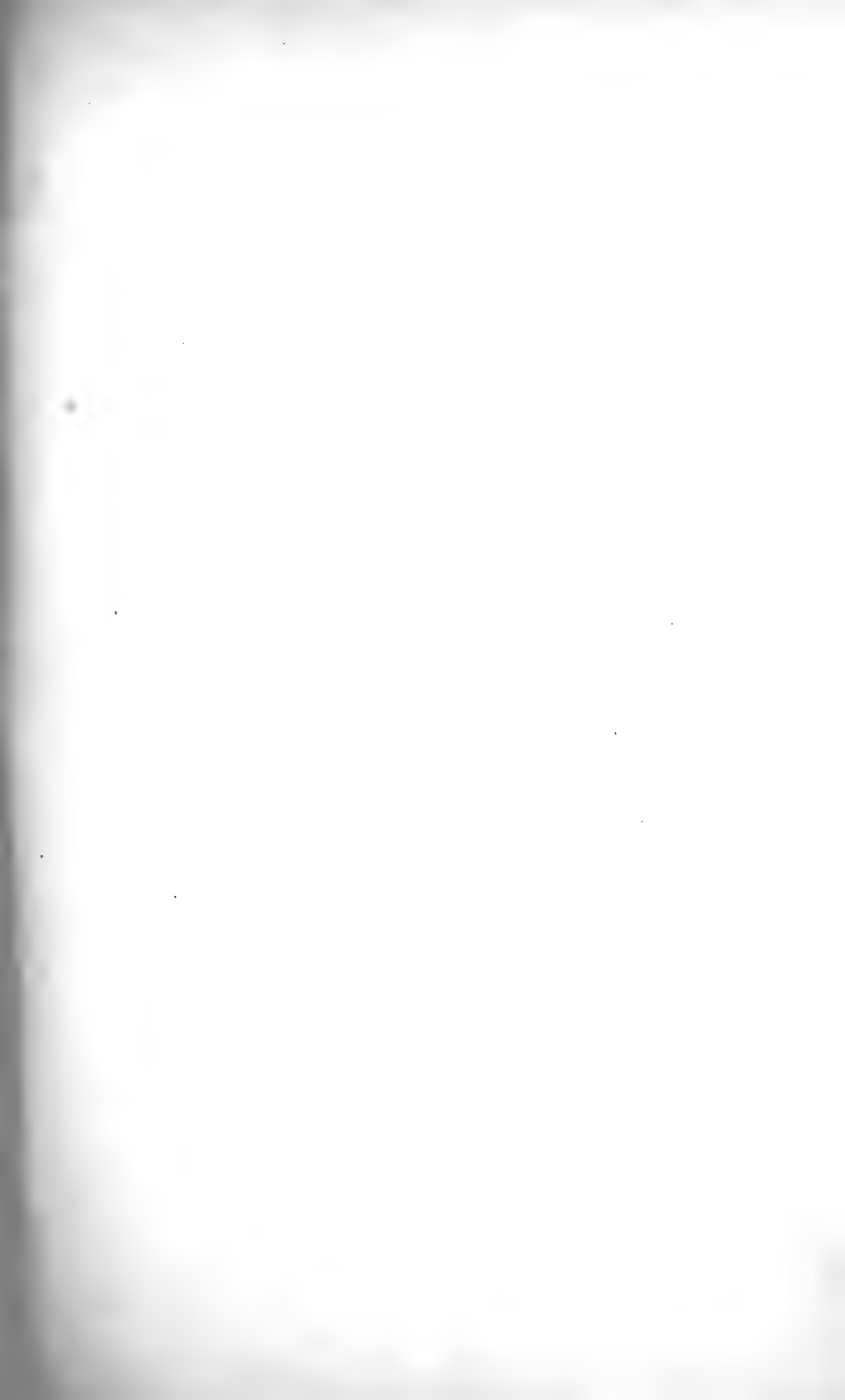
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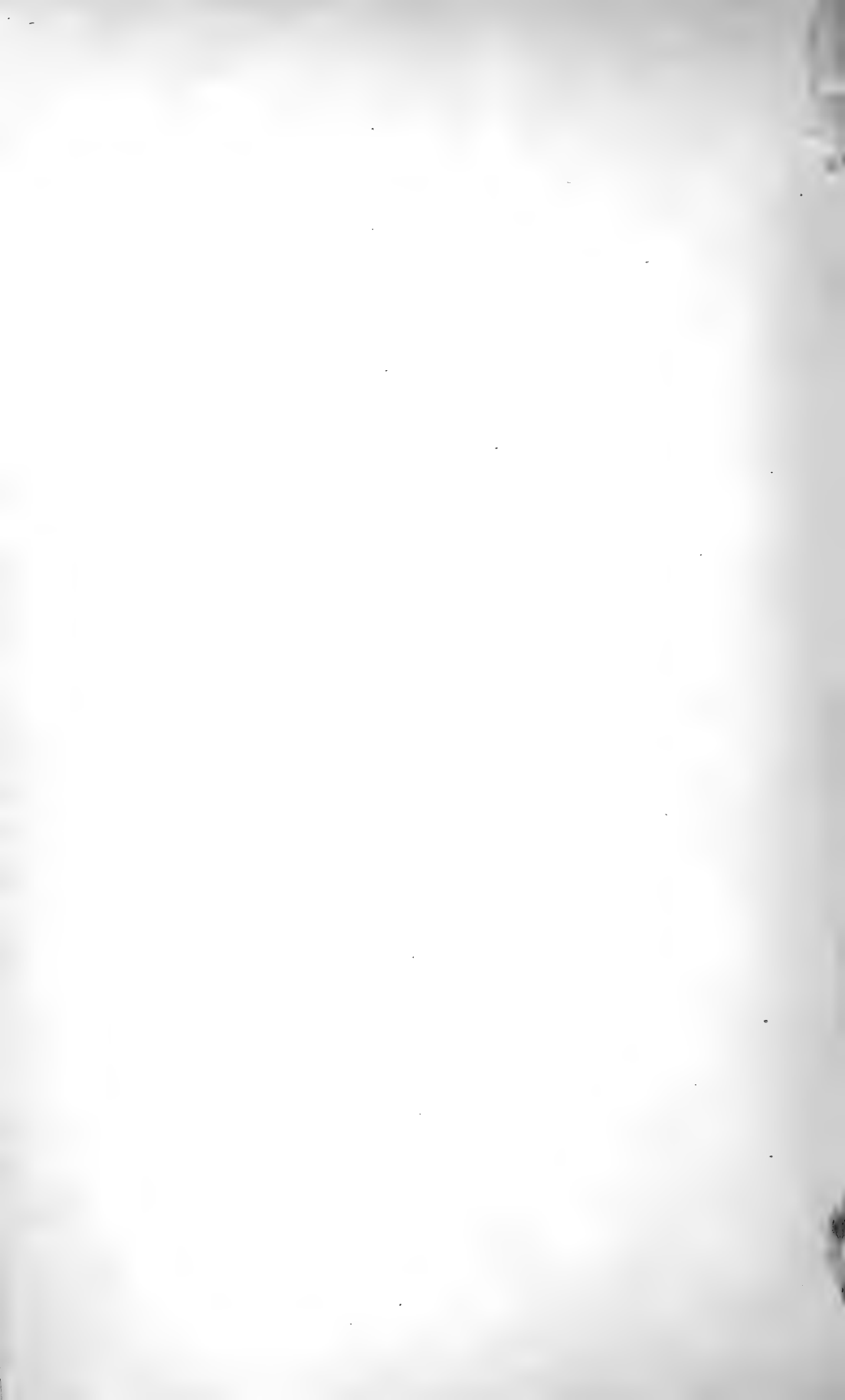
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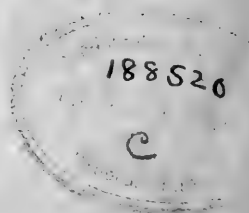
NO. 4



BIRDS OF THE HUACHUCA MOUNTAINS, ARIZONA

..BY..

HARRY S. SWARTH



LOS ANGELES, CALIFORNIA
PUBLISHED BY THE CLUB
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...NOTE...

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. The latter serves for the accommodation of papers meriting special consideration, or whose length prohibits their appearance in the official organ. Both sets of publications are sent free to honorary members and to active members in good standing.

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BIRDS OF THE HUACHUCA MOUNTAINS, ARIZONA.

BY HARRY S. SWARTH.

INTRODUCTION.

The Huachuca Mountains are a range which have been pretty thoroughly explored by investigators in various branches of natural history, but of which there has been but little published, at least of ornithological interest. A few scattered notes recording the occurrence of various rarities in that region, and some more or less carefully detailed accounts of the breeding habits of the most interesting and conspicuous species of birds inhabiting the mountains are about all that have appeared, but nothing of a general character; and as in the course of several seasons careful work in the mountains many interesting and surprising facts in distribution, migrations, etc., of various species were being continually encountered, which, while they may be familiar to the naturalists who have visited the range, are probably unknown to ornithologists in general, I have been induced to embody the results of my labors in the following pages. The list of residents and summer visitants I believe to be fairly complete, but as stray individuals of many surprising and more or less unexpected species have turned up in the region on various occasions it is but fair to suppose that additional species of this class will have to be added to this list in the future, and it is possible that there are some that I failed to meet with occurring regularly during the fall migration, of which I saw but very little. Though considerable work was done along the valley of the San Pedro River, but a few miles distant, and a number of birds found there not occurring in the Huachucas, I have preferred to limit my list to such species as occur in the mountains, or, ranging over the plains below, occasionally venture up into the mouths of the canyons; for a great variety of migrating water fowl undoubtedly occurs along the San Pedro River, both in the spring and fall, and these I had hardly any opportunity of observing, so prefer to restrict myself as indicated.

The following list is, with the exception of a few records quoted from various publications, entirely from observations made and specimens collected during three visits to the region under consideration. In 1896 four of us, W. B. Judson, H. G. Rising, O. W. Howard and myself made the Huachuca mountains the objective point of a leisurely wagon trip from Los Angeles across the Colorado desert and southern Arizona, and spent three months, from April 25th to July 20th, camped in Ramsey Canyon. In 1902 O. W. Howard and myself were camped together near the mouth of Miller Canyon from March 29th to July 25th, when Mr. Howard returned to Los Angeles, leaving me in the mountains, where I remained until September 5th. In 1903 I was in the mountains, also in Miller Canyon, from February 17th to May 30th. Almost all the collecting was done on the east side of the mountains, in the seven canyons

from Tanner to Ash Canyon, by far the best part of the range, ornithologically considered. Occasional trips were made to the west slope of the mountains, and along the San Pedro River. In 1896 but comparatively few skins were put up, but a large collection of nests and eggs was gathered which is unfortunately inaccessible at the present writing. On the two subsequent trips more attention was paid to the collecting of the birds themselves; personally I put up some 2500 skins, which, with the notes made at the same time, form the basis of the present paper.

The Huachuca Mountains lie in the southeastern corner of Arizona, extending northwest and southeast, and with their southern extremity lying just over the Mexican boundary line. The range is a small one, about forty miles long, composed of a single ridge or back bone, which reaches its greatest height at about the middle of the range; where two peaks rise, one to an altitude of about 10,000 feet, and the other a few hundred feet lower. On the eastern slope a number of broad, well watered canyons extend from the plains quite to the divide of the range, while smaller and shorter ones lie between. The western slope is steeper and more rugged, and the canyons are consequently shorter and not so well watered. The base of the mountains at Miller Canyon, about the center of the range lies at an altitude of about 4500 feet, and in this same canyon, where I did most of my collecting, the distance from the mouth of the canyon to the divide (9000 feet) is about six miles.

The San Pedro River rises west of the Huachucas, circles about the southern extremity of the range, and flows in a northerly direction almost parallel with the mountains and at an average distance of about fifteen miles. Just north of the mountains the Barbocomari River flows, about at right angles with the line of the range, emptying into the San Pedro River at Fairbanks. From the San Pedro to the mountains is an unbroken plain, covered with mesquite and other brush from the river up to within about five miles of the mountains, but for the rest simply a grass covered prairie. Where the various canyons leave the mountains they extend in the shape of washes across the plains to the river, the trees gradually diminishing in size and numbers; and the water sinking, in the summer far above the mouths of the canyons, and in the early spring sometimes two or three miles below, to rise again just before the river is reached. Where the water comes to the surface again rows of large willows, and other vegetation is found.

The Huachucas are a well wooded range, covered in the higher parts, with various conifers; along the canyons with maples, alders, ash, madrones, walnuts and sycamores; with extensive groves of live-oaks over the foothills and along the base of the mountains; and in places thickly covered with low brush. There are very few willows in the mountains, and these but small bushes; and of cottonwoods there are but a very few trees scattered along the base of the range. Though some beautiful little species of cactus occur, the various species of prickly pear and cholla, so conspicuous about Tucson and many other parts of the territory, are almost entirely absent, both in the mountains and in the plains; but there are many mescals all over the range, and, in the foothills a few yuccas.

The winters are cold in the mountains; in February, 1903, there was snow lying over the range down to the foothills, and in places along the

divide it was nearly eight feet deep; while on the first of May there were sheltered spots near the summit of the range where the snow was still lying. Many times in February and March the thermometer fell as low as 20 degrees Fahr. in the night, occasionally as low as 15 degrees. I did not find the summers unpleasantly hot in the mountains, but on the plains below it became far too warm for comfort.

I would like here to express my gratitude, first to Mr. G. Freaan Morcom, in whose interests these trips were made, and who has assisted me in many ways in compiling and publishing this list; to Mr. Joseph Grinnell, whose opinions I have consulted, and of whose advice I have frequently availed myself; and also to Mr. Ridgway who has kindly indentified for me many of the more obscure and puzzling species.

HARRY S. SWARTH.

Los Angeles, California, December 1, 1903.

BIRDS OF THE HUACHUCA MOUNTAINS, ARIZONA.

Oxyechus vociferus (Linnaeus). Killdeer.

Throughout the spring of 1903, when water was abundant in the mountains, and there were running streams in most of the washes below, several pair of Killdeer were seen along the streams near the base of the range. They could always be found in about the same locality, and presumably bred there. Along the San Pedro River they are quite common, but this is the only year in which I have seen them near the mountains.

Callipepla squamata (Vigors). Scaled Partridge.

Owing to the lack of cover near the base of the Huachucas, the Scaled Quail is but seldom seen there; though it is a common resident along the San Pedro River and up to within five or six miles of the mountains; as far, in fact, as the brush extends. I have seen a few birds near the mouths of various canyons, usually in enclosed pastures, where the grass and other vegetation attained a higher growth than elsewhere; and very probably a few pair breed in such localities.

Cyrtonyx montezumae mearnsi Nelson. Mearns Partridge.

This species seems to be scattered irregularly over the entire range, though much more abundant on the western than on the eastern slope; and apparently varies greatly in numbers in different years. In the summer of 1896, with four of us scouring the mountains daily, but two pairs of birds were seen, though two years later, in 1898, Mr. O. W. Howard found them to be most abundant in the same region. In 1902, in spite of all our efforts, Mr. Howard and I were unable to find a single bird, and in the following year, 1903, though informed of their occurrence in various places by inhabitants of the mountains, I saw just three myself. Owing to the peculiar habits and secretiveness of the species, together with the rough, broken nature of the ground in which it is found, it is quite possible for it to be fairly abundant, and still be entirely overlooked. If there are any of the quail around, indications of their presence can usually be found, in the shape of small, shallow depressions in the grass or dead leaves, where they have been scratching or dusting, of which they seem to do a great deal. As far as I could make out they seemed to occur indiscriminately from the base of the mountains to the top of the highest peaks.

Meleagris gallopavo merriami Nelson. Merriam Turkey.

I was told that the wild turkeys were formerly quite abundant in the Huachucas, but at present they are rare, though apparently distributed throughout the range. Mr. O. W. Howard has given an account of the capture of a set of eggs of this species in this region (Condor II, 1900, page 55) and besides the bird he mentions, I have heard of possibly half a dozen more, seen in the last three or four years, but never met with any myself.

Columba fasciata Say. Band-tailed Pigeon.

As soon as the acorns begin to ripen the Band-tailed Pigeons put in their appearance in numbers corresponding with the size of the crop; and throughout the summer they are abundant in all parts of the mountains. The earliest date of arrival noted was March 31, 1902, when three birds were seen, but this is exceptionally early, and they do not arrive in any numbers before May 1, as a rule. They breed rather late and I

have seen several nests containing young but a few days old the first week in September. Large flocks may be seen all through the summer, feeding in the oak trees in the lower parts of the mountains, but as a rule, they seem to breed at rather high altitudes, for most of the nests I have seen have been above 8000 feet. I know of no instance in which more than one egg or one young bird has been found in a nest in this region. During the breeding season the male bird is fond of sitting in some elevated position, usually the top of a tall dead pine, giving utterance, at frequent intervals, to a loud "coo," more like the note of an owl than a pigeon, which can be heard at a considerable distance; while occasionally he launches himself into the air, and with wings and tail stiffly outspread, describes a large circle back to his starting point, uttering meanwhile a peculiar, wheezing noise impossible of description. I had supposed that this noise was made by the outspread wings, but a male bird which Mr. Howard had in his possession for some time, gave utterance to the same sound whenever angered or excited, evidently by means of his vocal organs, as we had ample opportunity of observing.

Zenaidura macroura (Linnaeus). Mourning Dove.

A common summer resident, at times appearing in incredibly large numbers, as in April, 1902, when they were particularly abundant. They fed out on the plains below the mountains, and as it was a very dry year, were obliged to fly a mile or two up the canyons for water. Morning and evening they passed over our camp on their way up the canyon, the flight lasting from half to three-quarters of an hour during which time there was an almost continuous stream of birds passing overhead. During this time they formed no inconsiderable part of our daily bill of fare, being almost the only thing in the way of small game that the mountains afforded. Although usually found low down in the canyons, I have occasionally seen Mourning Doves as high as 9000 feet.

Melopelia leucoptera (Linnaeus). White-winged Dove.

In the spring the White-winged Doves make their appearance in the lower parts of the mountains in small numbers, and usually in company with the Mourning Doves. In 1902, the first one seen was on April 30 and the last May 15th. In the fall of the same year one was taken on August 6; and from then on until I left, September 5, they were much more abundant than I have ever seen them in the spring. Most of the fall birds were young of the year; as a rule they were two together, sometimes pairs and sometimes two of the same sex, though occasionally as many as six or eight were seen together. The White-winged Dove breeds rather commonly in places along the San Pedro River some twenty miles distant, but I know of no instance of its breeding in the Huachucas. The highest altitude at which I have seen it in the mountains is 5000 feet, and at that height but rarely.

Columbigallina passerina pallescens (Baird). Mexican Ground Dove.

A rare migrant. I secured a male bird on May 8, 1903, the only one I have seen in the mountains. They breed along the San Pedro River, and though by no means common, a pair or two can usually be found in any suitable locality, showing a marked preference for the cultivated fields and damp pastures.

Cathartes aura (Linnaeus). Turkey Vulture.

Fairly common through the summer months. Mr. F. C. Willard secured a set of eggs in Ramsey Canyon, but they don't seem to breed

in the mountains in any numbers. I think that I have seen more in August than at any other time, but they are never very abundant unless there is some carrion around on which they have been feeding.

Circus hudsonius (Linnaeus). Marsh Hawk.

Quite common in the early spring on the grass covered plains below the mountains, occasionally venturing up into the foot hills. None were seen later than April 1.

Accipiter velox rufilatus Ridgway. Western Sharp-shinned Hawk.

A fairly common migrant, and as I have seen one or two at various times through the summer months I presume that a few remain to breed. They range over all parts of the mountains, from the foothills to the summit of the highest peaks.

Accipiter cooperi (Bonaparte). Cooper Hawk.

Probably a resident, and fairly common though extremely wary; for continual warfare is waged between them and every poultry owner in the mountains. There are one or two pair breeding in almost every canyon, and as, when other game runs short, they make no scruples of picking up a half grown chicken from under its owner's nose, it is only by eternal vigilance that they are enabled to continue their career. I think that this is the only species of hawk occurring in the mountains that makes any depredations whatever upon the chicken yard.

Accipiter atricapillus (Wilson). American Goshawk.

On two occasions in April, 1903, I saw what I took to be a Goshawk circling overhead at the top of the mountains. I have also seen in the possession of one of the inhabitants of the mountains, a pair of wings undoubtedly belonging to an individual of this species, which he had shot.

Buteo borealis calurus (Cassin). Western Red-tailed Hawk.

Though not at all abundant a few pair breed in the higher parts of the mountains, and the same birds can be seen day after day in about the same locality. In 1902 a pair raised a brood near the head of the Miller Canyon, and through the month of August I frequently saw the young birds in the same locality. They were very tame and unsuspecting, and on several occasions one lit on a tree under which I was resting, evidently out of sheer curiosity.

Buteo abbreviatus Cabanis. Zone-tailed Hawk.

Not at all common. A pair were seen throughout the spring and summer of 1902, but I doubt very much if they bred, as the two were continually seen together up to September, when I left. A single bird was several times seen in the same canyon during the spring of 1903, and I have seen possibly half a dozen more in different parts of the mountains.

Buteo swainsoni Bonaparte. Swainson Hawk.

A very abundant summer resident on the plains between the Huachuacas and the San Pedro River. Occasionally a bird ventures up into the canyons, but I have never found any breeding in the mountains proper. In the washes, half a mile or so below the mouths of the canyons, where the trees begin to thin out and the country to become more open, they nest commonly in the walnuts, sycamores and mesquites, the nests being seldom over thirty feet from the ground and

usually much below that. The Swainson Hawks arrive early in April, the first observed in 1903 being on April 3, and they soon become quite abundant. They are very uniform in coloration, being practically all in the light phase of plumage. The only exceptions to this that I have seen, at least of breeding birds, were a female from which I secured a set of eggs on June 4, 1902, which had a great deal of dark chestnut markings on the lower parts, abdomen and thighs; and a female from which I secured a set, below the Santa Rita Mountains, some forty miles northwest of the Huachucas; which last appeared to be nearly black, being fully as dark as any Southern California *swainsoni* that I have seen. On September 5, 1902, while driving from the mountains to the train, enormous flocks of Swainson Hawks were seen between Fort Huachuca and the railroad, hundreds being in sight at once. Many were circling overhead at an average height of about fifty yards, and as many more were lit on the prairie on all sides, feeding on the grasshoppers, which abound there. The grass was so high as to hide many of them, but in several places along the road I counted a dozen or more in a space ten feet square. The great majority of them were in the light phase of plumage, but I saw two or three which appeared nearly black, and about every possible phase of plumage between the two extremes. The flocks were slowly moving in a southerly direction, and, as far as I could make out, contained no species of hawk but *swainsoni*. Of the few specimens of the Swainson Hawk which I prepared, the stomachs contained nothing but grasshoppers, which are so extremely abundant on the grassy plains of this region that I doubt if these hawks eat much of anything else while staying here.

Aquila chrysaetos (Linnaeus). Golden Eagle.

Resident throughout the year but not in any great numbers. Along the divide of the mountains, where they undoubtedly breed, a pair or two can be seen at almost any time, and occasionally a bird is seen on the plains below, hunting jack-rabbits or prairie dogs. During August, 1902, I several times saw what appeared to be young of the year.

Falco mexicanus Schlegel. Prairie Falcon.

In my experience the Prairie Falcon is of quite rare occurrence in this region. Mr. O. W. Howard secured a set of eggs of this species in the Huachuca Mountains (see Condor Vol. IV, 1902, page 57) and probably a few other pairs breed in scattered localities throughout the range, but taking it altogether, I doubt if I have seen over half a dozen of the birds. On April 6, 1902, Mr. Howard and I watched a pair flying about a rocky cliff in Ramsey Canyon. They were apparently in search of a nesting site for they flew into quite a number of caves and crevices in the rock, screaming shrilly the while, but on a later visit to the place we failed to find them.

Falco peregrinus anatum (Bonaparte). Duck Hawk.

A rare migrant. On April 20, 1902, a fine old female was secured at the base of the mountains, the only one I have seen in this locality: though several others were observed at various times along the San Pedro River, where the migrating water fowl probably afford a more congenial field of operations. The one secured had been preying on the Mourning Doves which abounded in the vicinity at the time.

Falco columbarius Linnaeus. Pigeon Hawk.

Of very rare occurrence. A single bird which passed over me on February 23, 1903, is the only one I have ever seen in the Huachucas.

Falco fusco-coerulescens Vieillot. Aplomado Falcon.

In Bendire's "Life Histories" there appears a detailed account of the nesting of this species on the plains below Fort Huachuca. Although evidently of quite common occurrence in this region at the time the data for the article mentioned was gathered, in 1887, since then they seem to have left the country altogether. Time and again I have driven over these plains without ever seeing a single bird which I could ascribe to this species, nor do I know of any being seen or taken in this region within the last few years. What could have caused them to shift their location so absolutely it is hard to surmise.

Falco sparverius phaloena (Lesson). Desert Sparrow Hawk.

During the migrations the Sparrow Hawks are most abundant on the plains, where the swarms of grasshoppers afford them an abundance of food. They breed in the oak regions of the foothills, and also in the pines on the summit, but in the canyons they are seldom seen; seeming to prefer the more open prairies and the uninterrupted view from the mountain tops, to the narrower, more restricted canyons. With a mild winter I suppose they might remain the year through, but in 1903 the weather was cold and there was lots of snow on the ground; and I saw no Sparrow Hawks until the middle of March. From this time until the middle of April they were very abundant, by which time the migrating birds had passed on. In 1902 the southerly movement was begun about the first of August, when the young birds began to make their appearance in large numbers. From this time until I left, September 5; they were exceedingly abundant everywhere on the plains and foothills.

Syrnium occidentale Xantus. Spotted Owl.

The Spotted Owl is resident in the Huachucas, above 6500 feet, particularly favoring the extensive, dark thickets of quaking asp found in the higher parts of the mountains, but occurring also in suitable localities along the canyons, usually not far from water. There are probably at least a pair or two in every canyon, and their varied and uncanny hooting is often heard in the most unexpected of places, occasionally in broad daylight.

Megascops asio cineraceus Ridgway. Mexican Screech Owl.

The common Screech Owl of this region. Probably resident, for I have heard them hooting in February, they are most abundant in the oak region of the lower parts of the mountains; and I do not recall ever seeing one above 6500 feet, though they may occur at a higher elevation. Compared with specimens of *cineraceus* taken at Tucson, the Huachuca Mountains birds are appreciably darker, both above and beneath; the ground color being dark slaty gray, quite different from the pale ashy of the bird of the lowlands.

Megascops trichopsis (Wagler). Spotted Screech Owl.

Though it is hard to estimate the relative abundance of secretive, nocturnal birds like the Screech Owl, this species does not appear to be nearly as common in the Huachucas as *cineraceus* is, and from my experience it would seem to be of quite rare occurrence. I have seen just two specimens taken in the Huachucas; one a male, taken by W. B. Judson, May 28, 1896, at about 6000 feet, altitude; and the second, also a male, taken by H. Kimball, September 29, 1895, and now in my collection.

Megascops flammeolus (Kaup). Flammulated Screech Owl.

Although the Flammulated Screech Owl is quite a common migrant in the Huachucas some years; I believe that but very few remain to breed, the bulk of them going farther north. In 1896 eight, and in 1902 seven, specimens were secured; and of these, I believe all but one were migrating birds. The exception was a female, taken, with a set of two badly incubated eggs, by H. G. Rising on June 7, 1896. Of the others the earliest secured was on April 22, 1902, and the latest on May 12 of the same year. All were shot where they were sitting in the trees, usually in dense thickets almost impossible to penetrate; and this fact may perhaps account for so few specimens of this bird being taken, as quite half of those secured were found while searching for the nest of such birds as bred in the thick brush. On May 5, 1902, O. W. Howard secured two females in some willows on the San Pedro River, fifteen miles from the mountains and an exceptionally low altitude for this species, about 3000 feet. The breeding bird mentioned was taken at about 8000 feet elevation; and all the others, from the base of the mountain (about 4500 feet) up to 6000 feet. In 1903 I did not see a single Flammulated Screech Owl, and it is noteworthy that *cineraceus* was also much more scarce than it had been during the previous year. The stomachs of such as I examined contained nothing but beetles and other insects, indicating an entirely insectivorous diet on the part of this species.

Bubo virginianus pallescens Stone. Western Horned Owl.

I have seen but very few Horned Owls in the Huachucas, although along the San Pedro River it appears to be of fairly common occurrence. In 1896 one made his home in a cavity in the face of a high precipice overlooking our camp, and hardly a night passed that we did not see him appear about dusk, and after a few preliminary hoots, start out in search of provender. A male I secured on May 6, 1903, at the mouth of Miller Canyon, was evidently not breeding. I have heard one or two others hooting at various times, but these two are all that I have seen and I believe that they are anything but common in the mountains. The male bird mentioned above is exceedingly pale in coloration, more so than any other Southern Arizona specimen I have seen, though the plumage is fresh and unworn and does not appear to be faded by the action of the sun. The general appearance of the upper parts is dark gray, with the head and ear tufts rather darker, but with very little of brownish or rusty markings anywhere. The throat, median line of breast, abdomen, tibiae and feet are pure white, while the sides of the body are white, finely marked with narrow, dark vermiculations.

Speotyto cunicularia hypogaea (Bonaparte). Burrowing Owl.

Burrowing Owls are to be seen in considerable numbers in the various prairie dog "towns" between the Huachucas and the San Pedro River, and a few are scattered elsewhere over the prairies, some coming quite to the base of the mountains.

Glaucidium gnoma Wagler. Pygmy Owl.

I have seen but very few Pygmy Owls in the mountains, and though very possibly resident there, I doubt if they are very abundant. On August 3, 1902, I saw a pair of very ragged birds but was unable to secure either of them.

Crotophaga sulcirostris Swainson. Groove-billed Ani.

The capture of a single specimen of this bird near the Huachuca Mountains, has been recorded by O. C. Poling. (See Auk Vol. VIII, 1891, page 313.)

Geococcyx californianus (Lesson). Road-runner.

Road-runners are fairly abundant all through the foothill region, and I occasionally saw them far up the canyons; at least once at an altitude of about 6500 feet.

Coccyzus americanus occidentalis Ridgway. California Cuckoo.

A rare migrant, but of fairly regular occurrence both in spring and fall. Along the San Pedro River it is a fairly common summer resident, breeding in all suitable localities; but in the mountains it is only a stray pair or two that remains to breed. O. W. Howard found a nest containing two badly incubated eggs, on June 28, 1896, in Ramsey Canyon at an altitude of about 6000 feet. The eggs were beyond saving and were left, and a day or two later young birds were seen in the nest. An adult male was secured on August 21, 1902.

Trogon ambiguus Gould. Coppery-tailed Trogon.

Probably of fairly regular occurrence in the mountains during the summer months. I have never been fortunate enough to run across any myself, but O. W. Howard informs me that he has seen them on several occasions, and specimens have been taken by G. F. Breninger, R. D. Lusk, and others. A hunter on the west side of the mountains told me that he had killed one in the summer of 1902, and that he knew of another that was killed close by at about the same time.

Ceryle alcyon (Linnaeus). Belted Kingfisher.

On April 15, 1903, a Belted Kingfisher lit on a tree overhanging the tent I was occupying, and gave utterance to his loud rattling call to announce his arrival. This is the only occasion on which I have seen this species in the mountains; none of the streams are large enough to support any fish, and an occasional stray bird which drops in to rest during the migration, is probably all that visits the range.

Dryobates villosus hyloscopus (Cabanis). Cabanis Woodpecker.

Fairly abundant in the higher parts of the mountains, from 7000 feet upward. They may be seen almost anywhere in that region, but for breeding purposes, seem to particularly favor the dense thickets of quaking asp. They do not seem to remain through the winter months; at any rate I saw none during February, 1903, nor did any appear until March 17, when I secured two and saw one other. Ten days later they were quite abundant. The winter of 1902-1903 was quite cold, with a great deal of snow on the ground, and it is possible that with a milder winter they might remain the year through. There does not seem to be any vertical migration on the part of this woodpecker, for I saw none below 7000 feet, and but very few as low as that. Specimens from the Huachuca compared with Southern California examples of *hyloscopus* average rather smaller, with decidedly smaller and weaker bills.

Dryobates scalaris bairdi (Malherbe). Texan Woodpecker.

On the dry and comparatively barren foothills the Texan Woodpecker is a fairly abundant resident, breeding usually in the dead stalks of the mescal plant, which grows in abundance throughout the mountains. This woodpecker is seldom seen above 5500 feet, and rarely ven-

tures into the canyons. On the plains below, wherever there is brush or trees, and all along the San Pedro River it is very common, as in fact, I have found it in all similar places I have visited in Southern Arizona. I have frequently observed the bird feeding in small bushes close to the ground, and often at work on the leaves of a cactus, seeming to be generally less dependant on the presence of large timber than any of the other woodpeckers.

Dryobates arizonae (Hargitt). Arizona Woodpecker.

Although the Arizona Woodpecker is resident the year through in the Huachucas, it is singular how the birds seem to disappear in the breeding season, that is from the middle of April to the middle of June, when the young birds begins to leave the nest. During this time their loud shrill call may be occasionally heard from some wooded hillside, but the birds themselves are seldom seen. I have taken specimens from the base of the mountains, about 4500 feet altitude, up to 8000 feet, but they are not often seen above 7000 feet. In the winter they seem to more particularly favor the large groves of live-oaks along the foot-hills and at the mouths of the canyons; scattering over the mountains and ascending to rather a higher elevation upon the advent of the breeding season. They breed indiscriminately in the large trees along the canyon streams, in the oaks on the hillsides, and occasionally in a dead mescal stalk in the same locality as the Texan Woodpecker. Although a fairly common bird in the region they frequent, I have never found them at all gregarious; except in the summer when a pair of old birds with three or four young may frequently be seen; never more than a single brood however and these small gatherings break up before the young acquire the adult plumage. What I have frequently seen though, occasionally even in the breeding season, is two old males bearing each other company, and usually sticking pretty close together.

About the third week in April they commence laying their eggs, and after the middle of June the young birds begin to leave the nest, and soon become quite abundant. I have never had any difficulty in approaching these birds as they are usually quite tame and unsuspecting; far more so than the generality of woodpeckers, and the young birds are noticeably so. I have several times stood within ten feet of a young bird, easily distinguishable by his red cap, as he was industriously pounding on a limb without seeming in the least disturbed by my presence, or showing any inclination to leave. On one occasion the confiding, and in this case inquiring nature of the bird occasioned rather a laughable scene. An acquaintance in the mountains, passing the camp one day stopped to lead his horse down to the well which supplied us with water. A young Arizona Woodpecker was sitting in an oak tree close by, and soon after the horse began drinking he flew down, and lighting on the animal's hind leg as on the side of a tree, hit it a vigorous rap or two. The horse and its owner appeared equally surprised, and both moving a little the bird retreated to his tree. It wasn't a minute before he was back again, this time on a front leg, where he went to work with such energy as to start the horse plunging and kicking in an effort to get rid of its curious assailant. The woodpecker left but did not seem to be particularly frightened, as he sat on the wooden curb of the well until he was left alone again.

The Arizona Woodpecker commences to moult about the middle of July, and by the first week in September the new plumage is almost completely acquired. The plumage of the breast, abdomen, and lower parts

generally, seems to be the first to be renewed, while the remiges, rectrices and feathers of the interscapular region are the last to get their growth. An old female shot on September 3 had practically completed its moult, with the exception of the tail feathers, none of which were over half an inch long; while several specimens of both sexes, taken during the last two weeks in August, are in nearly perfect autumnal plumage, except for some small patches of old feathers in the interscapular region. Fall specimens are considerably darker on the back than birds taken during the spring and summer, but the change is undoubtedly due to fading of the plumage, as birds taken in the late winter and early spring, show not the slightest traces of moult, and a series of birds taken from February to July, show plainly the gradual change of coloration. Singularly enough the pileum and back of the neck does not seem to fade as the dorsum does, and consequently, while birds in fresh fall plumage are of practically uniform coloration on the upper parts, specimens taken in the late spring and summer have the head and neck abruptly darker than the back and exposed portion of the wings. Young birds of both sexes have the pileum red, and although it is not always safe to lay down rules concerning young birds, the sexes not always being easy to ascertain with certainty, there seems to be some difference in the marking of the juvenile male and female. In no case does the red cap extend over the entire pileum; the anterior portion is always brown like the back, and in some young females half the surface is without any red. In the young female, besides occupying a less extensive surface, the red is less intense than in the male, and not as solid, that is there is always more or less brown showing through. The red cap of the juvenile bird seems to be worn but a short time, as a young female taken September 4 has hardly a trace of it remaining. Young birds are lighter underneath than the adult, with the markings of the under parts less plainly defined, but there is a difference in this respect between autumnal and spring adults also; and in each instance it is caused by the dark markings being obscured by light colored edges to the feathers, which disappear by abrasion later on. Of twenty-four specimens from this region four show more or less traces of white bars across the rump; one of these is a male in nuptial plumage, one a male in freshly acquired autumnal plumage, one a female in nuptial plumage (this specimen has some faint indications of white bars on some of the scapulars as well), and one is a young male. Another spring female has some white bars on the scapulars but none on the rump. Presumably this is a tendency toward the Mexican species *Dryobates stricklandi*.

Sphyrapicus varius nuchalis Baird. Red-naped Sapsucker.

In February, 1903, I found this species fairly abundant in the Huachuacas, and pretty equally distributed over all parts of the mountains; though possibly more abundant in the pine forests of the higher parts of the range than elsewhere. They remained in diminishing numbers up to March 26, on which date I secured the last one I saw. I was rather surprised at their leaving so early, the more so that during the previous year the only one I saw for the season was a male which I secured on April 25. Nearly all the specimens secured, showed more or less signs of moult on the throat and breast, though not elsewhere. One young male, shot February 21, had but a few scattered red feathers on the crown, and one or two black ones on the breast; the red throat patch being nearly perfect. In the specimens secured the color of the lower parts varies from almost pure white to rather bright sulphur yellow.

Sphyrapicus thyroideus (Cassin). Williamson Sapsucker.

On April 6, 1902, I saw about a dozen Williamson Sapsuckers near the summit of the mountains at an altitude of about 9000 feet. Though not at all in a compact flock they seemed to keep rather close together, and when one flew any distance away, the others soon followed. The bulk of them were females, and but one or two males were seen, one of which was, with great difficulty secured, for they were very wild. On April 9 several more were seen and a female secured at this same place; and a male was taken a mile or two from this place, at an altitude of nearly 10,000 feet. These were the last I saw in the spring, though they do occur later as I have a female that was taken in the Huachucas by H. Kimball on April 20, 1895. On August 30, 1902, I secured a female in Tanner Canyon at an altitude not over 7000 feet, the lowest point at which I have seen this species in the mountains. I think that this bird was a migrant returning south early, as I doubt very much if they breed anywhere in the Huachucas. On February 21, 1903, I shot a female at the same place where I had seen so many the previous year; it was a favorite locality for *nuchalis* and I took several of that species there, but saw no more of *thyroideus*, nor were any more seen for the remainder of the time I was in the mountains.

Melanerpes formicivorus aculeatus Mearns. Ant-eating Woodpecker.

A most abundant summer resident in the lower parts of the mountains; a few winter here but they are scarce during the cold weather. I saw but two or three during February and the early part of March, about the middle of March they began to arrive in numbers, and by April 1 were most abundant. Primarily a bird of the oak woods they seldom venture into the higher parts of the mountains, breeding almost entirely below 6000 feet. About July 1 the young birds begin to make their appearance so like the adults in general appearance that it is difficult to distinguish between them. The young of both sexes usually have the entire crown red, as in the adult male, but of a duller color, more of a brick red; but one young female secured has the red area very limited and coming to a point behind, so as to form a small, triangular shaped patch on the crown. Of seventeen specimens collected in the Huachucas, three show, more or less distinctly, white markings on the outer tail feathers. In one of these, an adult female, the marks consist of indistinct white spots, mostly on the inner web. The other two, juvenile females, have the outer feathers distinctly, though irregularly, barred with white for about half their length.

Aculeatus seems to me to be a perfectly good subspecies, intermediate in characteristics and habitat between true *formicivorus* and *bairdi*, as claimed for it by its describer. (See Auk Vol. VII, 1900, 249). My Huachuca Mountain birds have the "solid" black breast of *bairdi*, and in the coloration and markings of the lower parts generally, are absolutely indistinguishable from that race; but they are smaller, with smaller and weaker bills, and possess one important characteristic overlooked by Dr. Mearns in his description of *aculeatus*, which serves to distinguish them from either *formicivorus* or *bairdi*. This is the pattern of coloration of the crown in the females, in which respect the Arizona birds apparently approach the Lower California form *angustifrons*. In most cases the width of the white or yellow frontal band and the black crown band is about equal to the width (longitudinally) of the red occipital patch. Occasionally it is a trifle greater, but invariably the black

crown patch is much more narrow than in *bairdi*. The red occipital patch in the female is usually almost square in shape.

Following is a table of measurements of ten specimens of *Melanerpes formicivorus aculeatus* from Southern Arizona:

Number Coll. H. S. S.	Sex	Date	Locality	Length	Alar expanse	Wing	Culmen
3414	Male	Feb. 25, 1903	Huachuca Mts.	9.56	17.50	5.31	1.06
3544	"	Mar 19, "	" "	9.18	17.37	5.44	1.12
3121	"	Aug. 21, 1902	" "	9.18	17.69	5.75	1.
2906	"	July 4, "	" "	8.50	16.37	5.31	.94
6292*	"	June 20, 1903	Sta. Rita	10.	17.31	5.56	1.
3490	Female	Mar 10, "	Huachuca	9.06	17.25	5.50	1.
3044	"	Aug. 12, 1902	" "	8.87	17.50	5.56	1.
3111	"	Aug 20, "	" "	9.06	17.44	5.62	.94
2904	"	July 3, "	" "	8.62	17.44	5.44	.94
6291*	"	July 20, 1903	Sta Rita	9.	17.12	5.37	1.

* Collection of F. Stephens.

Asyndesmus torquatus (Wilson). Lewis Woodpecker.

Of irregular occurrence in this region, in 1902 I found them fairly common when I arrived in the mountains at the end of March, and they remained so until about the first of May. They did not venture into the canyons at any time, but remained in the groves of live oaks extending along the base of the mountains. The following year they did not put in an appearance at all, in fact this is the only year that I have seen them in the Huachucas.

Centurus uropygialis Baird. Gila Woodpecker.

Although the Gila Woodpecker is a common resident all along the valley of the San Pedro River, in the Huachuca Mountains it is of rare and very irregular occurrence. This woodpecker does not seem to migrate south from this region to any extent, but after the breeding season it spreads out over a greater area, and wanders to places it does not frequent during the summer. A such times it occasionally strays up into the Huachucas, but I doubt very much if any breed in the range. I saw one on August 30, 1902, and secured a female on March 9, 1903. One or two others were seen about the latter date but none later than March 15; all were right at the base of the mountains at an altitude of about 4500.

Colaptes cafer collaris (Vigors). Red-shafted Flicker.

A common resident throughout the mountains, but during the breeding season restricted to rather a higher altitude than at other times. They seldom breed below 5500 feet and from there on up become more and more abundant as the summit is approached. They begin to lay the first week in May and the full grown juveniles are tolerable abundant by the third week in July.

Antrostomus vociferus macromystax (Wagler). Stephens Whip-poor-will.

A fairly abundant summer resident, occurring principally between 5000 and 8000 feet; they may occasionally occur at a little higher elevation, but I have never seen any below the lowest altitude given. In 1903 the first I saw was on April 28, and soon after their notes could be heard every evening, usually from some thickly wooded hillside, near the bottom of the canyon. The birds themselves were but seldom seen and I never observed any alight on a road or trail, as their near relative the

Poor-will does so habitually of an evening. They seem to remain rather late in the fall, as at the end of August their notes were heard as frequently as ever, and I have a female taken by H. Kimball on September 29, 1895. An adult male secured on August 29, 1902, had not yet quite completed its moult.

Phalaenoptilus nuttalli (Audubon). Poor-will.

I found the Poor-will quite abundant during the summer months in the foothill region and in the lower parts of the canyons; but though most numerous below 5000 feet they were by no means restricted to these parts, for I saw or heard some in all parts of the mountains occasionally up to an altitude of nearly 10,000 feet. They began to arrive early in April and could soon be heard calling on all sides of an evening. Although usually silent during the night, I have frequently noticed that in the morning they begin again, and for half an hour or so before daylight, call nearly as much as they do in the evening. They show great fondness for any open piece of ground, and about dusk can usually be found along any road or trail, sitting on the ground and occasionally flying up after some passing insect. I cannot recall ever having seen a Poor-will alight on the limb of a tree, but on one occasion I saw one alight on a guy rope of a tent, where he remained for half a minute or so.

I have taken several specimens of the so-called Frosted Poor-will (*P. n. nitidus*) but have not much faith in the validity of this race, believing it to be merely a color phase of *nuttalli*. My series of Poor-wills from Arizona contains some very pale colored birds which could easily enough be distinguished from true *nuttalli* as far as color is concerned, but it seems strange to find two closely related sub-species like these occupying the same region and breeding side by side, as it were. I have taken both the pale and the dark colored birds in the foothills of the Huachucas, and at the summit of the highest peaks, both being more numerous during the migrations than at other times. If several pairs of birds could be obtained and shown to be of the same style of coloration, it might go to prove the validity of the race; but it is not easy to obtain both birds of a pair of a nocturnal species like the one under consideration, and though I secured both sexes, they were all single birds, mostly migrants. I have recently secured two exceedingly pale colored Poor-wills near San Fernando, Los Angeles County, California, demonstrating the presence of this light phase in *P. n. californicus* as well as in *nuttalli*. One of these is quite as pale as any specimen of "*nitidus*" that I secured in Arizona.

I have talked on this subject with Mr. G. F. Breninger, who has done a great deal of field work in Arizona, and believe that he holds the same view of it as I do.

Chordeiles virginianus henryi (Cassin). Western Nighthawk.

Quite a common summer resident, though as yet I believe that there is no positive evidence of its breeding in the Huachucas. The earliest date at which I have seen any is April 23, 1903, when a male bird was flushed from an oak tree near the mouth of one of the canyons. At times in the summer I have found them quite abundant in the oaks along the base of the hills (about 4500 feet altitude). They were invariably in the trees, sitting lengthwise of the limbs; and were very shy and hard to approach, at times flying to a considerable distance before alighting again. I never flushed one from the ground. Through the months of June and July, 1902, I found them very abundant on the divide at the

head of Miller Canyon, about 9000 feet altitude. They made their appearance soon after sunset and remained for an hour or so, hawking back and forth, usually within a few feet of the ground, sometimes thirty or forty being in sight at once; but they were difficult to shoot, as the light was poor and they seldom rose so as to be seen against the sky. A number of male birds were taken, but of females I secured but a single specimen. This was taken on June 23, 1902, and most undoubtedly was not a breeding bird. In the daytime, while shooting warblers and other small birds in the pines, several night hawks were flushed from limbs high up in the trees. I presume that in all probability they breed in the Huachucas, but I know of no one who has found any eggs in this region. The Texan Nighthawk I have never seen in the Huachuca Mountains, though along the San Pedro River it is a most abundant summer resident.

Chaetura vauxi (Townsend). Vaux Swift.

From the tenth to the fifteenth of May (1902) I several times saw a few Vaux Swifts flying about, usually late in the afternoon. They seem to be of rare occurrence in this region, as this is the only occasion on which I have seen any.

Aeronautes melanoleucus (Baird). White-throated Swift.

The numerous high rocky cliffs found throughout the mountains afford an abundance of nesting sites for these swifts; so that, as a rule, they are exceedingly abundant during the summer months, their shrill twittering notes being heard on all sides; and I believe that a few stay through the winter as well, as on February 26, 1903, I saw a small flock flying about during a snow storm. Altitude seems to cut but little figure with them, as I have seen them entering crevices in the rocks in all parts of the mountains, and they probably breed wherever the nature of the ground suits them. In feeding, however, they seem to congregate, in a measure, over the highest parts of the mountains, where I have seen them in greater numbers than in any other one place; passing from one side of the mountains to the other, and occasionally skimming over the ridge but a few feet from the ground, screaming and twittering almost continuously. Occasionally during July and August, the rainy season, I have been on the divide when black threatening thunder clouds were passing low over the mountains, and the flocks of swifts, flying beneath these heavy clouds produced by their wings a most peculiar sound; a continuous murmur, now loud and now low, utterly indistinguishable, but much like a crowd of people shouting in the distance. I heard the noise for half an hour or more one day before I was able to place it, for the birds were flying high, and were utterly silent as far as their vocal organs were concerned; being probably too busy feeding to indulge in their usual fights and squabbles, which are always accompanied by considerable noise. A nest of this species was, with the greatest difficulty, reached and examined by O. W. Howard and W. B. Judson on June 9, 1896. The nest was in a crevice in a high over-hanging cliff, and at this date a single egg was found lying on the rock outside the nest. On June 18 three eggs were taken from this nest. Aside from the difficulty and great danger usually attendant on approaching the nests of these birds, it is generally labor thrown away, as the crevices in which they breed often run far back in the rock, and the eggs are as much out of reach when the opening is reached as before.

Eugenes fulgens (Swainson). Rivoli Hummingbird.

On the first day I spent in the Huachucas, April 26, 1896, almost the first bird I saw on leaving camp in the morning, was a male Rivoli Hummingbird, two of them in fact; and the size and beauty of the bird made an impression on me at the time that even considerable familiarity with the species has not effaced; as it is without question, the handsomest of the North American Hummingbirds. The date given above is the earliest at which I have seen it in the mountains, and the birds become more and more abundant as the summer advances. As is the case with the rest of the hummingbirds the male *fulgens* is never seen near the nest, but remains almost entirely in the higher pine forests, and in my experience, only a stray bird is occasionally seen in the lower canyons. The breeding females are found principally along the water courses between 5500 feet and 7500 feet; the nest being frequently built in the maples along the streams, sometimes at a considerable height, forty or fifty feet above ground. On May 18, 1896, an unfinished nest was found, while on May 26, of the same year, two sets of eggs were taken; Mr. Howard has recorded the taking of a set as late as July 25, 1899, (Condor Vol. II, 1900, page 101); and on August 3, 1902, I saw a female on a nest, but did not disturb her as it was in rather too inaccessible a position. Toward the end of summer I have occasionally seen females down quite to the base of the mountains, but not often. A favorite resort of the Rivolis, in fact of most of the hummingbirds in this region, are the flowering stalks of the mescal plant, which grows in profusion all over the mountains; in 1902, I saw but one or two male *fulgens* before the mescals were in bloom, which was quite late, nearly the end of July, that year. In the spring of 1903 hummingbirds of all species were scarce in the mountains, though there was an abundance of wild flowers, more so than usual; I saw a few female *fulgens* along the canyon streams, but up to the time I left, the end of May, I had not seen a single male.

Coeligena clemenciae Lesson. Blue throated Hummingbird.

A summer resident in the mountains, but in my experience not nearly as common as the Rivoli. The two species are sufficiently alike to be confused while flying about, but I have seen but two or three that I could be positive belonged to this species, and succeeded in obtaining but a single bird. This one, a male, was taken on May 27, 1903, while feeding on a honeysuckle in a garden; and was extremely shy, darting off the moment it caught sight of me, and staying away for a considerable length of time.

Trochilus alexandri Bourcier & Mulsant. Black-chinned Hummingbird.

A very abundant summer resident, probably the most common hummingbird of this region. I have occasionally seen the male bird up to an altitude of 7000 feet, but they are most abundant below 6000 feet, and breed from that altitude down to the base of the mountains and as far down the washes as there is any vegetation. The earliest date on which I have seen this species was April 26, 1902, and on September 5, when I left the mountains, they were still abundant.

Calypte costae (Bourcier). Costa Hummingbird.

Costa Hummingbird begins to appear in the mountains about the first of July, and some years becomes exceedingly abundant. In 1896 they were particularly numerous, but nearly all immature males show-

ing just a trace of the violet coloration on the throat. Some adult males also were taken, but hardly any females; these were probably still attending to their family duties, as I have seen nests with eggs along the San Pedro River in July. They breed quite commonly all along this valley, and possibly a few breed in the mountains, but I do not know of any nests being found there. They do not ascend to any great height in the Huachucas and I have never taken one above 5500 feet.

Selasphorus platycercus (Swainson). Broad-tailed Hummingbird.

Although generally distributed over the mountains, and at times quite common, this hummingbird is still far more often heard than seen. The shrill buzz of its wings, that is of the male bird, is frequently heard; and time and again as the sound approached, passed, and died away in the distance, I watched, but in vain, to catch sight of the author of it. Several times I have seen one leave his perch on a twig and dart off in pursuit of another of the same species, and even then was unable to follow him with my eye; and though presently the sound of wings announced his return, I was seldom able to see the bird before he dropped onto his perch. It is possible that this species remains in the Huachucas through the winter as I saw a male bird near the base of the mountains on February 28, 1903; and though not at all common, I saw and heard them a number of times through the month of March. It was the middle of April before they began to appear in any numbers, and from then on they became more and more abundant. At this time they were seen at a low altitude and along the canyons; but after the summer rains began and the grass and flowers sprung up, I found them mostly in the highest parts of the range. At this time they were not nearly as restless and pugnacious as in the spring and were more easily approached. I have occasionally shot them on mescal plants, but they do not seem to feed on them nearly as much as some of the other hummingbirds do. The flight of the female is not accompanied by the buzzing noise made by the male bird, and from their habits they are more inconspicuous and less frequently seen than their mates. They breed in the highest parts of the mountains, often in the pines and at a considerable distance from the ground.

Selasphorus rufus (Gmelin). Rufous Hummingbird.

I have not seen this species at any time in the spring, but about the middle of July they begin to make their appearance; and throughout the month of August I found them very abundant, but frequenting the highest parts of the mountains, principally; more being seen between 8000 and 9000 feet than elsewhere. The flowering mescal stalks are a great attraction to them, and they seem to frequent them in preference to anything else. I have seen as many as twenty Rufous Hummingbirds around a single stalk, mostly immature birds, but with a fair sprinkling of adult males. No adult females were taken at any time. The old males were, as usual, very pugnacious, and objected to any other hummingbird feeding on the plant they were patronizing; but as they could only pursue one at a time, and as the one pursued promptly returned as soon as the chase ended, there was more or less confusion going on about these plants all the time. Upon finding a mescal in full bloom I frequently watched it for some time in the hope of securing some rarity, but in the twittering, whirling mass of birds it was no easy matter to distinguish the species. Occasionally a Rivoli would dart in, a giant among pygmies and easily enough distinguished, but for the rest it was mostly guess work.

Selasphorus alleni Henshaw. Allen Hummingbird.

Among a number of specimens of *Selasphorus rufus* from this region I have found four of *alleni*. These are an adult male and immature male taken July 13, 1896; an immature male taken July 15, 1896, and an adult male taken July 30, 1902. The last mentioned was taken from a flock of *rufus* at an altitude of 9500 feet.

Stellula calliope Gould. Calliope Hummingbird.

After the summer rains the mountains present an exceedingly inviting appearance, particularly so in the higher parts, along the ridges and on various pine covered "flats," where, with the green grass, a multitude of brilliantly colored wild flowers springs up, often waist high, and in many places in solid banks of bright colors. In such places, in the late summer of 1902, I found the Calliope Hummingbird quite abundant, feeding close to the ground, and when alighting usually choosing a low bush. I did not see any around the mescals, which at this time were past their prime, and aside from a few Rivolis did not attract many hummingbirds; nor did they seem very gregarious, a single bird, or at most two or three, being all that were seen at a time. The first one was shot August 14, and from then up to the time we left the mountains, September 5, they remained abundant in certain localities; none being seen below 9000 feet.

Atthis morcomi Ridgway. Morcom Hummingbird.

Known only from two females shot by H. G. Rising, July 2, 1896. These were taken in Ramsey Canyon, not together but not far distant from one another; and at an altitude of about 7500 feet. I have looked carefully for this species since then, but have seen nothing that I could ascribe to it, though possibly when *calliope* was so abundant there might have been some of *morcomi* with them without my noticing them, for the females, at least, of the two species are very much alike.

Basillina leucotis (Vieillot). White-eared Hummingbird.

In all probability the White-eared Hummingbird is a regular summer visitant to the Huachucas, though in small numbers. A female was taken by W. B. Judson on July 7, 1896; and in 1902, I secured a male on June 21 at an altitude of 5500 feet, and another August 14, at 7000 feet. On July 23 I saw still another at the same place where the last mentioned was secured. Mr. O. W. Howard tells me that he has seen them several times in the years intervening between 1896 and 1902, and on one occasion saw a female carrying building material. In 1903 I left the mountains at an earlier date than I had seen the species in the region, but a few weeks later, on June 24, I was in company with Mr. F. Stephens when he secured a male in the Santa Rita Mountains, some forty miles to the northwest of the Huachucas, at an altitude of 5500 feet. This one is not an adult bird, but is in a stage corresponding to one often met with in the male of *Calypte costae*, probably a bird of the previous year. In this bird (No. 6301 F. Stephens) the whole of the upper parts are dull green, the feathers of the rump being narrowly margined with brown. Forehead, dull brownish. Under parts (breast and abdomen) dull white spotted with green, as in the female. Throat, metallic emerald-green with a few grayish feathers intermixed, and with but the faintest trace, (one or two scattered feathers), of the beautiful sapphire-blue chin of the adult male. The white stripe on the side of the head is about the same, both in color and extent, and the auriculars are not even as dark, as in the female. The lateral rectrices (as is the case in the

opposite sex) are broadly tipped with white. Bill, black; base of mandible flesh color. In the adult male the base of the bill is compressed, similarly though not to such an extent as in *Iache latirostris*, but in this specimen it is quite as narrow as in the female. All the specimens secured were feeding on a scarlet flower, somewhat similar to a honey-suckle, but growing close to the ground.

Iache latirostris (Swainson). Broad-billed Hummingbird.

An extremely rare bird in this region. A male was secured on July 21, 1902, and I have seen a female taken by R. D. Lusk, July 10, 1897.

Platypsaris albiventris (Lawrence). Xantus Becard.

The capture of a male bird of this species on June 20, 1888, has been recorded by W. W. Price. (Auk Vol. V., 1888, page 425) Although Mr. Price mentions hearing the notes of several besides the one secured, and seemed to believe that the species would prove to be a regular summer visitant to the Huachuca Mountains, it has not since been met with by any collector in this region, and is probably extremely rare and irregular in its occurrence over our borders.

Tyrannus verticalis Say. Arkansas Kingbird.

The Arkansas Kingbird is found most abundantly in the washes leading from the various canyons; and breeds in large numbers as far down these washes as the trees extend. They occasionally venture up into the mountains but not often; and while breeding the nests stop so abruptly at the mouths of the canyons that I am uncertain if it is on account of the altitude, or because they prefer the open country below to the more restricted canyons. They are late late in getting here in the spring; considerably later than in Southern California, the earliest arrival noted at the Huachucas being three weeks later than the time the species reaches Los Angeles, which is considerably further north. In 1902 the first seen was on April 8, and it was a week later before they were at all abundant. The following year the first seen was on April 14, and the bulk of them were correspondingly later in making their appearance. During the breeding season the large numbers of White-necked Ravens and Swainson Hawks found in the vicinity afford the Kingbirds exceptional opportunities for exhibiting their peculiar talents, and during the summer months these wretched birds' lives are made a burden to them through the incessant persecution they receive. The hawks usually leave as soon as possible on being attacked; but the ravens, though beating a hasty retreat often try to fight back, twisting from side to side in vain endeavor to reach their diminutive assailant; cawing a vigorous protest, meanwhile, at being treated in such a disrespectful fashion. On September 5, 1902, I saw a large number of Kingbirds, both *verticalis* and *vociferans*, sitting along the fences in the valleys evidently migrating; and apparently in the midst of their moult, as they presented a very ragged appearance.

Tyrannus vociferans Swainson. Cassin Kingbird.

It is rather a singular fact that although this species winters abundantly in Southern California, in this region it arrives in the spring at the same time, and usually in company with *verticalis* the earliest being on April 8. In breeding it ascends to rather a higher altitude than that species, the majority of the nests found being between 5000 and 6000 feet; I have occasionally, but not often seen the birds as high as 7500 feet, and I found one nest quite at the mouth of the canyon, 4500

feet; but as a rule, the territories occupied by this species and *verticalis* during the breeding season hardly overlap. All the nests of this species I have seen in this region were built in sycamores, usually at a considerable distance from the ground. In 1896 a set was secured on June 20, and another on June 26. They probably leave in the early fall, for as I before remarked, I have seen both this species and *verticalis* evidently migrating in the early part of September.

The Cassin Kingbirds do not seem to persecute the hawks and other large birds to such an extent as the Arkansas does, but they are far more noisy; and at times, particularly in the early morning, make a fearful racket. Commencing shortly before daybreak, they keep up a continuous clamor, generally on the wooded hillsides, to such an extent that it seems like an army of birds engaged. They do not seem to be quarreling or fighting at these times, for those I have seen merely sat, screaming, on the top of some tall tree. This racket is kept up until about sunrise, when it stops rather abruptly.

Myiodynastes luteiventris Sclater. Sulphur-bellied Flycatcher.

This species, though a handsome, strikingly marked bird, and at times an exceedingly noisy one, is yet so shy and retiring, that, far from being conspicuous, a person unfamiliar with the habits of the species might collect for weeks in a region in which it abounded and not know that there were any around. Frequenting as they do, the tops of the tallest trees along the canyons, which are thickly covered with foliage at the time these birds arrive, a far brighter colored bird might easily escape observation; and as their colors, though striking, blend exceedingly well with the surrounding vegetation, they are by no means easy to see; the more so that they frequently sit perfectly motionless for a considerable length of time. It has happened more than once, that, hearing the familiar note in some tree top, I have watched, sometimes for half an hour, endeavoring to see the bird; scanning, as I supposed, every twig on the tree, only to see it finally depart from some limb where it had been sitting, if not in plain sight, at any rate but very imperfectly concealed. The call note is loud and shrill, and there are times when they are quite noisy, particularly so when pairing off. At this time three or more can occasionally be seen pursuing one another through the tree tops and keeping up a continuous clamor. Occasionally also, I have heard a single bird calling in the early morning, from some tree top, as the Cassin Kingbirds do. Though noisy their vocabulary is limited and I have never heard but the one shrill call from them, a note hard to describe but very much in the style of the familiar two-syllabled whistle of the Western Flycatcher (*Empidonax difficilis*). Of course the volume is infinitely greater than with the little *Empidonax*, but they resemble each other to this extent, that I have known a person familiar with the Sulphur-bellied Flycatcher to mistake a *difficilis* near at hand for the larger flycatcher in the distance.

They are late in reaching their breeding grounds, about the latest of all the birds of this region, May 19 being the earliest date at which I have seen any, and about a week later nearer the usual time for the first arrival. The nest is built in a natural cavity in a tree, invariably in a sycamore as far as known; and Mr. O. W. Howard, who has taken a good many sets of eggs, has demonstrated beyond question that the same cavity is used year after year, but that the same pair of birds occupies it indefinitely is, I think, open to question. I have, as I before remarked, seen two or more males contesting for a female, to the ac-

companionment of considerable clamor, and those I have seen first in the summer have invariably been single birds. Of course those I have seen pairing might have been birds hatched the preceeding year, or old birds whose mates had been killed; and possibly when both of a pair survive they repair to their old nest of the previous year. On July 10, 1902, in company with Mr. O. W. Howard about half a dozen nests of this species were examined. Although in each instance both birds were seen about the cavity, and exhibited considerable excitement at the invasion of their privacy, no eggs were found, and only two of the nests showed signs of having been recently constructed. From these two nests Mr. Howard secured sets later, on July 21. On August 30, 1902, four juveniles were secured, two hardly able to fly and two nearly full grown. The latter, in markings and coloration, are practically indistinguishable from adults. The concealed yellow crest of the old bird is lacking, the feathers of the crown merely having their bases pale saffron, not sharply defined and hardly apparent at a casual glance; and in the very young birds even this feature is almost entirely absent. Also, the dark median stripe of the rectrices is more narrow than in the adult; aside from this the only point of difference are the slightly darker, more brownish appearance of the upper parts; and the softer, more blended, appearance of the plumage, as is usually the case in young birds.

This species does not occur in the higher parts of the range, nor is it found in the foothills. Preeminently a bird of the heavily wooded canyons, it is seen only along the streams; and all I have seen have been between 5000 and 7500 feet, altitude. It is most abundant in Tanner Canyon, a broad, well watered canyon with a far more gradual ascent than any of the others. It is on this account, I think that this flycatcher occurs in it so much more abundantly than elsewhere, for besides being the longest canyon in the range, the head of it is at the lowest point along the divide; thus giving the greatest area at the altitude favored by this species of any canyon in the mountains. This canyon seems to be abundantly suited to the needs of this flycatcher for almost its entire length, and I have seen them very nearly to the head of it.

Myiarchus cinerascens (Lawrence). Ash-throated Flycatcher.

A common summer resident in the lower parts of the mountains, breeding generally throughout the foothill region and along the canyons, and down the washes nearly as far as the vegetation extends. It arrives early in April; in 1902 the first seen was on April 13, and the following year April 9; while on the latest date I have been in the mountains, September 5, it was still fairly abundant.

Myiarchus cinerascens nuttingi (Ridgway). Nutting Flycatcher.

Out of a considerable number of specimens of *cinerascens* from the Huachucas, just two examples of *nuttingi* were found; so judging from this it would seem to be of rare occurrence in this region. These two, both females, were taken June 17, and July 13, 1896, and were evidently breeding in the vicinity. They were both taken at rather a low altitude, almost at the base of the mountains; so very possibly, though rare in the Huachucas, they occur more abundantly in the valleys below.

Myiarchus lawrencei olivascens Ridgway. Olivaceous Flycatcher.

Though during the summer months the Olivaceous Flycatcher is found in considerable numbers through the lower parts of the mountains; still from its retiring habits, its mournful, long drawn, note is heard far more often than the bird itself is seen. Seldom venturing into

open ground, it loves the dense, impenetrable scrub oak thickets of the hillsides better than any other place, though also found along the canyon streams wherever the trees grow thick enough to prevent the sun from penetrating. It seldom ascends the mountains to any great height, 7500 feet being about the upward limit of the species, and it is most abundant below 6000 feet. They breed down quite to the mouths of the canyons, and on one occasion during the migration I secured one in a wash over a mile from the mountains. This, however, is quite exceptional. These flycatchers begin to arrive early in April, the first noted being on April 6, but it is a week or ten days later before they are at all abundant. They seem to disappear during the breeding season, and though really very abundant, their plaintive note, heard occasionally from some dense thicket is almost the only evidence that the birds are still around. Consequently not a great deal is known of their breeding habits. All the nests I have seen, some six or eight, all told, were built at a considerable distance from the ground, from twenty to fifty feet. They seem to breed rather late, as Mr. Howard secured a set on June 17, 1902, and on July 25 I shot a young bird which had only just left the nest. They begin to leave as soon as the young have attained their growth, being about the first of the summer residents to move south. Their numbers decrease rapidly after the end of July, and by the middle of August there were practically none left in the mountains. I saw no more, and supposed that they had all left, until September 3, when I came onto a pair of the birds feeding several young. This was right at a place where Mr. Howard had secured a set of eggs earlier in the season, and I have no doubt that, as neither of the parent birds were shot, they reared another brood and were correspondingly delayed in leaving. Young birds collected, of various ages, differ from the adults in having the upper parts more of a brownish color, and the lower breast and abdomen, light yellow in the adult, very pale, in some cases almost white with just the faintest tinge of yellow; wing coverts, tertials and secondaries are broadly, and primaries narrowly margined with rusty fulvous, while the rectrices are broadly margined with the same.

Sayornis saya (Bonaparte). Say Phoebe.

Resident in the foothill region, and along the base of the mountains generally, though in limited numbers. During the migrations they appear rather more numerous, but never venture far up into the canyons. A favorite nesting site is a well or some similar excavation, or an old abandoned adobe house. At the postoffice at Turner, some six or seven miles below the mountains, a pair of Say Phoebes has built a nest over the doorway, and bred there for many successive seasons; and not only do they breed there year after year, but the same individual pair of birds seems to stay there the year through.

Sayornis nigricans (Swainson). Black Phoebe.

The Black Phoebe occasionally breeds in the Huachucas up to as high an altitude as 6000 feet, but it is anything but a common bird in this region and does not remain at all through the winter months. The earliest date at which I saw any was March 15, 1903, when a single bird was seen; for the next week or two an odd bird was seen now and then evidently migrating, and after that, no more appeared. About the first of August they began to appear in the lower parts of the mountains, evidently moving up from the river valleys where they breed in greater abundance. At this time they were just commencing the autumnal moult

and were consequently extremely ragged and disreputable in appearance. I did not secure enough specimens to admit of extended comparison, but the few I have are absolutely indistinguishable from Southern California birds.

Nuttallornis borealis (Swainson). Olive-sided Flycatcher.

The Olive-sided Flycatcher occurs regularly in the Huachucas during the migrations, but is never at all abundant; five or six being about as many as I have seen in the whole course of a migration. It is rather a late arrival, and the extreme dates at which I have noted the species are from April 20th to May 28th. In the fall the first and only one I saw was on August 30th. Though a bird of the highest altitudes in the regions in which it breeds, these migrating birds never seemed to ascend the mountains to any height, none being seen above 6000 feet.

Contopus pertinax pallidiventris Chapman. Coues Flycatcher.

During the summer months this flycatcher is one of the characteristic birds of the pine regions of the Huachucas, where if not seen, it can at least be heard almost everywhere. It is one of the first of the summer residents to arrive, and one was heard calling as early as March 29th. The usual time of arrival is the first week in April, and during this month they can be found generally distributed over all parts of the mountains; while I have taken specimens, evidently migrating birds, quite at the base of the range, as late as May 25th, though others were found breeding at an earlier date. In its breeding, in fact in its habits in general, it closely resembles the Olive-sided Flycatcher, but I have never found it migrating out in the plains and valleys as that species quite generally does. As with *borealis* the male bird is fond of getting in some elevated position, usually the extremity of a dead limb at the top of some tall pine or fir, and remaining there for hours, uttering at frequent intervals its loud, characteristic call. In character and tone this call is quite similar to that of *borealis*, but the notes differ. The local name for the species, derived from its cry, is Jose Maria (pronounced, Ho-say Maria, with the second syllable of the last word drawn out and emphasized), a far better translation of the sounds that is the case in many similar instances.

During the breeding season these birds are to a great extent restricted to the higher parts of the mountains, being most abundant from 8000 to 10,000 feet; though I have seen one or two nests as low as 7000 feet. In the choice of a nesting place they show a marked preference for the conifers, the nest being usually built at a considerable distance from the ground, on some limb affording a wide, uninterrupted outlook, but there again no hard and fast rule can be laid down, as I have seen nests built in maples in the bottom of a canyon, not twenty-five feet above the ground, and nearly hidden by the luxuriant foliage. I have seen birds beginning to build in the middle of May, and eggs can be occasionally be found until at least the middle of July. On July 23, 1902, I secured a young bird which had just left the nest but was as yet hardly able to fly, and two weeks later broods of young, attended by the parents could be seen everywhere. After the young had left the nest, a general movement toward a lower altitude began, and by the middle of August young and old could be found quite commonly along the canyons, and in the groves of live oaks at the mouths of the same. The young birds collected differ from the adults in having the abdomen and lower tail coverts and sometimes the center of the throat as well, buffy ochraceous,

rather sharply defined against the dark colored breast and sides. The greater and middle wing coverts are edged with a darker shade of the same, so as to form two conspicuous bars across the wing. An adult female taken August 24, 1902, just commencing the autumnal moult, has most of the plumage so worn and faded as to have lost all distinctive coloring, but on the upper breast and on the dorsum the new feathers are just beginning to appear.

Contopus richardsoni (Swainson). Western Wood Pewee.

During the summer months this species is found in abundance in the lower parts of the mountains, occurring almost entirely, at least in the breeding season, along the canyon streams, and but seldom venturing up on the hill sides. It is a late arrival in this region, the earliest one noted being on May 4, 1903, and it is the middle of the month before they are at all abundant. Migrating birds were seen on the plains below the mountains up to nearly the end of May. Old birds were noted feeding young still in the nest after the middle of August.

Empidonax difficilis Baird. Western Flycatcher.

Although the Western Flycatcher breeds in the Huachucas it is anything but a common bird, and even during the migrations is not as abundant as some of the other species of *Empidonax*. It is a late arrival in this region, the earliest one noted being a male bird shot on May 18. Up to the first of June it can be found in limited numbers in the washes leading from the various canyons, not occurring at all in the higher parts of the mountains, from 7000 feet upward, where it breeds. On June 21, 1902, a nest was found, apparently just finished, but empty, built on a beam in an old cabin at an altitude of 9000 feet. The bird had been seen about the place a week earlier but at that time had not yet commenced to build. After examining the nest I left the cabin for a few minutes, and at my return the bird darted out over my head, having laid an egg during my brief absence. On visiting the place a few days later I found the nest torn apart and the eggs destroyed, probably by the rats which infested the place. After the breeding season they descend the mountains to a lower altitude, and after the first of August young and old are fairly abundant in the oaks of the foothills, and along the washes as in the spring.

Empidonax trailli (Audubon). Traill Flycatcher.

On August 9, 1902, I secured two Traill Flycatchers in some scrub oaks at the base of the mountains. This is the only record I have of the occurrence of this species in the Huachucas, though it is a fairly common summer resident in suitable spots along the San Pedro River. The two secured, both adult males, had not yet begun to moult their summer plumage, and compared with specimens from Southern California are very pale in coloration. There is hardly a trace of olivaceous on the back or yellow in the abdomen, and at a casual glance, they bear a close resemblance to *E. griseus*, for which species, in fact, I mistook them when I shot them.

Empidonax hammondi (Xantus). Hammond Flycatcher.

Of the migrating birds passing through this region in the spring the Hammond Flycatcher is one of the first to put in an appearance, and about the last to leave. The earliest noted, a male, was taken on March 30; the bulk of them arrive early in April, and they remain in the greatest abundance until the middle of May, when they begin to rapidly

diminish in numbers, the last being seen May 22. In the spring I found them in all parts of the mountains, but most abundantly below 6000 feet, and usually along the canyons, not far from water. I was rather surprised when they re-appeared in August, not in the foothills and along the canyons, as before, but up in the pines, none being seen below 9000 feet. The first was seen on August 26, and from that time on, though not at all abundant, I found them in small numbers scattered through the pines along the divide.

Specimens of *hammondi* collected vary from very dark colored birds at the one extreme, with the abdomen strongly tinged with yellow, and in some cases with the breast, throat and even the back, strongly suffused with the same yellowish hue; to very grayish colored ones at the other, with the yellow of the abdomen almost, and elsewhere entirely, obliterated.

Empidonax wrighti Baird. Wright Flycatcher.

A fairly common migrant but a shy unobtrusive bird, and consequently easily overlooked. On my first visit to the mountains, in 1896, I failed to find the species at all; and the next time, in 1902, I mistook the birds for *hammondi*, which they closely resemble, until the different note (exactly the same in *wrighti* as in *griseus*, with which I was familiar) betrayed them. They arrive about the middle of April; in 1902 I shot one in the lowlands near the San Pedro River on April 17, but saw none in the Huachucas until April 25, after which they were quite abundant. In 1903 I secured the first on April 14 and the last, May 18. They were most abundant below 5000 feet, particularly favoring the foothill region covered with scrub oak, madrona, and manzanita bushes. I also found them where the canyons opened out into the plains below, but they were not entirely restricted to the lower parts of the mountains, for on one occasion, May 1, 1903, I secured two and saw several others in the pines on the divide, about 9000 feet, altitude. Wherever I found them, though, they were equally shy and difficult to get a shot at, and when in the thick brush, which they particularly love to frequent, their low, lisping note was heard far more often than the birds themselves were seen.

Empidonax griseus Brewster. Gray Flycatcher.

I found this species to be a common migrant in the Huachucas, more abundant than its near relative *wrighti*, and generally frequenting ground of a different character. Some specimens were taken along the various washes, but the region where they were most abundant was in the most barren of the foothill country; rough boulder strewn hills with but a scattering growth of scrubby live oaks. In such places I found them fairly abundant, that is I have seen as many as twelve or fifteen in the course of a morning's collecting; but they never ventured above the very entrance of the canyons, nor ascended the mountains at all. Though this flycatcher probably winters in some parts of Arizona (I have specimens taken at Tucson during February and March), and might be expected to breed in this region, it nevertheless occurs in the Huachucas merely as a migrant; though from the early date at which it reappears in the fall, it probably breeds at no great distance to the northward. The earliest noted was on April 2; they were most abundant about the first of May; and by the middle of May had all passed on. They appeared again the first week in August; one was secured August 6, 1902, and soon after they were fairly abundant in the same localities as in the

spring, remaining so throughout the month. All that were taken at this time were adults in worn, abraded plumage, many of them in the midst of the autumnal moult with hardly enough feathers to cover them. A series of twenty-one Gray Flycatchers taken in the spring from February to the middle of May, show some little variation in color and plumage, enough so to indicate a slight pre-nuptial moult. Specimens taken during February and the early part of March are in fresh, unworn plumage, soft and blended in appearance and with a considerable olivaceous on the dorsum. Those secured at the end of March and throughout April have the feathers rather worn and abraded, the upper parts dull grayish with a few new olivaceous feathers showing on the back. Specimens taken in May present a bright, fresh appearance, with the upper parts olivaceous with but a few of the old gray feathers remaining, and with considerable yellow on the abdomen. There is considerable individual variation also, the extremes of which are presented in my collection by a male bird taken April 2, 1902, which has the breast, sides, and flanks dark plumbeous, the throat a trifle paler, and but the middle of the abdomen white, with just a tinge of yellow; and a female taken April 22, 1896, in which nearly the whole of the under parts are pure white, the breast being darker on the sides and presenting rather a streaked appearance along the median line.

From the middle of April to the middle of May these three *Empidonax*, *hammondi*, *wrighti* and *griseus*, taken together, are a feature of the avian landscape in all parts of the mountains; *hammondi* along the canyons and in the pines, *wrighti* in the oak belt, and *griseus* in the more barren country along the base of the range; and during this time there is hardly a place where one or more of some one of these small flycatchers can not be seen, darting from tree or bush after some passing insect, or sitting on a twig with drooping wings and twitching tail.

***Empidonax fulvifrons pygmaeus* (Coues).** Buff-breasted Flycatcher.

The Buff-breasted Flycatcher is one of the rarest of the regular summer visitants to these mountains, and as it is a small, inconspicuously colored bird, and in my experience rather shy and difficult to approach as well, it is a species that is most easily overlooked. It arrives in the Huachucas about the middle of April, and all the migrating birds I have taken have been along the base of the mountains, where they were usually sitting in low bushes or weeds. In 1902, I secured but two, both males, during the spring migration; one on the evening of April 20, and another early the next morning at precisely the same place. In 1903 I secured a female on the west side of the mountains on April 12, and a migrating bird was shot as late as May 4.

Specimens collected show considerable variation in the color of the lower parts, irrespective of sex. The darkest colored one I have, a female, has the breast deep ochraceous buff, with the throat and abdomen but little paler; while a rather large sized male in fresh unworn plumage, has the upper breast yellowish buff, fading to pale yellowish on the throat and abdomen, almost white along the median line. Specimens taken during April frequently have a few new feathers scattered over the back, indicating at least a partial pre-nuptial renewal of the plumage of these parts. The buff of the lower parts extends up on the sides of the neck so that in many skins it nearly joins on the nape.

On May 26, 1903, I found these flycatchers breeding near the head of Tanner Canyon in such a way as to almost indicate a "colonizing" tendency, for I found seven or eight pair breeding within a radius of

about a quarter of a mile, and three or four of these were within a hundred yards of each other. This may have been due, however, to the exceptionally favorable nature of the ground; for it was different from most of the region thereabout in that the canyon opened out into a considerable area of low, rolling hills, covered with a scattering growth of large pines. Most of the birds seemed to be building, and two nests were located, nearly completed; one of them being saddled on a large pine limb, in plain sight and not over fifteen feet from the ground. As rather exhaustive accounts of the breeding of the species in this region have already been published (Condor Vol. I, 1899, 103; Vol. III, 1901, 38) there is no need of dwelling further upon it here.

Pyrocephalus rubineus mexicanus (Sclater). Vermilion Flycatcher.

Though seldom entering into the canyons, never above the mouths of them, the Vermilion Flycatcher is quite a common summer resident all along the base of the Huachucas, breeding principally along the various washes descending therefrom. The earliest arrival noted was on March 25; others were seen during the first week in April, but the bulk of them did not arrive before the middle of the month. The male birds vary considerably in coloration, and probably take at least two years in attaining the perfect plumage. Several were taken at Tucson about the middle of March, probably birds of the previous year, just finishing the prenuptial moult. They are evidently just acquiring the globular red crest of the adult, for they still have grayish feathers scattered over the crown, and most of the red ones have not yet attained half their growth; while the red of the lower parts is paler than in the adult male, irregularly blotched with whitish, and with dusky streaks on the breast. A breeding male taken near Fort Huachuca has many of the feathers of the crown tipped with dusky, and the red of the under parts blotched with white on the throat and abdomen. A male shot on August 9, was in the midst of the autumnal moult. Females differ principally in the amount and shade of the red of the abdomen and flanks, but one in my possession has a few salmon colored feathers, tipped with dusky, on the crown, and a few of the same color scattered over the breast. During August, families of young with the parents in attendance, were frequently seen, and at this time I found them more shy and difficult to approach than at any other. The males are, in my experience, singularly tame and unsuspecting for such bright, gaudy plumaged birds.

Otocoris alpestris adusta Dwight. Scorched Horned Lark.

A common summer resident, breeding everywhere on the plains below the Huachucas, right up to the base of the mountains. They arrive early, for on February 17, 1903, while driving from the train to the mountains, I saw a flock of about a dozen, and a few single birds; but it was nearly a month later before they were at all abundant. I saw young birds flying about the prairie by the middle of May and they became more and more abundant as the summer advanced. Toward the end of July and early in August, young and old gathered together in immense flocks, and were at this time very restless and difficult to approach, flying a long distance when disturbed. They seemed to depart for the south soon after, for on September 5, 1902, on a drive of over twenty miles over country in which they had bred in the greatest abundance, not a single Horned Lark was seen.

Horned Larks from this region are very uniform in coloration, the greatest variation being in the intensity of the yellow of the throat.

This is the only race of the Horned Lark that I have found here, though I have specimens taken from February to July, and some of the other sub-species might be expected to occur as migrants.

Cyanocitta stelleri diademata (Bonaparte). Long-crested Jay.

A common resident in the Huachucas, ascending to the pine forests of the higher altitudes during the breeding season, but generally distributed over the mountains for the rest of the year. Up to the middle of April they were most abundant in the oak regions and along the canyons from 5000 to 7000 feet, usually in flocks of a dozen or more; but after that time they gradually withdrew to the higher parts of the mountains to attend to their domestic duties. During the breeding season, up to the beginning of July, they were as quiet and inconspicuous as it is in the nature of a jay to be, but after the young left the nest they began to move down to a lower altitude, as noisy and as much of a nuisance as ever. They did not seem to be as gregarious at this time as in the early spring, for after the young had attained their growth the families seemed to break up, and each one to shift for himself to a great extent.

A young male just from the nest, and with the rectrices not yet half their length, has both the upper and lower parts, a uniform dark slate color, rather darker on the crest and paler on the rump and abdomen. There is some whitish on the chin, an indistinct whitish line over the eye, and the faintest suggestion of bluish white markings on the forehead. A juvenile female is essentially the same in coloration but lacks the whitish markings about the head. A young male, taken August 13, is beginning to lose the juvenile plumage, having patches of blue feathers on the sides and upper parts of the breast, the rump and lower tail coverts. Soon after the young leave the nest the adults begin to moult; specimens taken the middle of July being in a very worn state of plumage, with the webs of the tertials abraded so as to show hardly a trace of the transverse markings; but as yet hardly beginning to shed their feathers. An adult male taken August 15 has almost entirely renewed the rectrices and remiges as well as the plumage of the lower breast and abdomen; while the chin and throat are nearly bare, but little more than the shafts of the old feathers remaining, and a scattering growth of pin feathers just beginning to appear. The feathers of the crest are mostly new, but still ensheathed for about half their length; while the neck and anterior portion of the dorsum still retain the old worn plumage.

Specimens in fresh, unworn plumage have the upper parts of a decidedly bluish tinge, in marked contrast to the brown dorsum of late spring and summer birds.

Aphelocoma woodhousei (Baird). Woodhouse Jay.

This species is resident in the oak belt from the base of the mountains up to an altitude of 7500 feet, and is possibly fairly common in this region; but from the quiet, retiring disposition of the birds (a striking contrast to the rest of the family!) they are seldom seen, and it would be an easy matter for even an experienced collector to overlook them entirely. They frequent the steep brush-covered hillsides for the most part, seldom venturing down into the canyons, or into the open anywhere; and though their note can occasionally be heard, though they do not call very much either, a fleeting glimpse of a bird sneaking through the brush, close to the ground, is the most that is usually obtained. They are possibly more abundant on the west slope of the mountains than elsewhere; and they are generally rather local in their

distribution, favoring certain spots in certain canyons, where they can usually be found, to the exclusion of other places presenting apparently precisely similar conditions. On April 6, 1903, I scared several from some oaks at the base of the mountains, and with considerable difficulty secured one. Possibly these were migrating birds, as it was a place they did not usually frequent; and the one secured, a female in very worn plumage, was evidently not breeding, not even paired off in fact. On July 23, 1902, I saw a fully fledged juvenile at an altitude of about 7500 feet. I was not able to secure it, for as I was resting by the side of the trail it lit on a limb but a few feet away, and after a short inspection, left rather abruptly, nor did I see it again.

Aphelocoma sieberii arizonae Ridgway. Arizona Jay.

Noisy, fussy and quarrelsome as all the jays are, I know of no other species which possesses to such an eminent degree the quality of prying into all manner of things which do not concern it, and of making such a nuisance of itself in general, on the slightest provocation or on none at all, as the Arizona Jay does. They are very gregarious, and even during the breeding season may be seen travelling through the oaks in flocks of fifteen or twenty or more, ostensibly seeking for food, but also on the lookout for trouble, or any excitement which might turn up. A collector travelling through the woods gets his fair share of invectives, especially if he is examining nests, shrieked from the tree tops at a safe distance, to the accompaniment of bobbing heads and twitching tails; a Red-tail or Swainson Hawk sitting on some limb, furnishes a little excitement until he removes to some quieter locality; but the crowning joy of all is to find some wretched fox or wild cat quietly ensconced on some broad, sheltered, oak limb. In such a case the one that finds the unhappy victim takes care to let every jay within half a mile know from his outcry that there is some excitement on hand; and it is nothing unusual to see thirty or forty birds gathered about the object of their aversion, letting him know in no undecided terms just what their opinion of him is. It is a curious sight also to see a dozen or more gathered around some large snake, which they seem to fear nearly as much as they hate. On one occasion I had an excellent opportunity of watching about twenty Arizona Jays protesting at the presence of rather a large rattlesnake which was leisurely travelling down a dry watercourse which passed our camp. The jays seemed imbued with a wholesome fear of their wicked looking antagonist, and though they surrounded it, kept at a respectful distance; they were not as noisy as they often are, but kept uttering low querulous cries, quite different from their usual outbursts. Some of the boldest lit a short distance from the snake and strutted before it in a most curious fashion, head and body held bolt upright, and the tail pressed down on the ground until about a third of it was dragging. A bird we had in captivity for some time strutted about in the same comical fashion whenever it was angered and wished to show fight. On many occasions while out collecting, I have heard an outburst of jay's voices drawing nearer and nearer, until presently a Cooper, or Sharp-shinned Hawk, passed silently, like a ghost down the canyon; while behind it a straggling stream of jays trooped, anything but ghost-like, screaming and clamoring, to the great detriment of the hawk's hunting, who regarded them, I have no doubt, with precisely the same feeling that most of the deer hunters of this region have for the jays. Beside his vocal outbursts, the Arizona Jay makes when flying a curious fluttering noise with his wings, loud and distinct enough to be heard some little dis-

tance producing a curious effect; especially when, as often happens, a troop of them comes swooping down some steep hill side to the bottom of the canyon. Though wary and cunning to a marked degree, so that it is usually impossible to get within gun shot of them, still their curiosity leads to their destruction; for it is a simple matter for the collector, by hiding behind a bush and making any squeaking or hissing noise, to get all the specimens desired. In fact they fairly tumble over one another to find out what is going on; and I had not the slightest trouble in getting as many as I wished with a .32 caliber auxiliary, though otherwise it would have been difficult to secure any even with a twelve gauge.

Owing to the gregarious nature of the bird, it is difficult to say just when they pair off, for even when breeding they remain in flocks to some extent; but they seem generally to begin building their nests about the first of April, though I have taken specimens late in April which had not yet paired off. There seems to be no difference in the territory occupied by these jays at different seasons; I have never seen them above 7500, and they are most abundant below 6000 feet, breeding down quite to the base of the mountains. Though so extremely gregarious they do not seem to mix with any of the other species, and though I have seen both Woodhouse and Longcrested feeding in company with the Arizona, it was evident that they were merely drawn together in the search of food; and when disturbed the different species did not attempt to stick together. Acorns form a staple article of diet with these birds, and they can be seen everywhere under the oak trees searching for their favorite food, progressing by means of strong, easy, hops; and poking under sticks and stones, eating what they can, and hiding more for future use. On finding an acorn, a retreat is made to some near-by limb or boulder, where the prize is held between the two feet, and opened by a few well directed blows. The tame bird before mentioned, could in this manner demolish a lead pencil in a very few minutes, so that it can be imagined that an acorn presents no particular difficulties.

Soon after the first of June young birds begin to appear, and by the middle of the month are very much in evidence everywhere in the oak region; first sitting in the trees squalling to be fed, but very soon descending to the ground and rustling for themselves. The young are, in general appearance, very similar to the adults, but with the upper parts brownish with hardly a trace of blue, and the lower parts a dingy grayish brown; while the base of the bill is always light colored, to a varying extent. Sometimes the lower mandible is nearly all light colored with but a dusky spot near the tip, and sometimes the upper mandible also is light colored for nearly half its length. A considerable number of birds taken in the early spring, and some breeding birds, retain the light colored base to the lower mandible to a greater or less extent, but I think it is unquestionably a sign of immaturity; those seeming to be the oldest and most mature having the upper parts almost uniformly blue, the throat and upper breast, strongly tinged with the same color and the bill invariably black; while those with the lower mandible still retaining more or less of the light color have most of the wing coverts, tertials and dorsum, grayish brown, with hardly a trace of blue on the breast, and the blue of the head, rump, etc., not nearly as bright as in the more mature birds. In short the brightest colored birds of both sexes always have the bill black throughout, and those with the parti-colored bills are always the duller in coloration. About the first of August young and old begin to moult together, and the grayish colored immature birds

variously blotched with blue, may be seen all through the month. The adults renew their plumage entirely at this time, but the juveniles seem to retain the rectrices and remiges acquired with the first plumage. I left before the moult was completed, but specimens taken in February and March, which I take to be birds of the previous year, have these feathers much more worn and abraded than have the more highly colored, older birds. Two old females taken the middle of August are in the midst of the autumnal moult, covered with pin feathers, and with many old feathers still scattered over the body.

Corvus corax sinuatus (Wagler). American Raven.

I have occasionally, but not often, seen large ravens in the higher parts of the mountains, their size, as well as the different note, serving to distinguish them from their smaller white-necked cousins of the plains. Possibly they breed in the mountains, but I know of no instance of a nest being found, or of any other evidence showing that they do so.

Corvus crytoleucus Couch. White-necked Raven.

On the plains and in the low lands generally in this region, the White-necked Raven, or "Crow," as it usually called here, is a most abundant resident; and though not a mountain bird, properly speaking, they frequently come up into the canyons, and on the lower foothills, usually after dead cattle. They are usually quite tame and unsuspecting, paying little or no attention to a man on horseback or a wagon passing by; but after being shot at a few times soon become very wary and hard to approach, and as they are usually out on the open prairie it is an easy matter for them to keep out of the way. On one occasion I approached a flock of thirty or forty busily engaged in catching grasshoppers, and as they began to leave long before I arrived within gunshot, I thought to try an experiment; wondering if an appeal to their curiosity might not be as successful as it usually was with the jays. Tying a stone in the corner of a red bandana handkerchief, I tossed it high into the air, and the result far exceeded my expectations; for though standing in plain sight, they came headlong to see what it was that had fluttered to the ground, and from that time on I had no difficulty in securing White-necked Ravens. When one or more were shot out of a flock the remainder did not fly off and alight again, but usually circled about, keeping in rather a compact body and ascending higher and higher; not descending to the ground for a considerable length of time, and usually a long ways off. On May 3, 1902, I heard a flock of Ravens making a great commotion in the air, and at first supposed them to be mobbing a hawk, but on their descending nearer to the ground and passing within about a hundred yards of where I was standing, I saw that what I had taken for a hawk was undoubtedly a White-necked Raven, but of a uniform pale brown color throughout. After a time the others appeared to become reconciled to their unique companion, and they all passed amicably away together. In the spring of 1903, I noticed a place on the plains some eight or ten miles from the mountains, where some species of bird was evidently roosting in large numbers. The plains are covered with brush at this point, mostly scrubby mesquite, and for a space some two hundred yards long and twenty-five or thirty yards wide the trees were almost destroyed by the use to which they had been put. The ground underneath was inches deep with excreta, and the trunks and branches of the trees were white with the same; while they were almost totally denuded of leaves, except at the extreme top where a little

green still lingered. In many cases the limbs were broken down by the weight of the birds. From the appearance of the excreta it was evidently a large species of bird that was roosting there, and as on a careful examination none but raven feathers could be found lying about, I came to the conclusion that it was they who were using the place, though I never found them roosting in such large numbers in any one place before.

At the neighboring schoolhouse the ravens were in the habit of gathering early in the afternoon, and cleaning up the scraps thrown aside from the children's lunches, strutting about the doorsteps like so many chickens. They are late in breeding though here in abundance all through the spring; and at nearly the end of May I have seen flocks of a hundred or more birds. I have found eggs the first week in June, but the bulk of them probably lay rather later. Their nests are scattered in considerable numbers along the washes leading from the mountains, being built indiscriminately in sycamores, walnuts, mesquites, or anything that will support the structure. From the nature of the trees they are in they are seldom over twenty or twenty-five above the ground, and I saw one nest in a little mesquite not over four feet from the ground. Early in August the young birds begin leaving the nests, and when they have attained their growth young and old gather together in enormous flocks. Juveniles taken at this time are much like the adults, but the plumage is of a dull black with none of the purplish gloss of the old birds, except on the wing and its coverts; the lanceolate throat feathers of the adult are also lacking, but the base of the feathers of the throat and neck is white, as in the old bird. The base of the lower mandible is light colored, (reddish in the dry skin) to a varying extent. Three young birds nearly full fledged, were taken from a nest August 16, 1902, and in spite of their protests, vocal and otherwise, taken to the camp and lodged in a large box. One soon died but the others did very well and returned to Los Angeles with us in September. About the first of October they commenced to moult; by the middle of the month they were very ragged looking, one being completely bald, but by the first of November they had renewed their entire plumage, except the rectrices and remiges. When we first secured them about the basal half of the lower mandible was light colored, but this area became more and more restricted, retreating toward the base of the bill, until by the time the moult was completed the bill was entirely black.

Nucifraga columbiana (Wilson). Clarke Nutcracker.

My personal experience with this species has been extremely limited. On June 21, 1902, a single bird passed over my head going in a southerly direction, at the extreme summit of the mountains. This is the only one I have seen, but I have some taken in the Huachucas by H. Kimball during April, 1895. I have been told that it is of quite common occurrence at times, but it is probably very irregular in its visits.

Cyanocephalus cyanocephalus (Wied). Pinon Jay.

On May 8, 1902, a large flock of Pinon Jays was seen late in the afternoon, flying about some oaks on a steep hillside, apparently looking for a place to roost. They were very restless and hard to approach, and it was with great difficulty that I secured three of them. Another flock was seen on May 15, but no more secured. The three I shot, a male and two females, were adult birds in rather worn plumage, and it is something of a puzzle just what they were doing here at this time, as they do not breed anywhere in the Huachucas. On August 22, 1902, I heard

a flock calling as they passed by, but was unable to catch sight of them on account of the thick trees in which I was standing. These are the only occasions on which I have met with the species in this region.

Molothrus ater obscurus (Gmelin). Dwarf Cowbird.

About the first of May, Cowbirds begin to appear in small numbers along the base of the mountains, but they never become at all abundant. Occasionally I have seen them as high as 5500 feet, but as a rule they do not venture far up into the mountains; remaining more at the base of the hills and in the mouths of the canyons. They are most numerous about the middle of May, and leave early in the summer; I saw none in the Huachucas after the middle of July.

Sturnella magna subspecies ?. Meadow Lark.

I have seen a few meadow larks in various places along the base of the Huachucas, usually in the tall grass in enclosed pastures, but they are anything but abundant, and those I saw were so wild as to be utterly unapproachable, so I was unable to secure a single specimen. I have seen them at various times through the spring and summer, so the few that are there undoubtedly breed in the locality. As I unfortunately failed to secure any it is, of course, impossible to say whether those I saw were *neglecta* or *hoopesi*, either or both of which may occur in this region.

Icterus parisorum Bonaparte. Scott Oriole.

A most abundant summer resident, principally frequenting the lower parts of the mountains, though I have occasionally seen it as high as 8000 feet. The earliest date at which I have seen any was March 31, 1903, when a male was secured; no more being seen until April 5, after which date they were abundant. Until nearly the end of April small flocks of from six to a dozen birds could be found along the canyons, usually below 5000 feet, feeding in the tops of the trees, where, in spite of the brilliant plumage and loud, ringing whistle of the male birds, they were anything but conspicuous. In feeding they sit quietly on the limbs prying and peering into such buds as are within reach, any necessary change of position being accomplished by clambering along the branches with hardly any fluttering of the wings; and as their plumage, though bright, harmonizes exceedingly well with the surrounding foliage, they could be easily overlooked were it not for the loud notes to which the males give utterance at frequent intervals. The first to arrive were the old, bright plumaged males, then a week or so later some females began to come in, and finally toward the end of April, what few flocks were seen were composed of females, and males presumably of the previous year, in every stage of plumage, most of them indistinguishable from the more highly colored females. The males in intermediate stages of plumage were very abundant for a time, and as specimens were secured in every phase from those absolutely indistinguishable from some females, up to the fully mature male, I should think it very probable that two years, at least, are required to obtain the perfect plumage. The dullest colored male I secured has the black restricted to the lores, cheeks, throat and upper breast, while the top of the head and sides of the neck are olive-green slightly specked with black. Some others are much like this one, but with the top and sides of the head more or less uniform, though dull, black. In all but one of these the tail is precisely as in the female, plain yellowish-olive, but little darker toward the tip; the exception has three rectrices bright yellow, the terminal third abruptly darker,

nearly as dark as in the adult male. These are not new feathers, for all the rectrices are equally worn and have the appearance of having been acquired the previous fall. Another specimen is a step nearer the mature plumage; the black of the head and breast is more extensive and more glossy; the back is dull black, and the feathers of this part as well as those of the nape and sides of the neck are edged with grayish and yellowish so as to produce a somewhat mottled effect. The pattern of coloration of the tail is exactly as in the adult male, but the colors much duller; and the under parts and the rump are dull greenish yellow but little brighter than the female. Still another is very nearly perfect; the wings and the tail have the bright, sharply defined colors of the adult, the throat and breast are glossy black, and while the yellow of the lower parts is not so bright as in my finest specimens, still it does not fall short of it very much. The upper parts, however, are duller; the head is black but with very little gloss, while from the nape the feathers of the back are broadly edged with olive-yellow and green. The rump, too, is dull greenish yellow but little brighter than in some females. Mr. Brewster, in his "Birds of the Cape Region of Lower California" dwells at some length of this same intermediate plumage of the male of *Icterus parisorum*, and seems to doubt the probability of its indicating immaturity; and though I have not the advantage of anything like as extensive a series as was at his disposal (I have no fall specimens but have examined in this connection thirty-five males taken by myself in the Huachuca Mountains and near Tucson from March to July) I can not help thinking that this is the explanation of the variation. It is not a well defined phase either of color or markings, for, as I have shown, there is a nicely graded series of changes from a dull plumage similar to the female, up to the brightest colored male. The fact that these dull colored males arrive in the spring later even than the female would also indicate their immaturity. The fact that they breed in this plumage is indisputable, but I should imagine that to merely prove that more than a year is required to obtain the full plumage. Most of the male birds I secured have more or less traces of grayish-white edgings to the feathers of the lower back, the only one without any trace of these markings being a specimen taken late in July, in very abraded plumage, and nearly ready to commence the moult. About a third of the females secured have the throat and upper breast, and sometimes the top of the head black, much as in the more imperfect males; one has a few scattered black spots on the breast, and the remainder have no trace of black on these parts.

The Scott Orioles seem to leave the Huachucas very soon after they are through breeding; I have taken none after July and though some may linger through August, I have no notes or recollections of seeing any at this time.

On May 25th, 1903, I secured a set of four fresh eggs near the mouth of one of the canyons, at an altitude of about 4500 feet. The nest was built under the sharp, overhanging leaves of a yucca, about four feet from the ground.

Icterus cucullatus nelsoni Ridgway. Arizona Hooded Oriole.

The Arizona Hooded Orioles hardly enter into the mountains at all, except in the migrations, when I have occasionally seen a few half a mile or so up the canyon; but in the washes below they are quite abundant throughout the summer. The earliest arrival noted was a male on April 4th, but they were not really abundant until after the middle of the month. Two males secured are in the dull plumage of the female, with

hardly any black on the throat. In one of these there are black feathers scattered throughout the area which is all black in the adult male; but the other has but two or three black spots on the throat. These two birds taken May 6th and 8th, 1903, were paired off and preparing to breed.

Icterus bullocki (Swainson). Bullock Oriole.

The only time at which I have seen Bullock Orioles at all abundant in the Huachuca Mountains was in August, 1902. About the middle of the month flocks of from ten to twenty, nearly all young birds, could be seen along the canyons up to an altitude of about 5500 feet. Most of these must have come in from other parts of the country, for I have never found them breeding at all abundantly in the mountains, being in fact, the rarest of the three species of orioles occurring there. They probably arrive, usually, about the first week in April along with the Hooded and Scott Orioles; in 1902 I saw one on April 3rd and they were fairly common by the middle of the month, but in 1903 the first I saw was on May 4th, after I had begun to think that they were not coming at all. They kept arriving in a leisurely fashion, and it was after the middle of May before I saw any beginning to pair off. They breed mostly along the washes in the same localities as the Hooded Oriole.

Scolecophagus cyanocephalus (Wagler). Brewer Blackbird.

I have seen this species about the yards and corrals at Fort Huachuca but hardly anywhere else. A solitary female was shot in a dry wash some three miles from the mountains on May 8, 1903.

Coccothraustes vespertinus montanus (Ridgway). Western Evening Grosbeak.

I am in doubt as to whether this species breeds in the Huachucas or not, for though I have never seen any at any time in the spring or early summer, on July 30, 1902, I came onto about half a dozen birds scattered through the pines at an altitude of about 9000 feet. An old male was observed feeding a fully fledged young, and secured, but the young one flew off and was not seen again. All that were seen were very wild, and after securing a second bird, a female, I was unable to approach within gunshot of any more. I am satisfied that these birds had not bred anywhere in the immediate vicinity of the place where they were at this time, for I had done a good deal of collecting there during the summer and would certainly have seen or heard them; but they might have done so in some more distant part of the range which I had not visited. The two secured were in badly worn plumage, the female having commenced to moult. On this occasion all the birds seen were scattered individuals, but on August 3rd a flock of six or eight were seen at a spot some five miles distant, and on August 30th a flock of over a dozen was seen near this latter place. These birds were all so wild that I was unable to get anywhere near them, and so none were secured.

Carpodacus cassini Baird. Cassin Purple Finch.

A migrant, but probably of irregular occurrence. At various times during the spring of 1903, I saw flocks of Cassin Purple Finch in the pines from 5000 feet upward, specimens being secured from April 8th to May 11th; while during the previous year all that were seen were one or two stray birds about the middle of April in the canyons below 5000 feet. They were frequently found in company with the Pine Siskin, feeding sometimes on the ground and sometimes in the trees, the two species flying away together when disturbed. Several male birds secured, one

as late as May 11, were in the brown streaked plumage of the female, and several in this plumage were in full song.

Carpodacus mexicanus frontalis (Say). House Finch.

A summer resident, but in very limited numbers. I have not found it common anywhere in or near the mountains, nor have I seen any above 6000 and but very few above 5000 feet. The first seen in 1903, was a male which I secured on March 6; from then until the first of May two flocks of five or six each, and an occasional bird at long intervals, were all that were seen. In May a few were observed in pairs and they gradually became more numerous as the summer advanced. I have seen more in August than at any other time, but they never become abundant enough to call upon their heads the wrath of the fruit grower, as in California; and as several species of birds have done here, more or less deservedly. Though the House Finches I secured in the Huachucas and Santa Rita Mountains do not differ appreciably in size or proportions from Southern California birds, the difference of color in the males is certainly striking; the Arizona birds having the head and breast of a bright rose-pink, very different from the darker colored California birds. There is usually more or less red on the back, and frequently the whole crown is uniformly of this color, but there is considerable variation in these respects.

Loxia curvirostra stricklandi Ridgway. Mexican Crossbill.

My experience with this species was very limited, but from information received from Mr. O. W. Howard and others, I should judge that it occurred with fair regularity in the Huachucas as a fall migrant. The first I saw was a flock of four birds on August 30, 1902, at an elevation of about 9000 feet, and I saw others on several occasions before I left the mountains, about a week later. All that were seen were so wild as to be unapproachable, and it was by chance that I secured a single bird, a female, which happened to alight within gunshot of where I was standing. I have several males taken in the Huachuca Mountains by H. Kimball, apparently in fresh autumnal plumage, but unfortunately without data.

Astragalinus psaltria (Say). Arkansas Goldfinch.

I have never found this species at all common in the Huachuca Mountains. From March until nearly the end of June an occasional stray bird, wandering up into the canyons, was all that was seen; but after the summer rains they became a little more abundant, and small flocks were frequently seen feeding on weeds close to the ground; occasionally venturing up the canyons to an altitude of 5500 feet. All the males secured have more or less admixture of black in the auriculars, scapulars, etc., and one or two very dark colored ones were seen but not secured.

Spinus pinus (Wilson). Pine Siskin.

A very abundant migrant, appearing about the end of March and remaining in considerable numbers until the end of May. I saw one or two single birds in June, 1902, but doubt very much if any breed in the mountains, though from the early date at which they reappear in the fall, their breeding ground can not lie so very far to the northward. On August 7, 1902, I saw several flocks, and from that time on they were quite abundant; but though in the spring they were generally distributed throughout the mountains, in August all that were seen were in the pines

from 8500 feet upward. All the specimens taken at this time were adults in very worn plumage, several of them with the lower part discolored with reddish stain. The series of Siskins I secured in this region averages paler and grayer than Southern California birds; with the streaking of the lower parts restricted more to the sides and flanks, so that frequently the median line from the bill to the tail is almost immaculate. Occasionally the plumage above and below is suffused with greenish yellow to a considerable extent. Only once have I seen this species anywhere in the lowlands in this region, on April 17, 1902, when a few were seen in some willows along the San Pedro River, some twelve miles from the mountains.

Calcarius ornatus (Townsend). Chestnut-collared Longspur.

For a month or so in the spring Chestnut-Collared Longspurs were quite abundant on the plains below the Huachucas, and could be seen almost anywhere, usually, in large flocks. The first observed were on March 14, when one or two small flocks were seen passing overhead. From that time on their numbers rapidly increased and the last week in March and the first in April they were at the height of their abundance. They began leaving about the middle of April, and by the end of the month were practically all gone, the last seen being a small flock, apparently all females, on May 3, 1902.

Rynchophanes mccowni (Lawrence). McCown Longspur.

Recorded by O. C. Poling as common at Fort Huachuca during February and March (Ornithologist and Oologist, Vol. 15, 1890, 71). I have never met with the species here myself.

Poocetes gramineus confinis Baird. Western Vesper Sparrow.

The Western Vesper Sparrow is quite a common migrant in the lowlands of this region, occurring as far up as the base of the mountains. Near the Huachucas it was rather locally distributed, clinging in small flocks to the same favorite localities as long as it remained in this region. The earliest date at which any were seen was March 14, and they disappeared soon after the middle of April.

Ammodramus sandwichensis alaudinus (Bonaparte). Western Savanna Sparrow.

Very rare. On March 29, 1902, I shot one on the plains a few miles from the mountains, moulting so badly that I did not save it. This is the only one I have seen in this region.

Coturniculus bairdi (Audubon). Baird Sparrow.

This species proved to be exceedingly abundant in the spring, on all parts of the plain below the Huachucas; even coming up into the mouths of the canyons in places where the ground was open and free from trees. Possibly a few remain through the winter as I took a specimen on February 17, 1903; but no more were seen until nearly the middle of March, when they became quite abundant, remaining so until the end of April, when they rather abruptly disappeared, May 3, being the latest date on which any were seen. I found them difficult to shoot at all times, running through the grass and seldom taking wing when it could be avoided; and their colors harmonize so well with the surroundings that they were by no means easy to catch sight of. None were observed singing at any time, nor were any seen in pairs; they were not at all gregarious, and though abundant, nearly all that were seen were

single birds. If more than one was seen at a time they made no effort to keep together when startled, but usually went in different directions. Specimens taken the third week in April were undergoing a slight moult, usually restricted to the chin, throat and upper breast. In such as have completed this change, the plumage of these parts is of a decidedly more buffy hue than in those taken earlier in the season, in which it is generally almost pure white. Aside from this, almost the only variation in the specimens collected is in the markings of the pileum; in some the dark streakings being restricted almost entirely to the sides, leaving a broad, well defined, median line of buff, while others have the whole crown almost equally streaked with dusky.

Coturniculus savannarum bimaculatus (Swainson). Western Grasshopper Sparrow.

A rare migrant. In 1902 I secured a female on March 31st, and a pair on April 4th; the following year a male was taken on April 5th. These were all shot in a field at the base of the mountains, about 4500 feet, altitude, and are all that I have seen in this region.

Chondestes grammacus strigatus (Swainson). Western Lark Sparrow.

This species proved to be an exceedingly abundant summer resident in the washes below the mountains, arriving about the middle of April. Though so common along the base of the mountains, I never met with any above the very entrance of the canyons.

Zonotrichia leucophrys (Forster). White-crowned Sparrow.

I found this species, together with *gambeli*, very abundant along the San Pedro River during the latter part of March and throughout April, but they appeared in the Huachucas in but very limited numbers. The first seen in the mountains were secured on April 7th, and a few others were observed at various times up to May 13th, when a pair of birds were shot, none being detected above 5000 feet. Most of the specimens taken early in May show more or less traces of moult on the head, throat, and dorsum.

Zonotrichia leucophrys gambeli (Nuttall). Intermediate Sparrow.

Very rare in the Huachuca Mountains, though, as I before indicated, more abundant along the valley of the San Pedro. Even there, however, it is outnumbered by true *leucophrys* two to one, and the only positive record I have of its occurrence in the mountains is one immature female taken March 24, 1903.

Spizella socialis arizonae Coues. Western Chipping Sparrow.

This species probably remains in the Huachucas through the winter, for on my arrival in the mountains on February 17, 1903, I found large flocks of Chipping Sparrows everywhere in the oak region, and they remained in the greatest abundance all spring. Though not breeding in this region they remain very late, being abundant up to the first of May; and I saw some as late as May 15. In 1902 they appeared in the fall about the first of August, and were soon quite abundant, though not as much so as in the spring. All that were seen at this time were adults in very worn plumage, many of them ragged and moulting. None were seen at a higher altitude than 5000 feet.

Spizella breweri Cassin. Brewer Sparrow.

Occurring in company with the Chipping Sparrow in the spring, but in much smaller numbers, and leaving at rather an earlier date. I saw none in August or September up to the time I left the mountains.

Spizella atrogularis (Cabanis). Black-chinned Sparrow.

On April 4, 1902, I heard a Black-chinned Sparrow singing on a steep hill-side near our camp. The bird was not seen, but the loud characteristic song was kept up for some time, and I know of no other species in this region with a note at all like it. Some ten days previous to this I saw and heard several in the foothills of the Santa Catalina Mountains, near Tucson, so I do not think I could have been mistaken. This is the only occasion on which I have had any indications of the presence of this species in the Huachucas, and it must be of rare occurrence there.

Junco hyemalis (Linnaeus). Slate-colored Junco.

Occurs in limited numbers in the winter in company with *caniceps*, *mearnsi* and *thurberi*. I took but four specimens all told; two males taken on February 18 and 24, respectively, and a male and female taken on March 24, all in 1903. Possibly three or four others were seen; none being observed at a higher altitude than 5500 feet.

Junco hyemalis shufeldti Coale. Shufeldt Junco.

I have three Juncos from this region, two males and a female, which Mr. Ridgway has identified as belonging to this race. These were all taken at a low altitude in flocks composed of the various species of *junco* wintering in the mountains, and though these were all the specimens secured they may have been fairly abundant, being associated with *thurberi* as they were; for the two races are by no means easy to differentiate, even where specimens are secured, and in the field it is practically impossible to do so.

Junco hyemalis thurberi Anthony. Thurber Junco.

As this bird is usually listed as a mere straggler in Arizona, I was surprised at finding it as numerous as it was in the Huachuca Mountains during February and March, 1903. At this time it was probably the most abundant species of *junco* in the mountains, being particularly numerous in the oak regions below 5500 feet, and occurring in limited numbers up to the highest parts of the range. On February 21, I saw a few on the divide of the mountain at about 9000 feet. After the middle of March they began to disappear, and after the first of April but an occasional small bunch of half a dozen or so was seen, the last observed being on April 19. Specimens secured differ in no wise from birds in my collection taken in various parts of Southern California.

Junco mearnsi Ridgway. Pink-sided Junco.

I found this species quite common during February and March, 1903, occurring in the large flocks composed of the various species of juncos that were in the mountains at the time; but restricted almost entirely to the lowest part of the range, no specimens of *mearnsi* being taken above 5500 feet. Though not as abundant as some of the other species, it was fairly numerous up to the third week in March, all that were seen after that being an occasional stray bird, usually in a small flock of *caniceps*, which lingers in this region longer than any of the other non-resident species of juncos. The last Pink-sided Junco seen was a female shot on April 15. In the specimens secured there is considerable variation, particularly in the females, in the shade of pink of the sides, and the area covered by it; in some this color extending far up on the sides of the neck, or meeting across the breast.

Junco caniceps (Woodhouse). Gray-headed Junco.

A winter resident, very abundant in the oak regions, and to a lesser extent in the higher parts of the mountains, remaining until about the end of April. In February and the early part of March it was outnumbered by *thurberi*, but as that species decreased in numbers *caniceps* became more in evidence, though probably not really increasing in numbers. Up to the middle of April the Gray-headed Junco was still fairly abundant, though in smaller flocks than before, and often found at a considerably higher altitude than that frequented earlier in the season. I took several specimens as high as 9000 feet, and they may have been more numerous than I supposed, for those secured were usually in company with the Arizona Junco (*J. p. palliatus*) and it is not easy to distinguish between the two species in life. I took specimens on various occasions toward the end of April, and have one shot as late as May 2 (1896). A small percentage of specimens of both sexes have more or less chestnut on the crown, of the same color as the back, usually in the shape of a few disconnected spots but occasionally covering nearly the whole of the crown. There is also considerable variation in the color of the tertials, which, usually edged with pale gray or having the whole outer web of that color, are in about a third of the specimens collected, broadly edged with pale brown.

Four specimens were secured which are probably hybrids between *caniceps* and *mearnsi* (*J. annectens* of Professor Baird, and *J. ridgwayi* of Dr. Mearns). These were all taken in March, 1903, two males the 7th and 12th, and two females on the 13th and 14th, respectively. Three of these, a male and two females, resemble each other very closely, and are practically like average examples of *caniceps* but with more or less pink on the sides and flanks. The fourth specimen, a male taken March 12, is quite different from these and has apparently just undergone a complete moult, for there are pin feathers scattered over the body, three of the rectrices have not yet attained their full length, and over the entire plumage there is a gloss and bloom only present in newly acquired plumage. The head and throat are darker than is the case in either *caniceps* or *mearnsi*, there is considerable pink on the sides and flanks, and the lower parts from the breast to the anal region are dirty buff, the only pure white feathers being the under tail coverts. The interscapular region is dark chestnut obscured throughout by a dusky wash; the greater wing coverts are reddish brown, and the outer web of the tertials is broadly margined with the same.

All four of these birds in general appearance resemble *caniceps* much more closely than they do *mearnsi*.

Junco phaenotus palliatus Ridgway. Arizona Junco.

An abundant resident, and one with which, apparently, the seasons make but little difference, for not only does it refrain from going further south at the advent of cold weather, but I could discern little evidence of any vertical migration either. During February and March I found the non-resident species of juncos together in large flocks throughout the oak region, but I never once took a specimen of *palliatus* in any of these mixed gatherings. Even in the coldest weather I never saw one below 5500 feet, and they were most abundant above 7500 feet; usually in small bunches of six or eight, occasionally with a stray *caniceps* included in the flock, but usually by themselves. They are at all times, winter and summer, most abundant along the divide of the mountains, from 8500 to 10,000 feet, altitude, and the only appreciable difference in their

distribution at the different seasons, is that up to the end of March they are fairly abundant between 5500 and 6500 feet, while but very few breed at so low an altitude. They begin to pair off about the first week in April; on April 25 I shot a female which had laid part of its set, while the latest nest I have seen was one containing three badly incubated eggs, on July 30. The nest is usually built upon the ground, under a bunch of grass, a log, or, as I have occasionally found it, under a flat stone; but this is not invariably the case, as I have known one or two instances of its being placed in some thick shrubbery, a drooping pine limb, or a young fir, a foot or two above the ground. The Arizona Junco is much more arboreal in its habits in general than any other of the genus that I have come in contact with, and on several occasions specimens were shot from the topmost branches of the pines, fluttering about like warblers, for which I mistook them, and from their actions apparently in search of insect food. In the spring the male bird frequently ascends high in the tree tops, and sits there motionless, uttering his short song at frequent intervals; and two or more may often be seen pursuing one another through the trees, seldom descending to the ground at such times. About the middle of June the young birds in the spotted plumage begin to appear, and all through July they are quite numerous, often two or more broods running together, accompanied by the various parents. The young birds are at this time heavily streaked above and below, though less on the throat and abdomen than elsewhere, the bill is uniformly black, and the iris brown. The dark streakings are confined principally to the tips of the feathers, and, as the soft juvenile plumage wears away very rapidly, those birds which have nearly attained their full size have these markings much more faintly indicated than those which have just left the nest. Specimens taken late in July, nearly ready to discard the juvenile plumage, have the dorsum nearly uniform red, as in the adults though much paler; and the dark streaks of the lower parts restricted almost entirely to the upper breast. As the bird becomes older the iris gets paler, changing from brown to whitish, then to pale yellow, and finally, about the time the juvenile plumage is shed, to the bright yellow of the adult bird. At the same time the lower mandible is gradually becoming paler than the upper, the change in this respect as well as in the iris, being completed about the time the adult plumage is assumed. The juvenile plumage is shed in August, at the same time that the adults are undergoing their post-nuptial moult; specimens secured on September 2 being hardly distinguishable from adults, and with but a few faint spots remaining on the breast, sides of the head, and scapulars. The scapulars seem to retain the juvenile markings the longest, and I have one specimen, a female, presumably of the previous year, taken on April 4, in which not only the scapulars, but the greater wing coverts also, are tipped with dusky, and there are one or two faint spots on the red of the dorsum as well. An adult male taken September 2, has not quite completed the moult, some of the rectrices having not yet acquired their growth; and is practically indistinguishable from specimens taken in February, the principal difference being in the softer more blended appearance of the plumage.

In the specimens collected there is some difference, mainly seasonal, in the intensity of the red of the back, those taken in February and March, having the color obscured by grayish edgings to the feathers. In a number of cases there is more or less admixture of grayish in the red of the scapulars and greater wing coverts, these parts occasionally being almost entirely gray. In the tertials also there is considerable

variation, from those in which the outer web is gray with hardly a trace of red, through every stage to those in which they, together with the scapulars and greater coverts, are uniform with the back. All the specimens secured have the bright yellow iris of *palliatu*s, and I took none but what are referable to that race rather than *dorsalis*, though the latter might be expected to occur in this region in the winter. Intergradation between the two races might be indicated by the varying extent of the red areas of the upper parts in the specimens of *palliatu*s secured.

In just one specimen, a female, is there any indication of red on the crown, but whereas in *caniceps*, where it is fairly common, such a mark usually takes the form of a more or less connected patch, in this case it is a well defined line over each eye.

Amphispiza bilineata deserticola Ridgway. Desert Sparrow.

Breeds in the greatest abundance in the valley of the San Pedro River, where it is probably resident the year through. It appears in limited numbers in the foothills of the Huachucas for a short time in the spring, from the end of March, to about the end of April; and though I have seen none during the breeding season, toward the end of July small flocks were frequently met with, usually composed of a single family; the two parent birds and three or four juveniles.

Aimophila cassini (Woodhouse). Cassin Sparrow.

When I reached the Huachuca Mountains at the end of March, 1902, I found this species scattered in small numbers along the base of the mountains, and took several specimens during the first week in April. At the middle of April it was fairly abundant along the San Pedro River, being generally found in the tall grass; and in June, O. W. Howard found several nests in the valley, some ten miles from the mountains, that probably belong to this species, though none were positively identified. About the middle of March of the same year I took several specimens in the foothills of the Santa Catalina Mountains, near Tucson.

It seems rather irregular in its occurrence, for in 1903, there were none to be found in places where it was fairly abundant the previous year; and the only one seen was a single bird at the base of the Huachucas, on May 14th.

Aimophila ruficeps scotti (Sennett).. Scott Sparrow.

This species proved to be an abundant resident in the Huachucas, particularly favoring those parts of the foothills which, having but little brush, are covered with tall grass and a scattering growth of live-oaks. Though most abundant in the foothills below five thousand feet, they seemed affected more by environment than altitude, and were found throughout the mountains, in all suitable places, quite up to the divide of the range. They were almost invariably seen in pairs, occasionally but rarely, two pair being together. Specimens collected vary considerably in color. This variation is seasonal to a great extent, for birds taken in February and March have the colors of the upper parts obscured by the grayish edgings to the feathers; but aside from this, and irrespective of sex, some are much paler than others. It is only those taken late in the summer, in July and August, in very abraded plumage, that have the rufous of the crown clearly defined and unmixed with other colors.

Melospiza lincolni (Audubon). Lincoln Sparrow.

This species is usually fairly abundant in the spring, frequenting damp shady places in the canyons up to an altitude of 6200 feet. In 1902 I found it in the mountains when I arrived at the end of March, remaining until about the middle of May; but in 1903 the first did not arrive until May 9, and not more than half a dozen were seen altogether.

Pipilo maculatus megalonyx (Baird). Spurred Towhee.

A common resident in the higher parts of the mountains, descending, along the canyons, as low as 5500 feet, but most abundant from 7500 feet upward. During the breeding season a more restricted area is occupied than at other times; for after the young birds begin to appear, about the middle of July, they scatter over the mountains, and are more abundant in the lower canyons than before, but at all times their numbers are greater along the divide of the mountains, in the pines, than elsewhere.

Pipilo fuscus mesoleucus (Baird). Canyon Towhee.

Occurs in limited numbers along the base of the mountains, favoring the more barren foothill region rather than the canyons, where it is frequently seen in company with *Aimophila ruficeps scotti*. It is far more abundant along the San Pedro River than I have found it anywhere in the Huachucas.

Oreospiza chlorura (Townsend). Green-tailed Towhee.

A common migrant, frequenting the lower canyons up to an altitude of about 6000 feet. In 1902 the earliest arrival noted in the Huachucas was on April 2, though I saw some near Tucson, in the Santa Catalina Mountains at the middle of March. They were fairly abundant throughout April, and up to the middle of May; reappearing in the fall on September 1st. In 1903 the Green-tailed Towhee were very late in arriving, the first seen being on May 6th; the last noted, on May 22nd. At this time all that were seen were in the washes issuing from the canyons, specimens being taken a mile or more from the mountains. A male bird, presumably of the previous year, taken on May 8, 1903, has hardly a trace of the rufous crown, and is generally of a duller color and with the markings less sharply defined than in the fully adult bird. An immature female, taken September 1, 1902, has the rufous crown obscured by dusky tips to the feathers; and the whole of the upper parts suffused with a brownish wash.

Zamelodia ludoviciana (Linnaeus). Rose-breasted Grosbeak.

I have in my possession a male Rose-breasted Grosbeak collected by R. D. Lusk in the Huachuca Mountains, on June 29, 1894. From the date at which it was taken it would almost seem as if it was a breeding bird, though I doubt very much that that was the case. This species is undoubtedly of extremely rare occurrence in this region; I have never met with it myself nor do I know of any other specimens secured in the mountains.

Zamelodia melanocephala (Swainson). Black-headed Grosbeak.

This species is one of the most abundant and conspicuous of the breeding birds of this region, and during the summer months the loud, ringing song of the male bird can be heard in all parts of the mountains. They arrive in April, in 1902 the first being seen on April 20th, and the following year on April 28th; and though the first arrivals soon set to

work at their housekeeping, migrating birds were taken up to the end of May. It is rather singular that though in California this species is most abundant in the willow regions of the low lands, here it is pre-eminently a bird of the higher mountains, and, even during the migrations, of very rare occurrence in the lower valleys. During the summer it is most abundant in the highest parts of the mountains, seldom breeding below 6000 feet; but soon after the young leave the nest a downward movement is begun, and up to the middle of August these Grosbeaks fairly swarm in some of the lower canyons, young and old gathering together in enormous, though loose and straggling flocks. They have a bad name with the fruit growers of this region, who destroy them without mercy, and there is no doubt that they are very destructive to the fruit, descending on the orchards in large flocks, and ruining much besides what they eat. A series of eighteen male birds from the Huachuca Mountains shows considerable variation in color and markings, but the most highly plumaged specimens have the lower parts darker than any California birds in my possession, with rather more black on the chin and throat. A well defined tawny postocular stripe is present in many instances, and even in most perfectly marked early spring specimens it is usually indicated by rusty tips to the feathers of those parts which are lost by abrasion at a later date; so that it is really only late summer specimens in worn plumage that have the head solid black without any appearance of these markings. One bird, otherwise as brightly colored and highly marked as any collected, has the black of the head divided by a broad, well defined median stripe reaching quite to the bill, while the postocular stripe is continued, narrowly but sharply defined, over the eye to the nostril. Several specimens taken during the latter part of May were changing from the dull, immature plumage to that of the adult; and such birds are variously marked, streaked more or less underneath, with the bright new black and white wing and tail feathers showing conspicuously against the old dull colored ones, and blotches of old feathers showing on various parts of the head and body. This change seems to be accomplished very gradually, however, and I saw none which appeared very ragged as a result of it. It is noteworthy that in such specimens the postocular stripe is always present, more or less conspicuously, so that it is possible that such a mark is to some extent a mark of immaturity.

The male birds had nearly all left by the second week in August; and such as were taken at this time had not yet commenced to moult their summer plumage, though in many instances the white and tawny edges to the feathers of the dorsum, as well as the scapulars and tertials, had worn off to such an extent as to leave those parts almost uniformly black in appearance. By the middle of August none but females and immature birds remained, and these gradually disappeared, until by the end of the month there were very few to be seen of any age or sex.

***Guiraca caerulea lazula* (Lesson).** Western Blue Grosbeak.

A common summer resident along the San Pedro River, but of rare occurrence in the Huachucas. Several times during August, 1902, I thought I heard the note of the Blue Grosbeak in some of the lower canyons but never secured any. I have seen an adult male taken by R. D. Lusk in the Huachuca Mountains, August 19, 1894.

***Cyanospiza amoena* (Say).** Lazuli Bunting.

During the spring migration this species appears in the Huachucas, not in great numbers, but still in tolerable abundance; but its stay is an

exceedingly short one, more so than any other of the migrating species. In 1903 the first noted was on April 14th; for about a week they were quite plentiful, and then abruptly disappeared. In 1902 I observed a few along the San Pedro River on April 17th; a day or two later they began to appear in the mountains, and by the third week in April had all gone on. In 1896 I saw a very few during the last week in April. They reappear at a very early date, for one was seen on July 22, 1902, and their numbers increased rapidly throughout August. Though at all times more abundant in fairly open ground in the lower parts of the mountains than elsewhere, I have occasionally seen them far up the canyons; and, particularly in the spring, have known them to ascend to as high an altitude as 8000 feet. At such times they were generally in mixed flocks of migrating warblers, vireos, etc.; and fed with them in the tree tops rather than on or near the ground, as they usually do. In the fall the old males were the first to appear, the females and young following later. An adult male taken August 21st has renewed many of the feathers of the head and back, but for the rest it is clothed almost entirely in the old worn breeding plumage. An adult female taken August 11th has almost entirely renewed the plumage of the upper parts, and has many new feathers scattered over the throat, breast and sides.

Cyanospiza ciris (Linnaeus). Painted Bunting.

On July 12, 1902, I secured a male bird of this species, which, on dissection appeared to be an adult, though lacking entirely the bright colors of the old male. The plumage is old and abraded, the upper parts almost uniform dull greenish, while the lower parts are yellowish with a tinge of green on the throat and breast. This bird was taken near the mouth of a canyon, feeding on the ground under some live-oaks, and another, apparently a facsimile of the one secured, was seen close by. Several times during the month of August I imagined I saw others in the same dull plumage in the flocks of *amoena* which were abundant at the time, but no more were secured; and it is difficult, if not impossible, to distinguish with any degree of certainty, the immature of the two species while flying about.

Calamospiza melanocorys Stejneger. Lark Bunting.

The only place in this region where I have found the Lark Bunting really abundant is below Fort Huachuca along the edge of the mesa rising from the Barbacomari River. I have occasionally seen scattered birds along the base of the Huachucas elsewhere, though not many, but here during the migrations they can usually be found in considerable numbers. I saw several small flocks here on April 22, 1902, and secured a male which had nearly acquired the nuptial plumage. The lower parts are nearly all black, and the plumage of the wings and tail has been entirely renewed, but a good many old feathers remain, scattered over the upper parts, and a single pure white one shows conspicuously against the black throat. On May 16, 1902, I saw a large flock and several single birds on the Empire Ranch, some twenty-five miles to the northward of the Huachucas, the latest that I have seen any in this region in the spring. The first to appear in the fall were three adult males which I saw at the base of the mountains on August 10th; while on September 5th, while driving to the railroad, flocks of hundreds were seen on the plains below Fort Huachuca, all moving in a southerly direction. In these flocks none were seen in the black and white plumage of the adult male, so that either the old males had gone on ahead, or had already moulted their summer plumage.

***Piranga ludoviciana* (Wilson).** Western Tanager.

Occasionally during the summer months I have seen Western Tanagers in some of the higher parts of the mountains, so they probably breed in the Huachucas, though in very limited numbers. They are fairly common during the spring migration, the first noted being on April 26, but are more abundant in the lower oak regions than elsewhere, going in flocks of ten or twelve, often in company with the Black-headed Grosbeaks. Such flocks were seen throughout May and early in June, after which they disappeared, except for the stragglers before mentioned, to reappear about the third week in July, rapidly increasing in numbers from then on. Throughout August they remained in large flocks composed mostly of young birds and females, with but a sprinkling of old males, and their favorite food at this time seemed to be the wild cherries, of which there is an abundance in the mountains.

***Piranga hepatica* Swainson.** Hepatic Tanager.

A fairly common summer resident, generally distributed over the mountains during the migration, but in the breeding season restricted more to the canyons between 5000 and 7500 feet. In 1902 the first arrival was noted on April 11th, and the following year on April 16th; about the middle of May they were quite abundant in the higher pine regions, going in flocks of eight or ten, feeding in the tree tops and but seldom descending to the ground. The male birds collected vary but little in shade or intensity of the red coloration, except that late summer birds are paler and duller through abrasion of the plumage, but there is hardly one that does not show some greenish-yellow feathers somewhere in the plumage, sometimes but a scattered feather or two, and sometimes a conspicuous patch of that color. Two male birds secured are strikingly different from the others in that in general appearance they strongly resemble the female, though of a larger size. Possibly this is an immature stage, but it seems to be of rare occurrence; and one of these two birds was taken on April 16th, the first of the species to arrive for the year, which is rather unusual for a young bird; while the other, shot on June 2, 1896, was a breeding bird. The first mentioned is, in coloration, a facsimile of the average female, but the other differs in having chin, throat, and jugulam, bright orange, with some of the same color on the anterior portion of the crown. Females vary, principally on the lower parts, from rather bright greenish-yellow to dark olive-green; while one from the Santa Rita Mountains has the entire under parts, including the lower tail coverts, and excluding the flanks, bright orange-buff.

A young bird taken August 26, 1902, with sex undetermined but probably a male, for it is larger than the average female, is still in the streaked juvenile plumage. Chin, throat, breast and abdomen are heavily streaked with dusky, while the crown, dorsum, rump and lower tail coverts are more faintly marked with the same. A few greenish-yellow feathers are beginning to appear on various parts of the body.

***Piranga rubra cooperi* Ridgway.** Cooper Tanager.

This species proved to be of very rare occurrence in the mountains, during the migration; though it is a fairly common summer resident along the San Pedro River. I have met with it in the Huachucas on but three occasions; a male bird, secured on May 6, 1902, at an altitude of 5700 feet, which is probably as high an elevation as is ever reached by this species; and two females taken near the base of the mountains on May 3, 1902, and May 8, 1903, respectively.

Petrochelidon lunifrons (Say). Cliff Swallow.

At various times during the month of April and May I have seen small flocks of Cliff Swallows passing overhead, usually flying at a considerable height, but I know of no place in this region where the species breeds. As no specimens were secured it is, of course, possible that *P. melanogastra* was also seen, and it may be that all that were observed belonged to that species rather than *lunifrons*.

Hirundo erythrogastra Boddaert. Barn Swallow.

Though the Barn Swallow is an exceedingly common summer resident along the San Pedro River and in the low lands generally in this region, I have seen it along the base of the Huachucas on but very few occasions during the migration.

Tachycineta thalassina lepida (Mearns). Northern Violet-green Swallow.

A fairly abundant summer resident in the higher parts of the range, breeding from 7500 feet upward, but most numerous along the divide of the mountain. The first arrivals were noted on March 12, 1903; a small flock flying about some live oaks at the mouth of a canyon, but they were not at all abundant until about a month later. Toward the end of July, 1902, after the young were out of the nest, they moved down into the lower parts of the mountains, where young and old were seen together in large flocks; the young birds being, in many cases, still fed by their parents.

Ampelis cedrorum (Vieillot). Cedar Waxwing.

Probably of very irregular occurrence. None were seen either in 1896 or 1903, but in the spring of 1902 they were fairly abundant in the lower canyons up to an altitude of 6000 feet. They were seen throughout the month of April, the last observed being a small flock on May 6th.

Phainopepla nitens (Swainson). Phainopepla.

Though this species is an exceedingly abundant summer resident in the lower valleys of this region, it does not, as far as I am aware, breed anywhere in the Huachuca Mountains; but appears in the spring, during the migration, in limited numbers in the foothills. About the end of July, 1902, a movement began from the lower valleys up into the mountains, and during August the Phainopeplas were most numerous throughout the oak region, up to about 5000 feet. At this time they were in loose straggling flocks of from six to a dozen birds, young and old together, and were generally seen sitting in the tree tops and feeding for the most part, as flycatchers.

Lanius ludovicianus excubitorides (Swainson). White-rumped Shrike.

A common resident throughout the brush-covered valleys and lowlands generally, breeding occasionally quite up to the base of the mountains. I found it most abundant in the Huachucas, though even then only in the lowest parts of the foothill region, toward the end of the summer from the last week in July through the month of August; most of the birds seen being young of the year. The shrikes of this region seem to be rather late in their breeding, compared with the California birds.

On March 21, 1903, I saw eight or ten birds in one place near the San Pedro River, evidently pairing off; the males sitting on the tree tops singing, and at frequent intervals fighting among themselves or

pursuing the females. On April 17, 1902, several nests containing from one to three eggs were examined, and the first containing a full set was one containing six eggs, found on April 22nd. An immature bird taken on July 26th, is still to a great extent in the grayish brown vermiculated juvenile plumage, but another, shot on August 6th, is hardly distinguishable from the adult. An adult male taken on August 17th has almost completed the moult, the only old feathers remaining being a few in the wings and tail. It is appreciably darker than the spring specimens.

Vireo olivaceus (Linnaeus). Red-eyed Vireo.

I have an adult male of this species taken in the Huachuca Mountains by R. D. Lusk on May 20, 1895. It is probably a mere straggler to this region.

Vireo gilvus swainsoni (Baird). Western Warbling Vireo.

A very common migrant; but though I thought it possible that a few might remain to breed in these mountains, I was unable to detect any during the breeding season, and they probably go further north; though from the early date at which they reappeared in the fall their breeding ground cannot be at any great distance to the northward. The earliest date at which I have seen this species in the spring was April 21, 1902; the following year the first seen was on April 30th. They were found in all parts of the mountains, though probably most abundant in the oak region, below 6000 feet, and remained in tolerable abundance until about the third week in May. They reappeared before the end of July; I saw several on July 27th, and, though not as abundant as in the spring, they were to be found all through the oak region during the month of August.

Vireo solitarius cassini (Xantus). Cassin Vireo.

A common migrant, found throughout the mountains. The earliest arrival noted in the spring was on April 9th, and the last seen on May 22nd. On September 3, 1902, I saw several and secured two, a male and a female, in newly acquired autumnal plumage.

Vireo solitarius plumbeus (Coues). Plumbeous Vireo.

During the spring migration the Plumbeous Vireo is quite abundant in all parts of the mountains; and at this time I took several specimens from the base of the mountains up to the top of the highest peaks.

During the summer it is not so numerous, though still a fairly common bird, and the breeding birds occupy a more restricted area, being found along the canyons, from 6000 to 8000 feet. In 1902, the first seen was on May 6th; in 1903, one was secured on May 1st, and on May 5th, one was seen at work at a nest which was already well started. Specimens collected show considerable variation in color, and though I took none that could be confused with *cassini*, still some have a considerable admixture of greenish-yellow on the sides and flanks; though the majority have those parts plain, dark plumbeous. A female shot on May 11th, has a number of old, worn feathers scattered over the crown and back as though it were just completing a moult.

Vireo huttoni stephensi Brewster. Stephens Vireo.

Possibly this species remains in the Huachucas Mountains throughout the winter, but I am inclined to doubt it, and if it does it must be in very limited numbers. I secured a single bird as early as February 20th, but no more were seen until March 2nd, when another was taken:

about the middle of March they became more abundant, though not a common bird at any time, and soon after the middle of the month were already in pairs. Upon their first arrival they were found mostly in the live oaks near the base of the mountains, but the breeding range seems to lie between 5000 and 7500 feet. During the breeding season these vireos were very quiet and inconspicuous, and were most easily overlooked; but after the middle of August they began to appear in considerable numbers, and were more abundant at this time than at any other. Specimens taken the middle of August are in the midst of the moult, but some secured the first week in September have nearly completed the change. Birds taken at this time are generally rather darker and more olivaceous than spring specimens, with more greenish-yellow on the edges of the wing and tail feathers. Aside from these seasonal differences the series of specimens I secured here shows very little variation in color, and I took none which approach *huttoni* very closely; but I have a male specimen of *huttoni* taken at Los Angeles on December 6th, 1898, which is almost indistinguishable from autumnal examples of *stephensi*; being quite as pale in coloration, but having rather more greenish-yellow streakings on the sides and flanks than is the case with that race. The bill is also of the larger size which distinguishes the coast race.

Vireo pusillus Coues. Least Vireo.

This species must be of very rare occurrence in these mountains, for the only occasion on which I met with it was on April 8, 1902, when a single bird was seen, but not secured, in a live-oak at the base of the mountains. Along the San Pedro River it is a common migrant, and breeds fairly abundantly in suitable places.

Helminthophila luciae (Cooper). Lucy Warbler.

From April 8th to 12th, 1902, I found this species in very limited numbers, in company with *virginiae*, *gutturialis* and *lutescens*, in some live-oaks at the mouth of the canyon I was camped in. This is the only occasion on which I have found it in the Huachucas, though in the lower valleys of this region it is an exceedingly abundant summer resident. Along the San Pedro River it breeds in great abundance, and O. W. Howard and F. C. Willard have both informed me that in this region the nest is frequently placed in some hole or depression in the steep sides of the "washes" and "draws" which intersect the country draining to the river.

Helminthophila virginiae (Baird). Virginia Warbler.

This species proved to be very abundant during the spring migration, particularly in the lower parts of the mountains; but the most of them seem to go farther north, and but few, compared with the numbers seen in April and the early part of May, remained through the summer to breed. The earliest arrival noted was on April 10th and soon after they were quite abundant, mostly in the oak region below 5000 feet, remaining so throughout April and up to the first week in May, at which time the migrating birds had about all passed on. All that were seen after that I took to be breeding birds, for they gradually moved to a higher altitude, (6000 to 8000 feet) and were nearly all in pairs. About the middle of April, 1902, I found a few *virginiae*, together with other migrating warblers, in the willows along the San Pedro River, some fifteen miles from the mountains. Throughout the summer they were

very quiet and inconspicuous; I once or twice heard the male bird singing from some elevated position, but as a rule they kept quietly in the underbrush, close to the ground, and were most easily overlooked. On May 20, 1903, I found a nest about half finished, which on the 29th contained four fresh eggs. It was built on a steep sidehill about ten feet from a much traveled trail, and was very well concealed; being under a thick bunch of overhanging grass, and sunk into the ground besides, so as to be entirely hidden from view. This was at an elevation of about 8000 feet, which seems to be about the upward limit for this species in this region. About the middle of July, young birds began to appear, and from this time, young and old moved down into the foothill region once more, where I took specimens at various times through the month of August, though they were not nearly as numerous as in the spring.

In the spring males collected there is great variation in the amount of yellow on the breast; in some instances it extends quite to the bill, and over the sides of the breast, while in some few it is restricted to a small, faintly indicated spot. Usually the yellow is restricted to the center of the breast and lower part of the throat, the upper throat and chin being grayish white; and even in the brightest colored specimens there is a more or less well defined line of grayish extending across the yellow of the throat. Just one spring bird shows signs of moult on the chin and throat, the new feathers being yellow, the old ones gray; so possibly it is the older birds which are the brightest in this respect. In some females the yellow marking is almost entirely absent; while in others it is quite bright, more so than in some of the duller colored males; and in the females the chestnut crown patch is sometimes present and sometimes not.

An adult male taken August 18th, which has nearly completed the post-nuptial moult, has the upper parts clear gray with but very little of a brownish cast. The lower parts are grayish, strongly tinged with brown on the sides and flanks, while the yellow of the breast is overcast with grayish, and the chin and throat white, tinged with yellowish buff. An adult female taken August 22nd, in newly acquired autumnal plumage has the upper parts uniform grayish brown, much darker than the male bird just described. The crown patch is present but almost entirely concealed by the brownish tips of the feathers. The yellow of the breast is quite as extensive as in many spring specimens, but overcast with grayish; while the throat and median line of the abdomen are white with a decidedly buffy tinge, the sides and flanks being brownish. A very young male has the upper parts dull grayish brown, the breast, sides and flanks a rather paler shade of the same, while the chin, throat and abdomen are a dirty white. On the median line of the throat and on each side of the breast, a narrow line of buffy yellow pin feathers is appearing. A female, a little older, has the entire lower parts of this buffy yellow hue, a spot on the breast being almost clear yellow. Another, with sex undetermined but probably a female, is about the same but lacks the yellow on the breast, having the lower parts buffy yellow interrupted by a line of grayish feathers across the throat. Two young males taken at a later stage have lost much of the buffy hue of the lower parts, have the chin and throat grayish white, the yellow of the breast quite bright and well defined, and are losing by moult the plumage of the head, upper neck, and back, replacing it with a plumage more like the adult. In one case in which the feathers of the pileum have been

almost completely renewed, there is still no sign of the chestnut crown patch of the adult bird. It is rather curious that in all these juveniles the yellowish rump, and upper and lower tail coverts, are nearly or quite as bright as in the adult.

To sum up, it would seem that on leaving the nest the young bird is in a plumage, grayish-brown above, on the breast and sides, and whitish on throat and abdomen, which is retained but a very short time; a moult of the lower parts taking place almost immediately, and those parts becoming a more or less uniform buffy-yellow from the bill to the anal region. A little later the plumage of the upper parts is moulted, and at the same time the buffy breast and abdomen changes to grayish-white with the yellow breast spot. Through the changes the rectrices and remiges are retained and the bird is now much like the autumnal adult, though lacking the chestnut crown patch, which possibly is not acquired until the following spring.

Helminthophila rubricapilla gutturalis (Ridgway). Calaveras Warbler.

Contrary to my expectations I found the Calaveras to be rather a common migrant in this region, and in the spring at least, occurring in the lowlands as well as in the mountains. The earliest noted in the Huachucas was on April 6th and the last seen on April 25th; while about the middle of April I saw several in the willows along the San Pedro River. In the spring they were most abundant in the oaks at the mouths of the canyons, but also occurred up as high as 6500 feet. They reappeared in the fall on August 18th, and until I left, September 5th, were fairly abundant, but frequented rather different localities than in the spring; for I took none below 5500 feet, and they were most abundant along the divide of the mountain, from 9000 to 10,000 feet, where they fed mostly in the flowers and weeds which had sprung up from the summer rains. Both adults and young were taken at this time, but the old birds seemed to be the most numerous.

Helminthophila celata (Say). Orange-crowned Warbler.

On September 2, 1902, I secured a male bird of this species from where it was feeding in some low bushes at an altitude of 9000 feet. The same day I saw several more apparently the same, fluttering in and out of a thick patch of sunflowers, but was unable to get any of them. The one secured is a facsimile of some fall birds I have taken in Southern California, with the head very gray, grayish-white orbital ring, and the lower parts dull greenish yellow, obscurely streaked with grayish. On April 17, 1902, I secured a female in some willows near the San Pedro River which appears to be of this species. Allowing for the greater abrasion of the plumage, it is practically the same as the autumn bird just mentioned.

Helminthophila celata lutescens Ridgway. Lutescent Warbler.

Although I found the Lutescent Warbler to be a most abundant migrant in the spring in this region, I took but few specimens which can be considered as typical of the race; but one or two, in fact, which are as brightly colored as Pacific Coast specimens. The greater part of those secured appear to be intermediate between *celata* and *lutescens*, but nearer the latter from which they differ principally in being of duller coloration.

Although I have seen the species at Tucson in the middle of March, the earliest arrival noted in the Huachuca Mountains was on April 8th; the last seen on May 5th.

***Dendroica olivacea* (Giraud). Olive Warbler.**

I have not found this species very abundant in the Huachucas at any time, but it is probably resident to some extent, for I secured an adult male on February 21, when the snow was deep on the ground. During March I saw several more, all adult males and single birds, usually with a troop of Pygmy Nuthatches; but it was not until the first of April, when the other warblers were arriving, that they became at all abundant. In 1902, they were few in numbers and I did not get many specimens, in fact but two adult males were observed; but in 1903 they became fairly abundant, particularly in April, when many small flocks of five or six birds each, were seen. I found them only in the pine forests of the highest parts of the mountains, even in cold weather none being seen below 8500 feet; and more were secured above 9000 feet than below it. They were seldom in company with other warblers, but when not alone, associated with nuthatches and creepers. In their actions they are more like vireos than warblers, clambering slowly and deliberately over the branches in the search for food; and uttering at frequent intervals a liquid note much like that of a bluebird, but ventriloquial in its effect, and very difficult to locate. Though frequenting the tree tops to a great extent, they seem singularly tame and unsuspecting, and several times I have had one feeding in some of the lower branches, within arm's reach of me without it's showing the least sign of fear.

The male birds seem to take at least two years in acquiring the adult plumage, being indistinguishable from the female the first year, and I was surprised at the large proportion of birds in this immature plumage that were seen. At a very liberal estimate I should say that the males in adult plumage comprised barely a third of the birds seen in the spring; while in the late summer, when the flocks of juveniles appeared on the scene, the proportion of perfect plumaged males was, of course, much smaller. The male bird breeds in the immature plumage, for on June 21, 1902, I assisted Mr. O. W. Howard in securing a nest, containing four eggs, the parents of which were indistinguishable in color and markings.

About the middle of July young birds began to appear, and throughout August young and old were seen together in small flocks.

***Dendroica aestiva sonorana* Brewster. Sonoran Yellow Warbler.**

A common summer resident along the San Pedro River. It is possible that this species occasionally breeds in the Huachucas, for on several occasions about the middle of June, 1902, I saw a single bird, a female, at the same spot, a small clump of willows in a canyon at an altitude of about 5500 feet. This warbler does not occur in the mountains at all during the spring migration, but in August, 1902, it was fairly abundant up to 6000 feet, the first seen being on August 9, and most of those observed being immature birds. An adult female taken August 26th, in fresh autumnal plumage, is very curiously colored; normally marked below, but the dark olive-green of the upper parts, wings and tail, irregularly blotched with bright yellow; so that in the character of coloration it closely resembles a tame canary.

***Dendroica aestiva brewsteri* Grinnell. Western Yellow Warbler.**

From May 8 to 19, 1903, I found Yellow Warblers in limited numbers in some of the washes immediately below the mountains. At the time I took them to be *sonorana*, but the nine specimens I secured, five males and four females, prove to be indistinguishable from California birds; and were probably migrants en route for the Pacific Coast to-

gether with *D. townsendi*, *D. occidentalis*, *Vireo s. cassinii*, and others passing through here at the same time.

Dendroica auduboni (Townsend). Audubon Warbler.

I was surprised at not finding this species in the mountains during the winter months, but it seems to occur in the Huachucas only as a migrant. A single bird was seen near the base of the mountains on March 6th, but he was much in advance of the rest of his tribe, for no more were seen until March 24th; after which they steadily increased in numbers until the end of April. A great many were seen in the pines on the top of the mountain on May 11, 1903, and they left rather abruptly about a week later. Though distributed over all parts of the mountains, they were at all times more abundant in the higher pine region, than elsewhere; and on April 24, 1903, I found them particularly numerous along the divide of the mountains, evidently migrating. They could hardly be said to be in flocks on this occasion, for along the ridge, which runs almost due north and south, there was for several miles a continuous stream of Audubon Warblers travelling rapidly from tree to tree, always moving in a northerly direction; sometimes a dozen or more in one pine, and sometimes only two or three, but never stopping long and all moving in the same direction. Almost all that were seen on this occasion were high plumaged males, hardly half a dozen females being observed for the day.

Dendroica auduboni nigrifrons (Brewster). Black-fronted Warbler.

This, the only form of *auduboni* that breeds in the Huachucas, occurs during the summer months, though in rather limited numbers, in the higher pine regions from 8500 feet upwards. On one occasion, April 5, 1903, I secured a male *nigrifrons* from a flock of *auduboni* feeding in some live-oaks near the mouth of one of the canyons at an altitude of about 4500 feet, but this is the only time that I have seen it below the altitude given above; and it is also exceptional in the early date of its arrival. No more were seen until the second week in May, which seems nearer the usual time of arrival, for in 1902, the first seen was on May 9th. A young bird just from the nest was secured on July 1, 1902, and another about the same age was taken on July 13th. A young male taken August 19th, which has discarded the streaked juvenile, for the first winter plumage, is practically indistinguishable from specimens of *auduboni* at the same stage, being perhaps a shade darker throughout. In two adult males, taken August 26th and August 30th, respectively, which have practically completed the postnuptial moult, the black of the under parts is quite as extensive as in spring birds, but obscured by gray tips to the feathers. In one the feathers of the back are much as in spring birds, though with rather broader gray edgings and overcast with a faint wash of brown; while the white patch formed by the edgings and tips of the middle and greater wing coverts is nearly perfect. In the other, the plumage of the back is overcast with brown to such an extent that hardly a trace of the dark centers of the feathers is discernable, while the white wing patch is heavily washed with the same.

Several specimens were taken intermediate in their characteristics between *auduboni* and *nigrifrons*; some, of the size of the latter, though in color but little darker than *auduboni*, while some show every gradation of color between the two extremes.

In the darkest specimens of *nigrifrons* the black of the under parts extends from the yellow throat patch to the flanks uninterruptedly, even

the white of the abdomen being mixed with black; while the yellow areas on the throat, crown, and sides, are more restricted in size, and brighter in color, as compared with *auduboni*. In one specimen there is a black line, narrow but well defined between the yellow of the throat and the lower mandible. But two adult females of *nigrifrons* were secured; both are darker than female examples of *auduboni*, and with the yellow areas more restricted. In one the breast, sides and flanks are covered with rather narrow, sharply defined black streaks; the other has the breast and sides uniformly black, but with the feathers broadly edged with lighter, producing a dark slaty appearance, while the flanks are streaked with dusky.

Measurements (in inches):

	Length.	Alar ex- panse.	Wing.	Tail.
<i>Dendroica auduboni nigrifrons</i> .				
Average of nine adult males...	5.96	9.84	3.26	2.36
Maximum	6.12	10.18	3.40	2.37
Minimum	5.81	9.56	3.18	2.30
<i>Dendroica auduboni</i> .				
Average of twelve adult males...	5.79	9.49	3.05	2.26
Maximum	6.06	10.	3.30	2.37
Minimum	5.62	9.06	2.94	2.25

Dendroica graciae Baird. Grace Warbler.

Of very irregular occurrence; in the spring of 1902, I saw but a single bird, whereas in the following year it was fairly abundant during the spring migration. In 1896 it was still more abundant, and what is rather unusual remained to breed in considerable numbers. The earliest arrival noted was on April 12, 1903; they remained fairly numerous throughout the month and disappeared about the first of May. A bird of the pine woods, it was found almost exclusively in the higher mountains, all that were taken being above 8000 feet, with the exception of a few secured in the spring of 1896 as low as 6000 feet. In their travels they associated with the other migrating warblers, particularly with *occidentalis* and *townsendi*, and I found it by no means easy to distinguish the various species in the tree tops; though *graciae* acts more like a fly-catcher than any of the others, constantly flying out from the trees to a considerable distance after insects. Several juveniles were taken during July, 1896; and in July and August, 1902, one immature and six adults in fresh autumnal plumage were secured. A young male taken July 13th is in the brown streaked plumage, but yellow feathers are beginning to appear along the median line of the throat and upper breast, and the yellow superciliary stripe is also beginning to show. Another, a little older, has the streaks of the lower parts restricted to the sides and flanks, and the yellow markings nearly perfect. A male taken on July 30th, which has just discarded the juvenile for the winter plumage, differs from the autumnal adults in having the white of the under parts more strongly tinged with buff; and whereas the adult has the back decidedly streaked, though the markings are overcast by the brownish edgings to the feathers, in the juvenile these markings are but imperfectly indicated. Autumnal adults have the upper parts overcast with brown to such an extent, that except on the sides of the crown where a little of the black shows through, the characteristic markings are entirely hidden. Females are even more brown than the males, and have the black streaks on the sides of the breast and flanks nearly concealed as well.

Dendroica nigrescens (Townsend). Black-throated Gray Warbler.

A very common summer resident, occurring principally below 7500 feet, and favoring the brush covered hills of the oak belt to a great extent. The earliest arrival noted was on March 31st.

Dendroica townsendi (Townsend). Townsend Warbler.

One of the most abundant of the migrating warblers in this region. In the spring I found it in all parts of the mountains, but most abundant along the canyons from 5000 to 7500 feet. The first seen was on April 9th, and the last May 15th. At the beginning of the fall migration in 1902, a few were seen in the pines above 9000 feet on August 19th; and they remained in limited numbers up to the time I left the mountains, September 5th.

Dendroica occidentalis (Townsend). Hermit Warbler.

A common migrant both in the spring and fall. The first arrivals appeared in the very highest parts of the mountains, but a little later they could be found in all parts of the range, and on April 17, 1902, I saw a few in some willows near the San Pedro River. The first seen in the spring was on May 9th, and the last, May 28th. They reappeared in August, but at this time were seen only in the pines above 8500 feet. It is rather singular, and in contradiction to the idea that in the migrations the old birds go first in order to show the way, that the first secured in the fall was a young female, taken August 7th. The young birds then became very abundant, and on August 14th the first adult female was taken; and not until August 19th was an adult male seen. The adults then became nearly as abundant as the juveniles, and both together were more numerous than I have ever seen them in the spring, on several occasions as many as fifteen to twenty being seen in one flock.

The young birds of both sexes were in many instances quite indistinguishable in coloration, none of the young males having as much black on the throat as the adult female.

Seiurus noveboracensis notabilis (Ridgway). Alaska Water-Thrush.

I met with this species on but one occasion, August 31, 1903, when I secured a female at an altitude of about 5500 feet. Scott has recorded its occurrence in the Santa Catalina Mountains in September, and Henshaw, at Camp Crittenden in August, so it may very possibly prove to be a regular fall migrant through this region.

Geothlypis tolmiei (Townsend). Tolmie Warbler.

A fairly common migrant in the lower parts of the mountains, occurring up to 6000 feet, mostly in the thick underbrush along the streams. I observed it in the spring from April 11th to May 18th; in the fall one was seen on August 21st, and through the rest of the month it was fairly abundant, though not as much so as in the spring.

Geothlypis trichas occidentalis Brewster. Western Yellow-throat.

A rare migrant in the mountains though of common occurrence in the lower valleys of this region. In the Huachucas I have seen it on but two or three occasions, and then only in the lowest parts, at the mouths of the canyons and in the washes below. A male was secured, and another seen, on May 8, 1903, and a female taken on May 22nd.

A breeding male taken on the San Pedro River, about twenty miles from the mountains, on July 6, 1902, and submitted to Mr. Ridgway, was pronounced by him as "inclining toward *G. t. melanops*." This bird

is of about the same size as the migrating yellow throats that pass through this region, but is very different in coloration. The entire lower parts, including the lower tail coverts, are bright yellow, darker on the flanks. The upper parts are greenish yellow, even the grayish white of the crown and sides of the neck being strongly suffused with the same color; while the black "mask" is continued in a long point, further down the sides of the neck than in the case with *occidentalis*.

Icteria virens longicauda (Lawrence). Long-tailed Chat.

In 1896 several pair of Chats bred in the vicinity of our camp in Ramsey Canyon, at an altitude of about 5500 feet, but this is the only place in the mountains where I have known them to do so; and the only year in which I have seen them through the summer months. As a rule two or three migrating birds seen during April near the base of the mountains, are all that appear; though along the San Pedro River they breed in tolerable abundance.

Wilsonia pusilla pileolata (Pallas). Pileolated Warbler.

An exceedingly common migrant in all parts of the mountains, though most abundant below 6000 feet. It was observed in the spring from April 12th to May 22nd; reappearing in the fall on August 21st. On August 26, 1902, I saw a Pileolated Warbler on the summit of the highest peak in the mountains, about 10,000 feet altitude. All the specimens secured are referable to *pileolata* rather than *chryseola*, though the latter also might be expected to occur here as a migrant.

Setophaga picta Swainson. Painted Redstart.

One of the most beautiful of the summer residents of the mountains, the Painted Redstart is pretty sure of receiving rather more than his fair share of the attention of the visiting ornithologist, for it is abundant in numbers, and, for such a bright colored bird, not at all shy. In fact, instead of escaping observation he seems to court it, for with wings and tail outspread, and feathers puffed out to show their beauties to the best advantage, he can be seen clambering over tree trunks or mossy rocks, turning now this way and now that, as if conscious and proud of his beautiful appearance even when engaged in the commonest duties of life, gathering insects for the young or material for the nest. Females, as well as males, strut about in the same ostentatious manner, for in color and appearance the sexes are absolutely indistinguishable; and even the dull colored juveniles adopt the same style as soon as they are able to fly. They are most abundant in the damp, shady canyons in the breeding season, between 5500 and 8000 feet; but during the migrations, though ascending no higher, they are more generally distributed over the mountains, and can be found quite to the base of the range. They reach the mountains very early in the spring, the first arrival being noted on March 15th, and a week or so later they were quite abundant. At all times rather a solitary bird, they are never to be seen in the mixed flocks of migrating warblers, but prefer rather to forage for themselves; and I have never seen more than a pair of birds together, except for the short time that the adults tend the young after the latter leave the nest. Though feeding to some extent in the underbrush, and even on the ground and over the rocks, they do not stick closely to such places as do the Tolmie Warblers and Yellow-throats; nor on the other hand do they frequent the extreme tree tops and tips of the limbs as the Townsend, Hermit and other Warblers do, but preferring rather the medium between the two extremes, they can be seen clambering about the sides

of the tree trunks and over the larger limbs, examining the crevices and interstices in the bark in search of food, and occasionally flying out a short distance after some passing insect. A call note is uttered at frequent intervals, not unlike the peep of a young chicken, and occasionally the short, low song of the male can be heard. Though this is usually given utterance to between intervals of feeding, I have once or twice, usually in the early morning, seen the male bird ascend to the top of a tall tree, and from the tip of some dead limb repeat his song, sometimes for half an hour before descending. Though the nest is usually built near the bottom of the canyon, and generally close to the water, this is not always the case, for I saw one nest that the birds had built in a crevice on the side of an open cut leading into a tunnel on a ridge between two canyons, and nearly a mile from water. The strangest part of it was that two men were working and blasting, daily in the tunnel without the birds seeming disturbed. When the young appear, the first being seen about the end of June, they are dark sooty black, rather paler on the abdomen, but they quickly begin to lose this plumage; most of those secured having a few glossy black feathers showing on the back, and one or two red ones on the lower parts. The juvenile plumage is moulted entirely with the exception of the remiges and rectrices, (even the wing coverts being renewed, though the pattern of coloration is the same in the juvenile as in the adult); specimens taken during July and August being variously intermediate in color, and more or less covered with pin feathers. The adults moult at the same time; one taken on August 20th having entirely completed the change, though others secured later have many pin feathers still scattered over the body. By the first week in September, however, the moult is practically completed, and at this time young and old are indistinguishable in color; only differing from spring specimens in a slightly scaled appearance of the red of the lower parts, due to those feathers being faintly tipped with grayish.

Cardellina rubrifrons (Giraud). Red-faced Warbler.

The Red-faced Warbler and Painted Redstart are always associated together in my mind, being both of a tropical appearance in decided contrast with their duller colored associates, and essentially alike in their habits and modes of life. They inhabit rather different areas in the mountains, *rubrifrons* being found during the breeding season from 7000 feet upwards, and in the migrations as abundant in the higher pine regions as anywhere. The first arrival was noted April 20th, and up to the middle of May they were seen in considerable numbers along the canyons, often in company with other migrating warblers. During the breeding season their numbers seem to be greatly decreased, but this is probably more apparent than real, as at this time they are very quiet and inconspicuous; and as soon as the young begin to appear, about the middle of August, are as numerous as ever. The moult takes place in August, and specimens secured immediately after, in fresh autumnal plumage, have the white of the under parts strongly tinged with pink. Early spring specimens have this pinkish tinge, though in a lesser degree, but in breeding birds taken during May and June it is almost entirely absent. After the young leave the nest they spread out more and descend to rather a lower altitude, though I have never taken specimens below 5500 feet, and at the same time they can be found in the highest parts of the range.

A nest containing four eggs, found on May 20, 1903, at an altitude of about 8500 feet, was well concealed under an old rotten log, on a steep

bank by the side of a trail, and could never have been seen had not the bird darted from the nest when it was approached.

Cinclus mexicanus Swainson. American Dipper.

On August 4, 1902, I saw a dipper in the narrow, rocky defile known as the "Box" in Ramsey Canyon. Several times in the month of August I saw what was probably the same bird, in this place; but it was so wild as to be unapproachable, and though it never flew to any great distance I was quite unable to get a shot at it.

Mimus polygottos leucopterus (Vigors). Western Mockingbird.

A summer resident in the lower canyons and very abundant in the washes leading from the mountains. It does not seem to remain during the winter, for though a single bird was seen on February 18th, I believe it was one that had strayed from the valley below, and quickly returned there, for no more were seen until the middle of April. As the summer advances they ascend higher and higher in the canyons, about 5500 feet being their upward breeding limit; but on one occasion, August 14, 1902, I saw a Mockingbird right on the divide of the mountain at an elevation of about 8500 feet. Specimens taken the first week in May were not yet breeding, and a female secured on May 18th had laid part of its set; while on July 5th I examined eight or ten nests along the San Pedro River, all of which contained eggs in various stages of incubation.

Toxostoma curvirostre palmeri (Coues). Palmer Thrasher.

Breeds in very limited numbers in the lower parts of the mountains, none being seen above 5000 feet. It is common enough in the brush covered valleys below, and after the breeding season, moves up toward the mountains to some extent. During August young and old, equally ragged in appearance, were seen along the foothills in considerable numbers; but they were very shy and difficult to approach, and from their disreputable appearance I did not covet them very much, so secured but few specimens.

Toxostoma crissalis Henry. Crissal Thrasher.

This is apparently a very rare species in this region, for a juvenile, though fully fledged, female, secured August 9, 1902, at the base of the mountains, is the only one I have seen. This bird, as well as the Palmer Thrasher, was busily engaged in grubbing up a species of small black beetle which abounds after the summer rains, from the shallow burrows that it occupies.

Heleodytes brunneicapillus couesi (Sharpe). Cactus Wren.

I have never seen the nest of this species in the Huachuclas, though very possibly it breeds in limited numbers in some parts of the range; but in the valley below it is a common resident, ascending, together with the thrashers, to the base of the mountains after the breeding season.

Salpinctes obsoletus (Say). Rock Wren.

A common resident in the stony foothill region, ascending in places up to 5000 feet. I could discern no difference in the distribution of the species at the different seasons.

Catherpes mexicanus conspersus Ridgway. Canyon Wren.

Resident throughout the mountains, though nowhere very abundant, the Canyon Wren is to be found around the steep cliffs and precipices bordering the canyons, or on the rock strewn foothills. A female secured on April 12th contained an egg about ready to be laid; and by the middle of June troops of young led by their parents were seen in many places.

Thryomanes bewicki leucogaster (Baird). Baird Wren.

I found this wren to be quite common in the lower parts of the mountains, ranging up to about 6000 feet, and occurring also in suitable localities in the valley below. It appeared to be resident, and I could discern no increase in the number of birds seen during the migration.

Though a common species the nest is quite difficult to find, and I have seen only three or four, all built in cavities in the trees, from six to fifteen feet from the ground.

Specimens secured vary much in size but little in color, though the only autumnal adult taken, a male on August 17th which had nearly completed the moult, is appreciably darker than any spring specimens.

Troglodytes aedon aztecus Baird. Western House Wren.

An abundant summer resident in the higher parts of the mountains, breeding from 7000 feet upward, but most abundant in the pine forests above 8000 feet. Upon their arrival in the spring, the first being noted on April 8th, they were distributed over all parts of the range, but soon withdrew to the higher altitudes to breed; nor did they descend again when the young were out of the nest, as so many species similarly placed, did. Spring specimens are uniformly very pale, and easily distinguished from *parkmani* of the Pacific Coast; but a male taken September 2nd, which has quite completed the moult, is much darker than the spring birds and bears a close resemblance to fall specimens of *parkmani*.

Olbiorchilus hiemalis pacificus (Baird). Western Winter Wren.

I met with this species on but one occasion, on April 2, 1902, when a male bird was secured at an altitude of 5500 feet. It is probably a straggler from the Pacific Coast, of rare and irregular occurrence.

Certhia familiaris albescens (Berlepsch). Mexican Creeper.

A fairly common summer resident in the higher pine regions, and as a rule restricted to those parts and but seldom descending below 7000 feet. The earliest arrival noted was a female, taken with a female of *C. f. montana*, on March 3, 1903, at an altitude of 5700 feet, the lowest altitude at which I have ever found the species. About ten days later they were fairly numerous along the divide of the mountains, where the faint call note peculiar to the species could be frequently heard, though the birds themselves generally succeeded in evading observation. About the middle of July young birds began to appear, and they seemed more abundant at this time than at any other. As with many other species breeding in the higher parts of the range, a downward movement began about this time, and though never descending to the foothills, in the late summer Creepers were found scattered all through the upper part of the oak belt. The juveniles seem to be attended by their parents for a long time, for up to the first week in September, when young and old were practically indistinguishable in size and general appearance, the families

still clung together, and the old birds were seen continually feeding their offspring.

In differentiating this race great stress has been laid upon the absence of white markings on the primary coverts of *albescens*, a characteristic which is not borne out by the series before me, for out of fourteen specimens, young and old, there are just three that lack these markings. In most cases they are quite as distinct and apparent as in any specimens of *selotes*, or the two examples of *montana* in my collection.

Certhia familiaris montana Ridgway. Rocky Mountain Creeper.

A creeper submitted to Mr. Ridgway and pronounced by him to be *montana*, was secured in Miller Canyon on March 1, 1903, at an altitude of 5500 feet. Another bird practically the same in markings and coloration, and referred to above, was taken on March 3rd in the same canyon. These were probably migrants going further north, and they may be of regular occurrence in this region during the migrations. The paler coloration, above and below, longer and more slender bill, and generally larger size, serves to distinguish this race from the breeding bird (*albescens*) of the mountains of Southern Arizona.

Sitta carolinensis nelsoni Mearns. Rocky Mountain Nuthatch.

Resident throughout the mountains, though most abundant in the higher pine regions. During the cold weather it is quite common in the oaks along the base of the mountains, but though a few breed there, the majority of them ascend to a higher altitude in the summer. Several were seen hard at work excavating for their nests on April 6th; and a set of eggs was secured by O. W. Howard on April 19, 1902. They seem to be at all times rather solitary birds, and though a single one may occasionally be seen in a flock of Pygmy Nuthatches or Chickadees, I cannot recall ever seeing more than a pair of them together. Birds taken in August and September are much darker than spring specimens, and some males, possibly immature, have the black of the crown extending in disconnected spots on to the dorsum.

Sitta canadensis Linnaeus. Red-breasted Nuthatch.

On April 6, 1902, I secured four Red-breasted Nuthatches from a flock of a dozen or more feeding in some pines in a steep, narrow canyon, at an altitude of about 8500 feet. This is the only occasion on which I have seen the species in the Huachucas, and from the scarcity of records it would seem to be of rare occurrence anywhere in Arizona.

Sitta pygmaea Vigors. Pygmy Nuthatch.

An abundant resident, though restricted entirely to the higher parts of the range and rarely descending as low as 6000 feet, the Pygmy Nuthatch is seen and heard everywhere in the pine regions; going about in large flocks and travelling rapidly and restlessly from tree to tree. During the migrations they seem to form a sort of nucleus for other birds to gather around, and are usually accompanied by a number of migrating warblers vireos, etc. Many of them remain in small flocks up to the middle of May, though others may be seen at work at their nests in some old stump early in April; so by the time the last of them are paired off, those that first went to work are nearly ready to appear with their broods, and there is consequently hardly any time when Pygmy Nuthatches are not to be seen in flocks.

Baeolophus wollweberi (Bonaparte). Bridled Titmouse.

This, one of the characteristic birds of the mountains of Southern Arizona, is found in the greatest abundance everywhere in the oak regions of the Huachucas, breeding occasionally up to 7000 feet, but most abundant below 6000 feet. On one occasion, late in the summer, I saw a Bridled Titmouse in a flock of Lead-colored Bush Tits on the divide of the mountains at about 8500 feet, but it is very unusual to see the species at such an altitude. In February and March they were in small flocks of from twelve to fifteen birds, and about the middle of March they began to pair off, though one or two small flocks were still seen during the first week in April. Early in June young birds began to appear, and soon the broods, attended by their parents, were seen everywhere in the oaks. The young are essentially like the adults as to the markings about the head, but duller colored and with the black of the throat more or less obscured by grayish. About the middle of July the adults commence to moult, the new plumage being entirely acquired by about the first of September. Adults in fresh autumnal plumage are more olivaceous on the dorsum and rump than are spring specimens, which are usually of a more uniform grayish cast throughout. At the end of August they were gathered in rather larger flocks than I have seen them in at other times, sometimes as many as twenty or twenty-five being seen together.

Psaltriparus plumbeus Baird. Lead-colored Bush-Tit.

I found this species in the Huachucas in February, though not as abundant as it was later on, nor did I see any in the higher parts of the range until later in the spring. During the summer it seems to be equally distributed over all parts of the mountains, from the highest peaks down to the groves of live oaks on the plains immediately below the mountains. About the middle of March the birds commenced to pair off, and I found one nest about half finished on March 26th. The earliest nests found were all in the lower foothill regions, built mostly in scrub oak and small juniper trees, usually not over eight or ten feet from the ground; but later in the season they nest abundantly in the higher altitudes, sometimes high up in the pine trees. I saw one nest at the very top of a tall pine, but the tree was growing on a steep hill side, and the nest was about on a level with the trail from which I saw it. Of the spring specimens collected, the majority had bright yellowish-white eyes; but in about a third of either sex the iris was brown; several of the adults have the flanks decidedly tinged with vinaceous. I took no specimens that could be referred to *lloydi* though several juveniles, undoubtedly *plumbeus*, have some slight indication of a dusky line over the auriculars; and one young female has a fairly distinct, though narrow, black line or collar across the hind neck.

Auriparus flaviceps (Sundevall). Verdin.

Though the Verdin is exceedingly abundant along the San Pedro River and everywhere in the lowlands it but very rarely ventures up into the mountains, and I have seen it in the Huachucas but once or twice, and then only in the foothills. I have seen one or two old nests in some of the canyons so it sometimes breeds in the mountains, though probably very rarely.

Regulus calendula (Linnaeus). Ruby-crowned Kinglet.

A common migrant and probably a winter resident. I saw a few in February, but they did not become abundant until about the middle

of March, when their numbers were suddenly greatly increased. At this time they could be seen feeding in trees along the streams in flocks of from fifteen to twenty-five individuals, being larger gatherings of these birds than I have seen elsewhere. Though occurring in all parts of the mountains up to the highest peaks, they were most abundant in the canyons below 7000 feet; and remained until about the middle of May, the last being seen May 13th. In the fall, up to the time I left, September 5th, they had not yet returned.

Polioptila caerulea obscura Ridgway. Western Gnatcatcher.

This is the only species of gnatcatcher I have observed in the Huachucas. On the brush covered plains below, and along the San Pedro River, *plumbea* breeds in moderate abundance, but I have never seen it in the mountains, the altitude being probably too high. *Obscura* is probably resident in the Huachucas, though I have not found it very abundant at any time; and it does not seem to range above 6500 feet, and but rarely to that altitude. It seemed more particularly to frequent the rather barren foothill country, staying in the oaks and brush high up on the hill sides rather than in the canyons. I saw several already paired on April 7th.

Myadestes townsendi (Audubon). Townsend Solitaire.

The Townsend Solitaire occurs in this region only as a migrant, passing through early in the spring. The first noted was on March 7th, and the last on April 30th. They were found in all parts of the range, for I took specimens at nearly 10,000 feet, and others in the washes below the mountains. They preferred rather open ground, and in the canyon I did most of my collecting in there was a large patch of cleared ground which they seemed particularly to favor, and occasionally as many as eight or ten birds could be seen sitting on the tops of the trees surrounding the clearing. As a rule they stayed high up in the trees, and were at all times shy and hard to approach. They were in full song before they left.

Hylocichla ustulata (Nuttall). Russet-backed Thrush.

Hylocichla ustulata swainsoni (Cabanis). Olive-backed Thrush.

In 1896 two thrushes from the Huachuca Mountains sent to Mr. Ridgway to be identified were returned to him labelled, the one *ustulata*, the other *swainsoni*. These two represent the extremes of color of a considerable series of these birds from the region under consideration, the one (*ustulata*) being an extremely pale colored bird, sparsely marked on the breast, indistinguishable from breeding birds from Southern California; while the other (*swainsoni*) is a very dark colored heavily marked bird. Between these extremes the specimens collected form an unbroken chain, so that it is impossible to say where the one ends and the other begins. The series of *swainsoni* are all very olivaceous in their coloration, without any trace of the grayish on the upper parts that Mr. Oberholzer ascribes to the sub-species *almae*, (Auk. XV, page 303). otherwise I should think it more probable that the Huachuca Mountain birds belonged to that race than to *swainsoni*.

These two varieties appear in the spring at about the same time, and in the same localities, being abundant along the streams in the lower canyons at a time when most of the migrants have already passed on, to their breeding grounds. I have specimens of both *ustulata* and

swainsoni taken on May 2, 1902, which is the earliest date on which I have noted them, and they remain until about the end of the month.

***Hylocichla guttata* (Pallas).** Alaska Hermit Thrush.

The Hermit Thrushes as found in this region are an interesting though rather puzzling group, for though the individuals were never at all abundant, the number of varieties found passing through during the migrations was surprising. The birds were all extremely shy and hard to approach, and it was only by hard work that I managed to secure as many specimens as I did. In all twenty-four Hermit Thrushes were obtained, representing the following races: *guttata* (9), *auduboni* (10), *nana* (1), *slevini* (4). These figures probably represent pretty accurately the relative abundance of the various races. The specimens of *guttata* were all taken at a low altitude, none above 5500 feet; usually in thick brush along the canyon streams. One specimen (No. 3434, March 1, 1903) is an extremely grayish colored bird, with the spots on the breast ill-defined and run together, and may possibly represent the Sierra Nevada form *sequoiensis*, but in size it does not differ from true *guttata*.

Possibly a few of these thrushes spend the winter in the Huachucas, for one was taken as early as February 19 (1903); the last secured was on April 20 (1902).

***Hylocichla guttata auduboni* (Baird).** Audubon Hermit Thrush.

Very possibly this thrush breeds in some parts of the Huachucas, though if it does it must be in very limited numbers, for personally I have never met with it except in the migrations. I secured most of my specimens of *auduboni* in the highest parts of the range, feeding, not in the thick bushes and underbrush, as most of the thrushes do, but on the open ground under the big pines, scratching and working in the pine needles with which the ground was thickly covered. One or two specimens were secured in the canyons as low as 6000 feet, but the great majority of the birds seen were along the divide of the mountain, from 8500 feet upward. The earliest arrival noted was one secured on April 18 (1903), and the latest a female shot by W. B. Judson on May 19 (1896). This last is in badly worn plumage and may have been a breeding bird; they were most abundant about the first week in May.

***Hylocichla guttata nana* (Audubon).** Dwarf Hermit Thrush.

From its extremely dark coloration and rich markings I have ascribed to this race a female, shot in a thick tangle of wild grape vines and other shrubbery, near the mouth of Miller Canyon on April 6, 1903.

***Hylocichla guttata slevini* (Grinnell).** Monterey Hermit Thrush.

This seems to me to be a perfectly distinct and easily distinguishable variety, about the recognition of which there should be no hesitation, for in size it departs from *guttata* as far to one extreme as *auduboni* does to the other; and the extremely pale coloration of *slevini* also renders it one of the most easily recognized of the rather puzzling branches into which the Hermit Thrush divides. At first it seems strange to find a bird belonging so decidedly to the Pacific Coast wandering as far as eastern Arizona, but when we consider that such species as the Hermit and Townsend Warblers, Cassin Vireo, and others, pass regularly through this region, it is evident that there is a regular line of migration from the Pacific Coast to the southeast, in spite of the formidable

deserts that intervene, and might be expected to form an utterly impassible barrier.

I believe *slevini* to be a fairly common migrant in the Huachucas, though but few specimens were secured, for it is an extremely shy bird, and from the nature of the ground frequented, exceedingly difficult even to get sight of. *Auduboni* was found mostly in the pine woods, and *guttata* along the canyons, but *slevini* seemed to prefer the dense thickets covering the steep, dry, hillsides, an unpleasant place to travel in at any time, and almost hopeless ground in which to pursue a shy, secretive bird like the present species. The specimens secured were, a male shot on March 9, 1903, and two females taken on May 8th, and another on April 19, 1902.

I have a specimen of *slevini* in my collection, from which the label was unfortunately lost, which was one of a lot of skins (now in the possession of W. Lee Chambers) put up by R. D. Lusk in the Chiricahua Mountains. If this specimen came from that range, as would seem to be the case, it probably indicates the extreme eastern limit to which the species wanders.

***Merula migratoria propinqua* Ridgway. Western Robin.**

This species is a fairly common resident in the Huachucas, and I could see no difference in its numbers at different seasons. During the cold weather the Robins could be found in abundance along the lower canyons and through the foothills generally, but by the end of April they had retreated to the higher pine regions, few being seen below 8000 feet during the breeding season. I took fully fledged young on July 1, and by the middle of the month they began to move down to a lower altitude, the spotted juveniles being seen in all parts of the mountains.

***Sialia mexicanus bairdi* Ridgway. Chestnut-backed Bluebird.**

During February and the early part of March I found the Chestnut-backed Bluebirds quite numerous in the lower foothills, and on the plains immediately near the mountains, being entirely absent from the higher parts of the range, where the snow still lay deep on the ground; but about the middle of March they began to move upward, and by the first of April there were none to be seen except in the higher pine regions, their breeding grounds. Here they remained through the summer in the greatest abundance, none being seen below 8000 feet, and being most numerous along the divide of the mountain. About the middle of August they began, to some extent, to move down to a lower altitude once more, for the evening of August 12th a small flock was seen flying overhead near the base of the mountains.

The male birds collected show considerable variation in the shade and intensity of the blue coloring, but are remarkably uniform in the pattern of the markings; having with hardly an exception the interscapular region "solid" chestnut, and the sides and flanks of the same color extending broadly across the breast. In just one specimen, a breeding bird in rather worn plumage, the blue of the throat and abdomen just meets on the median line of the breast; while the chestnut of the upper parts is reduced to a mere line across the back. A juvenile male taken August 26th is still in the spotted plumage, though with large chestnut patches appearing on the sides and flanks.

Passer domesticus (Linnaeus). English Sparrow.

In the report on the English Sparrow published by the Department of Agriculture in 1889, this species was reported as present at Camp Huachuca in the summer of 1886 (page 200, l. c.). I have never seen the bird either in the grounds of the post or anywhere in the surrounding country, and it has probably been exterminated in this region since that time.

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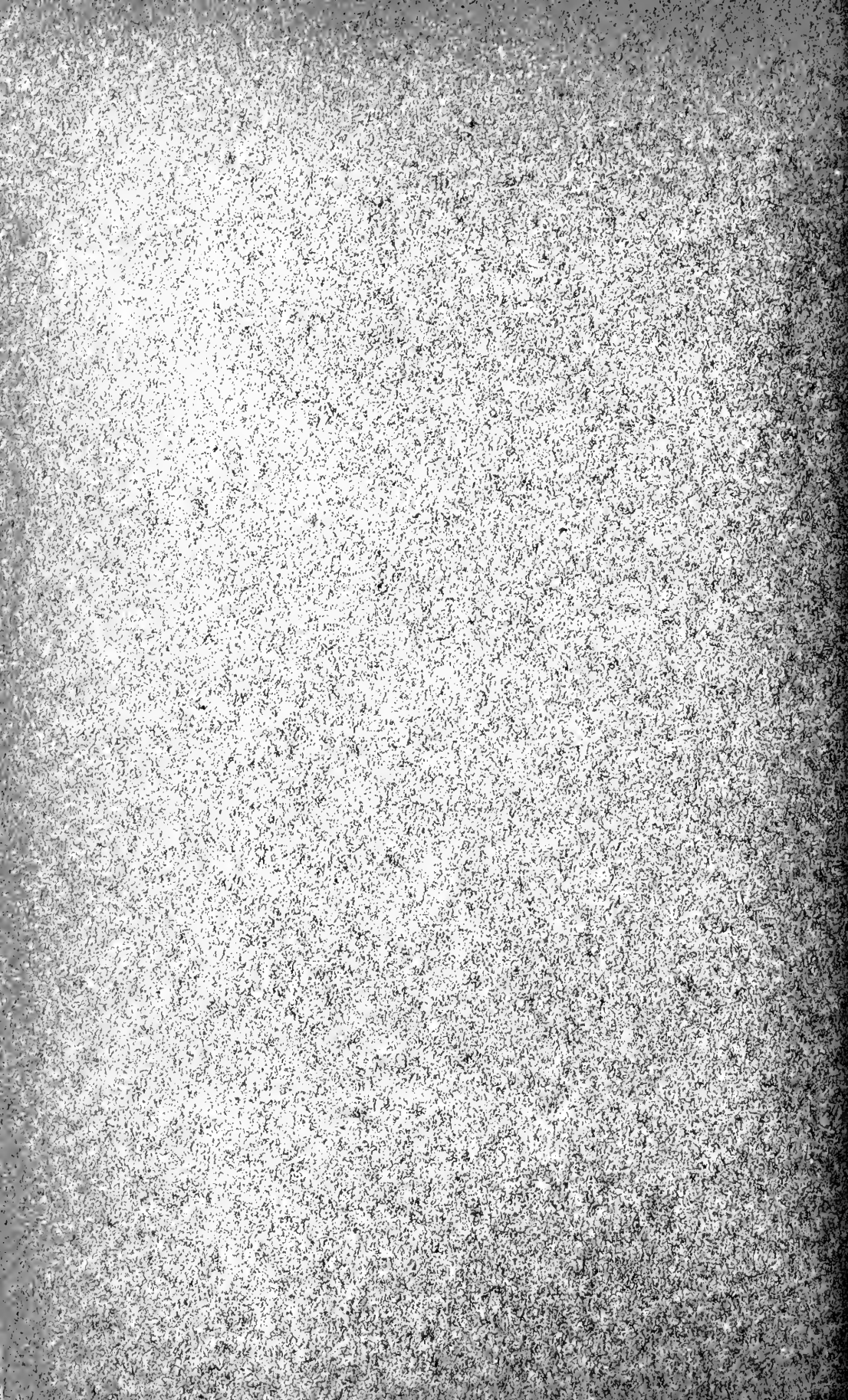
BY
JOSEPH GRINNELL

A CONTRIBUTION FROM THE MUSEUM OF VERTEBRATE ZOOLOGY
OF THE UNIVERSITY OF CALIFORNIA



SANTA CLARA, CALIFORNIA
PUBLISHED BY THE CLUB
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NOTE

PACIFIC COAST AVIFAUNA No. 5 is the fifth of a series of publications issued by the Cooper Ornithological Club of California for the accomodation of papers whose length prohibits their appearance in THE CONDOR.

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

I began the collection of titles for a bibliography of California ornithology in 1900, while a student at Stanford University. Since then I have taken every opportunity to secure additions to my list, while from year to year I have tried to keep it up to date. Nothing becomes more apparent to one engaged in this kind of an undertaking than the impossibility of ever attaining ideal accuracy or completeness. Three years ago I thought I had a fairly comprehensive bibliography up to that time. But only within a few months have I run across several important titles of early date which had been previously unknown to me. As I could not but suffer continued uncertainty, no matter how long I should withhold this contribution from publication, I present the results of my work as they are now, believing that they will prove of value to every other working bird student, as they already have to me.

The criterion for inclusion in this bibliography is the pertaining of the article or book, either as a whole or in any part, to the birds of California. I have adhered strictly to the faunal idea. Reference to a species bearing the name "*californicus*" or "*californianus*," unless accompanied by a definite indication of its occurrence in California as the State is now restricted geographically, does not make the article worthy of inclusion in this list. Mere mention of "birds", or "waterfowl", or "ducks", or "songbirds", is ignored.

After accumulating a good-sized sheaf of titles from popular literary and fiction magazines and books, I came to the conclusion that this source is unworthy of citation. Such bird articles are either altogether untrustworthy (often mere fabrications or imaginative productions, of questionable value, even from the literary standpoint), or, if possessing scientific value, popularized modifications or verbatim copies of articles appearing before or afterwards in scientific periodicals, where they are accessible to the ornithologist anyway. I have, therefore, included no titles from newspapers, literary magazines, or sportsman's journals, with the single exception to the latter category, of the earlier volumes of *Forest and Stream*, and to the former of *Hutchings' California Magazine*. A list of the serial publications from which I have taken titles is appended to the present paper.

It may be asked why I have quoted from the "minor ornithological" periodicals, many of which were ephemeral and consisted largely of accounts of boys' egg-hunts. My reason is that incidentally these relatively insignificant and somewhat illiterate journals contain records of the former distribution of species, and other valuable data, nowhere else obtainable. All such periodicals aspired to scien-

tific accuracy, even tho obviously failing in many instances; but so have the most pretentious of our ornithological journals often unknowingly given publication to unreliable articles. It must be borne in mind that I have tried to be consistent in citing all appropriate titles from every serial recognized at all, whether of evident value or not.

In but two or three cases and, then so stated in the annotation, have I introduced titles second-hand. In other words, every title, except the two or three, has been copied by me personally. Titles have been transcribed with constant regard to preserving precise wording, spelling and punctuation.

In making annotations under each title I have kept two objects in view: to amplify the title where it is insufficient in itself to convey an idea of the nature of the article, particularly as regards locality; and to give briefly any knowledge I may have as to the authenticity of the article. Question marks in the annotations show my doubt as to the identity of the species named. In the case of a name not now in use, and where I know what species is meant, the current name is given in parenthesis. In a few cases I have given a short analysis of the article.

In gathering the 1785 titles listed in this bibliography I have had free access to the library of Stanford University, to the former library of the California Academy of Sciences, to the private libraries of Mr. W. Lee Chambers, Mr. John Lewis Childs and myself, and, during a visit to Philadelphia in January, 1908, to the library of the Academy of Natural Sciences there. I have also obtained help from time to time in regard to certain points, from Mr. W. Lee Chambers, Dr. Walter K. Fisher, Dr. Chas. W. Richmond and Mr. Witmer Stone.

Pasadena, California,
March 12, 1908

JOSEPH GRINNELL

BIBLIOGRAPHY OF CALIFORNIA ORNITHOLOGY

NOTE.—In this Bibliography titles are grouped according to the year of publication, from 1797 to 1907. The titles for each year are arranged alphabetically by authors. Under each author, if he published more than one article during that year, titles are arranged chronologically by months. Names of periodicals are usually abbreviated; their full names are to be found in the List at the end of this work.

1797. Milet-Mureau, M. L. A. Voyage | de la Pérouse | autour du Monde, | publié | conformément au décret du 22 avril 1791, | et rédigé | par M. L. A. Milet-Mureau, | Général [etc., two lines]. | Tome Second. | — | A Paris, | de l'Imprimerie de la République. | AN V. (1797). 4to, pp. 1-398. > Chap. XI (pertains to Monterey). > Pp. 254-255 (mention in the vernacular of several species of birds, mostly water-fowl). Also folio Atlas du Voyage de La Pérouse, plates 36 (of ♂ and ♀ of California Quail) and 37 (of California Thrasher).

The "Perdrix de la Californie" is very plainly *Lophortyx californicus*, and the "Promerops de la Californie Septentrionale" is with little doubt our *Toxostoma redivivum*. The latter was thus figured nearly fifty years before it was formally described by Gambel from the same locality. I examined the copy of this work in the Academy of Natural Sciences, Philadelphia.

1797. Shaw, G., and Nodder, F. P. Vivarium Naturæ or Naturalist's Miscellany. By G. Shaw M. D. F. R. S. the Figures by F. P. Nodder, Botanic Painter to Her Majesty. [This on first volume but not in full on subsequent volumes.] Vol. IX, 1797, 8vo, unpagged, pll. 301-348, text and index.

Vultur Californianus, pl. 301 (= *Gymnogyphs californianus*). Description in Latin and English. "This Vulture was brought over by Mr. Menzies, during his expedition with Captain Vancouver, from the coast of California, and is now in the British Museum." *Tetrao Californicus*, pl. 345 (= *Lophortyx californicus californicus*). Description in Latin and English. "This curious bird is a native of California, and was brought over by Mr. Archibald Menzies, who accompanied Captain Vancouver in his late expedition. The specimen from which the present figure was taken is in the British Museum." I handled this book in the Academy of Natural Sciences, Philadelphia.

1829. Douglas, D. Observations on some Species of the Genera Tetrao and Ortyx, natives of North America; with Descriptions of Four new Species of the former, and Two of the latter Genus. < Transactions Linnean Society London XVI, December 1828 ["read"], pp. 133-149.

Tetrao (= *Centrocercus*) *urophasianus*, *Tetrao Sabini* (= *Bonasa umbellus sabini*), *Ortyx picta* (= *Oreortyx pictus*) and *Ortyx Douglasii* (= ?) are ascribed to California.

1829. Vigors, N. A. On some species of Birds from the North-west Coast of America. [Sub-title under Art. XLVII. Sketches in Ornithology, &c.] < Zoological Journal IV, Oct. 1828-Jan. 1829, pp. 352-358.

Includes original descriptions of *Colaptes collaris* (= *Colaptes cafer collaris*), *Ortyx Douglasii* (= ?), both from "Monterey"; *Recurvirostra occidentalis* (= *R. americana*) from San Francisco; *Strepsilas melanocephalus* (= *Arenaria melanocephala*) and *Numenius rufiventris* (= *N. hudsonicus*), neither with locality indicated, but perhaps Californian.

1830. Douglas, D. Über einige nordamericanische Gattungen von Tetrao u. Ortyx. < Isis XXIII, 1830, pp. 917-921.

Ortyx picta (= *Oreortyx pictus*) from the "interior of California."

- 1830-1831. Lesson, R. P. Histoire Naturelle des Colibris, suivie d'un supplément à l'histoire naturelle des Oiseaux-Mouches [etc.]. 8vo, pp. i-x, 1-196; pll. (double) 1-25, (suppl.) 1-39.

Includes original description (p. 115) and plate (7) of immature *Ornismya anna* (= *Calypte anna*) from California.

1831. [Anonymous] < Isis XXIV, 1831, pp. 218-220.

Quoted descriptions of several of the birds described by Vigors in "Zoological Journal."

- 1831-1839. Audubon, J. J. Ornithological Biography, | or an account of the habits of the | Birds of the United States of America; | accompanied by Descriptions of the Objects Represented | in the Work Entitled | the Birds of America, | and Interspersed with Delineations of American | Scenery and Manners. | By John James Audubon, F. R. SS. L. & E. | Fellow [etc., 5 lines]. | Edinburgh: | Adam Black, 55. North Bridge, Edinburgh; | [etc., 5 lines]. | — | MDCCLXXXI. 8vo, vols. I-V, MDCCLXXXI-MDCCLXXXIX. (The above is the exact title of the first volume; the titles of the other four vary from the above in minor respects.)

Only Vols. IV and V, 1838 and 1839, contain references to California, and these are nearly all upon the authority of Nuttall or Townsend; for Audubon never himself traveled as far west as California. There are five species ascribed to California in Vol. IV, the only important one of which is *Corvus Nuttalli* (= *Pica nuttalli*) newly described (p. 450, pl. 362 of the elephant folio) from the vicinity of Santa Barbara where taken by Nuttall. Vol. V contains records of 19 species from California. Of these, *Icterus tricolor* (= *Agelaius tricolor*) is newly described (p. 1, pl. 388 of the elephant folio) from Santa Barbara where secured by Nuttall; *Sylvia Delafieldii* (probably an individual variant of *Geothlypis trichas arizela*) is described (p. 307) as new from "California"; and *Fringilla Mortonii*, a South American sparrow, is described (p. 312) as new, and alleged to have been procured in "Upper California" by Townsend. The specimen of *Sylvia montana*, said (p. 295, pl. 434 of the elephant folio) to have "come from California", seems to have been an immature example of *Dendroica townsendi*.

1831. Swainson, W., and Richardson, J. Fauna Boreali-Americana. Part Second, containing The Birds. London: MDCCLXXXI. 4to, pp. i-lxvi, 1-523, pll. 24-73, and many cuts.

In a table of distribution included in the Introduction, several species are said to occur in "California" in winter. This Table is stated to have been compiled from the work of "the Prince of Musignano, Wilson, Audubon, and some others."

1833. Vigors, N. A. [On a Collection of Skins of *Birds* from California] < Proc. Zool. Soc. I, 1833, p. 65.

Brief general remarks.

1837. Gould, J. On a New Species of Ortyx. < Proc. Zool. Soc. V, 1837, p. 42.

Original description of *Ortyx plumifera* (= *Oreortyx pictus plumiferus*); from "California".

1838. Lichtenstein, H. Beitrag zur ornithologischen Fauna von Californien nebst Bemerkungen über die Artkennzeichen der Pelicane und über einige Vögel von den Sandwich-Inseln. (Gelesen in der Akademie der Wissenschaften am 27 Juni 1837.) <Abhand. Königl. Akad. Wiss. Berlin, 1838, pp. 417-451; Tab. I-V (gefärbten).

Ascribes to California: *Sarcoramphus* (= *Gymnogyps*) *californianus* (Pl. I); *Falco* (*Buteo*) *ferrugineus* (= *Archibuteo ferrugineus*), original description; *Strix frontalis* (= *Cryptoglaux acadica*), described as new; *Fringilla hudsonia* (= *Junco hyemalis thurberi* ?); and *Pelecanus trachyrhynchus* (= *P. erythrorhynchus*).

1839. Audubon, J. J. A | Synopsis of the Birds | of | North America. | By | John James Audubon, F. R. SS. L. & E. | Member of Various Scientific Associations in | Europe and America. | Edinburgh: | Adam and Charles Black, Edinburgh; | Longman, Rees, Brown, Green, and Longman, | London. | MDCCCXXXIX. 8vo, pp. i-xii, 1-359.

The assigned habitats of many species include "California" or "North California", but no authorities for these statements are cited.

1839. Vigors, N. A. The | Zoology | of | Captain Beechey's Voyage; | compiled from the | Collections and Notes made by Captain Beechey, | the Officers and Naturalist of the Expedition, | During a Voyage to the Pacific and Behring's Straits Performed in | His Majesty's Ship Blossom, | [etc., 8 lines] | — | Illustrated with upwards of | Fifty Finely Coloured Plates by Sowerby. | — | Published Under the Authority of the Lords Commissioners of the Admiralty. | — | London: | Henry G. Bohn, 4, York Street, Covent Garden. | — | MDCCCXXXIX. 4to. >Ornithology; by N. A. Vigors, Esq., A. M., F. R. S., &c. Pp. 13-40, pll. III-XIV.

Of the 100 species briefly described or commented upon, the greater part were evidently obtained on the coast of California. But unfortunately in many cases the locality of capture is omitted. Only the following are definitely stated to have been obtained at San Francisco or Monterey: *Falco sparverius*, *Bubo Virginianus* (=subs. ?), *Alcedo Alcyon* (= *Ceryle alcyon*), *Turdus migratorius* (= *Planesticus migratorius propinquus*), *Fringilla Canadensis* ? (= *Zonotrichia leucophrys nuttalli* ?), *Fringilla hyemalis* (= *Junco hyemalis pinosus*), *Fringilla meruloides* n. s. (= *Passerella iliaca meruloides*), *Agelaius phoeniceus* (= *A. gubernator californicus*), *Garrulus Californicus* n. s. Pl. V (= *Aphelocoma californica*), *Picus villosus* (= *Dryobates villosus hyloscopus*), *Picus ruber* (= *Sphyrapicus varius ruber*), *Picus formicivorus* (= *Melanerpes formicivorus bairdi*), *Colaptes collaris* n. s. Pl. IX (= *Colaptes cafer collaris*), *Sitta pygmaea* n. s. Pl. IV, *Columba monilis* n. s. Pl. X (= *C. fasciata*), *Ardea exilis* (= *Ardetta exilis*), *Recurvirostra occidentalis* n. s. Pl. XII (= *R. americana*), *Clangula albeola* (= *Charitonetta albeola*), *Larus Sabini* (= *Xema sabini*), and *Diomedea fuliginosa* (= *D. nigripes*). Besides these, *Charadrius melodus* (= *Aegialitis meloda* ?) and *Ortyx Douglasii* n. s. Pl. XI (= *Lophortyx douglasii*) are accredited to San Francisco and Monterey, respectively. But it seems likely that the latter anyway was obtained on the Mexican coast. Either San Francisco or Monterey has been subsequently fixed by elimination, for certain of the species described by Vigors but with no locality indicated. These include *Muscicapa semiatra* n. s. (= *Sayornis nigricans*), *Troglodytes spilurus* n. s. Pl. IV (= *Thryomanes bewickii spilurus*), and *Fringilla crissalis* n. s. (= *Pipilo crissalis*). Several of the forms marked as n(ew) s(pecies) had been previously described in the Zoological Journal.

- 1840-1844. Audubon, J. J. The | Birds of America, | from | Drawings Made in the United States | and their Territories. | By John James Audubon, F. R. SS. L. & E. | Fellow [etc., 11 lines] | — | Vol. I [-VII] | — | New York: |

Published by J. J. Audubon. | Philadelphia: | J. B. Chevalier. | 1840 [-1844].
[The seven-volume octavo edition.]

Thirty-three species are definitely accredited to California, mostly upon the authority of Nuttall.

1840. Nuttall, T. A | Manual | of the | Ornithology | of the | United States and of Canada. | By | Thomas Nuttall, A. M., F. L. S. &c. | Second Edition, with Additions. | — | The Land Birds | — | — | Boston: | Hilliard, Gray, and Company. | — | MDCCCXL. 12mo, pp. i-viii, 1-832; many figg.

Contains short notes on several species personally observed by the author at San Diego, Santa Barbara or Monterey; also descriptions of two alleged new species from Santa Barbara, *Trochilus icterocephalus* (= *Calypte anna*) and *Troglodytes maculosa* (=?). Other species are accredited to California on authority of Audubon, Vigors or Lesson, some erroneously.

1843. Gambel, W. Descriptions of some new and rare Birds of the Rocky Mountains and California. <Proc. Ac. Nat. Sc. Phil. I, April 1843, pp. 259-262.

Includes the original description of *Picus Nuttallii* (= *Dryobates nuttallii*); taken near Los Angeles, December 10.

1845. Gambel, W. Descriptions of new and little known Birds, collected in Upper California. <Proc. Ac. Nat. Sc. Phil. II, August 1845, pp. 263-266.

Includes the original description of *Harpes rediviva* (= *Toxostoma redivivum*) from "near Monterey"; *Parus inornatus* from "Upper California"; and *Parus fasciatus* (= *Chamæa fasciata*) from "California." Also *Mergulus Cassinii* (= *Ptychoramphus aleuticus*), from the "Coast of California", is described as new.

- 1846-1847. Gambel, W. Remarks on the Birds observed in Upper California. <Proc. Ac. Nat. Sc. Phil. III, April 1846, pp. 44-48; October 1846, pp. 110-115; February 1847, pp. 154-158; April 1847, pp. 200-205.

This is an annotated list of 82 species, a large number of which are for the first time accredited to California. The accompanying notes, in some cases quite extended, are of value in that they indicate the abundance and distribution at that time of species now rare or local. Of particular interest in this respect are the remarks on the California Vulture, Raven, and Yellow-billed Magpie. However, all the species mentioned are still to be found somewhere within the State, except *Quiscalus major*, which Gambel claims was occasionally seen in his time as far north as Upper California.

1847. Gambel, W. Chamæa, new genus of Birds allied to Parus. <Am. Journ. Sc. & Arts, 2nd Ser. IV, November 1847, p. 286.

1847. Gambel, W. Chamæa, a new genus of Birds allied to Parus. <Annals and Magazine of Nat. Hist. XX, December 1847, pp. 441-442.

A republication.

- 1847-1849. Gambel, W. Remarks on the Birds observed in Upper California, with descriptions of new species. <Journ. Ac. Nat. Sc. Phil., 2nd Ser. I, December 1847, pp. 25-56; August 1849, pp. 215-229; pll. VIII-IX.

An extensively annotated list of 176 species; but a number of these, altho entered regularly, are extralimital, having been secured, as sometimes stated, in the Rocky Mountains or in Mexico.

1848. Peale, T. R. United States | Exploring | Expedition. | During the Years | 1838, 1839, 1840, 1841, 1842. | Under the Command of | Charles Wilkes, U. S. N. | Vol. VIII. | — | Mammalia and Ornithology. | By | Titian R. Peale, | one of the naturalists of the expedition. | Member [etc., 2 lines]. | — | Philadelphia: | Printed by C. Sherman. | 1848. Large 4to, pp. i-xxvi, 17-338.

Many birds are listed or briefly mentioned as from California, the locality where specified being San Francisco or the Bay of San Francisco.

- 1850-1857. Bonaparte, C. L. Conspectus | Generum Avium. | Auctore | Carolo Luciano Bonaparte. | Tom. I. [et Tom. II.] | Lugduni Batavorum. | apud | E. J. Brill, | Academiae Typographum. | — | 1850.[-1857.] 8vo, pp. 8+1-542 [2+1-232].

Incidental systematic treatment of species from California.

1850. Cassin, J. Descriptions of new species of Birds of the Genera *Parus*, Linn.; *Emberiza*, Linn.; *Carduelis*, Briss.; *Myiothera*, Ill.; and *Leuconerpes*, Sw., specimens of which are in the collection of the Academy of Natural Sciences of Philadelphia. <Proc. Ac. Nat. Sc. Phil. V, October 1850, pp. 103-106.

Includes the original descriptions of *Emberiza Belli* (= *Amphispiza belli*) from "Sonoma and San Diego"; *Carduelis Lawrencei* (= *Astragalinus lawrencei*) from "Sonoma and San Diego"; and *Leuconerpes albolarvatus* (= *Xenopicus albolarvatus*) from "near Sutter's mill".

1850. Gambel, W. Description of a new species of *Mergulus*, Ray, from the coast of California. <Journ. Ac. Nat. Sc. Phil., 2nd Ser. II, November 1850, p. 55, pl. VI.

Mergulus Cassinii (= *Ptychoramphus aleuticus*).

1850. Jones, J. M. Note on the California Quail. <Zoologist VIII, 1850, p. 2852. Popular account of a personal experience at "Montiero" (= Monterey).

1851. Cassin, J. Sketch of the Birds composing the genera *Vireo*, Vieillot, and *Vireosylva*, Bonaparte, with a List of the previously known and descriptions of three new species. <Proc. Ac. Nat. Sc. Phil. V, February 1851, pp. 149-154.

Includes the original description of *Vireo huttoni*, from Monterey.

1851. Cassin, J. Descriptions of birds of the genera *Laniarius*, *Dicrurus*, *Graucalus*, *Manacus* and *Picus*, specimens of which are in the collection of the Academy of Natural Sciences of Philadelphia. <Proc. Ac. Nat. Sc. Phil. V, December 1851, pp. 347-349.

Includes the original description of *Picus thyroideus* (= *Sphyrapicus thyroideus*) from "California."

1851. Gurney, J. H. Notes on the Zoology of California. <Zoologist IX, 1851, pp. 3297-3299.

Includes a page of brief and rather grotesque remarks on a number of birds, named only in the vernacular.

1852. Cassin, J., and Stephens, H. L. Illustrations | of the | Birds of California, Texas | and | British and Russian America. | Intended to Comprise all the Species of North America, Except Mexico, not Figured by | Former American Authors, and to Serve as | a Supplement | to the Octavo Edition of | Audu-

bon's Birds of America. | By | John Cassin, | Corresponding Secretary [etc., 4 lines] | and | Henry L. Stephens, | Artist attached to the Academy of Natural Sciences of Philadelphia. | To be Completed in Thirty Numbers, published Monthly. | Philadelphia: | King & Baird, Printers, No. 9 Sansom Street. | 1852. Large 8vo, pp. 30 (not consecutively paged), pl. 5.

Relating to California is a plate, description and biographical sketch of *Melanerpes formicivorus* (= *M. f. bairdi*) and *Chamaea fasciata* (probably *Ch. f. rufula*). The plates are not the same as those in the subsequently issued parts which went to make up Cassin's "Illustrations". I consulted the above publication in the library of the Academy of Natural Sciences of Philadelphia, January 9, 1908. Mr. Witmer Stone tells me there was no other part issued under the above title. A new artist was obtained, as well as a new publisher, when the work was recommenced. (See Cassin's "Illustrations", 1856.)

1852. Cassin, J. Descriptions of new species of Birds, specimens of which are in the collection of the Academy of Natural Sciences of Philadelphia. <Proc. Ac. Nat. Sc. Phil. VI, October 1852, pp. 184-188.

Includes the original descriptions of *Ammodramus ruficeps* (= *Aimophila ruficeps*) "from Calaveras river"; *Emberiza rostrata* (= *Passerculus rostratus*) from San Diego; and *Larus heermanni* from San Diego.

1852. Farnham, T. J. Pictorial Edition!!! | Life, | Adventures, and Travels | in | California. | By T. J. Farnham. | To which are added the | Conquest of California, | Travels in Oregon, | and | History of the Gold Regions. | New York, | Published by Cornish, Lamport & Co. | 1852. 8vo, pp. i-iv, 1-514, numerous woodcuts.

The accounts of birds (pages 388-394) are of interest chiefly from a historical standpoint. This title was not seen by me, but was transcribed by W. K. Fisher. (See Fisher, *Condor* IX, March 1907, pp. 57-58.)

1852. Lawrence, G. N. Descriptions of New Species of Birds, of the Genera *Toxostoma* Wagler, *Tyrannula* Swainson, and *Plectrophanes* Meyer. <Ann. Lyc. Nat. Hist. New York V, 1852, pp. 121-123.

Original description of *Toxostoma LeContei*; type from "California, near the junction of the Gila and Colorado rivers."

1852. Lawrence, G. N. Ornithological Notes. <Ann. Lyc. Nat. Hist. New York, 1852, pp. 220-223.

Buteo Harlani (= *B. borealis* ?), *Pterocyanea caeruleata* (= *Querquedula cyanoptera*) and *Sterna Forsteri* from California.

1853. Baird, S. F. * * * | Exploration and Survey | of the | Valley | of the | Great Salt Lake of Utah, | including | a Reconnoissance of a New Route through the | Rocky Mountains. | By Howard Stansbury, | Captain Corps Topographical Engineers, U. S. Army. | — | Printed by Order of House of Representatives of the United States. | — | Washington: | Robert Armstrong, Public Printer. | 1853. 8vo. >Appendix C.—Birds. By Spencer F. Baird. Pp. 314-335.

Many references to "California" birds upon authority of previous writers.

- 1853-1854. Bonaparte, C. L. Notes sur les collections rapportées en 1853, par M. A. Delattre, de son voyage en Californie et dans le Nicaragua. <Compte Rendu XXXVII, November 1853, pp. 806-810; December 1853, pp. 827-835,

913-925; XXXVIII, January 1854, pp. 1-11, 53-66; February 1854, pp. 258-266, 378-389; March 1854, pp. 533-541; April 1854, pp. 650-665.

Includes the original descriptions of *Passerculus alaudinus* (= *Passerculus sandwichensis alaudinus*) from "California," and *Procellaria* (= *Oceanodroma melania*) from "California," probably near San Diego; also critical notices of numerous other species "de Californie."

1853. Cassin, J. Descriptions of new species of Birds of the genera *Melanerpes* Swainson, and *Lanius* Linnæus. <Journ. Ac. Nat. Sc. Phil., 2nd Ser. II, January 1853, pp. 257-258; pll. XXII-XXIII.

Second description of *Melanerpes albolarvatus*.

1853. Cassin, J. Synopsis of the Species of Falconidæ which inhabit America north of Mexico; with descriptions of new species. <Proc. Ac. Nat. Sc. Phil. VI, December 1853, pp. 450-453.

Several species accredited to "California."

1853. Heermann, A. L. Notes on the Birds of California, observed during a residence of three years in that country. <Journ. Ac. Nat. Sc. Phil., 2nd Ser. II, January 1853, pp. 259-272.

An annotated list of 130 species.

1853. Lawrence, G. N. Descriptions of New Species of Birds of the Genera ORTYX Stephens, STERNA Linn., and ICTERIA Vieillot. <Ann. Lyc. Nat. Hist. New York VI, April 1853, pp. 1-4.

Sterna Pikei (= *Sterna paradisæa*) from Monterey; *Icteria longicauda* (= *Icteria virens longicauda*) from "California".

1853. Lawrence, G. N. Additions to North American Ornithology.—No. 3. <Ann. Lyc. Nat. Hist. New York VI, April 1853, pp. 4-7.

Ephialtes choliba (= *Megascops asio bendirei* ?) from Sacramento; "Procellaria hæsitata Kuhl" (= *Priofinnus cinereus*) from off Monterey; and *Procellaria* (= *Daption*) *capensis* from off Monterey.

1853. Lawrence, G. N. Ornithological Notes. No. 2. <Ann. Lyc. Nat. Hist. New York VI, April 1853, pp. 7-14.

Stercorarius catarractes (= *Megalestris skua*) from Monterey.

1853. Woodhouse, S. W. *** | Report of an Expedition | down the | Zuni and Colorado Rivers, | by | Captain L. Sitgreaves, | Corps Topographical Engineers. | — | Accompanied by Maps, Sketches, Views, and Illustrations. | — | Washington: | Robert Armstrong, Public Printer. | 1853. 8vo, pp. 198. > Birds. By S. W. Woodhouse, M. D. Pp. 58-105; pll. I, III-VI.

Many species accredited to California upon personal observation.

1854. Heermann, A. L. Additions to North American Ornithology, with description of new species of the genera *Actidurus*, *Podiceps* and *Podylymbus*. < Proc. Ac. Nat. Sc. Phil. VII, October 1854, pp. 177-180.

Includes the original descriptions of *Podiceps Californicus* (= *Colymbus nigricollis californicus*) and another supposed new species, *Podylymbus lineatus* (= young of *Podilymbus podiceps*).

1854. Lawrence, G. N. Description of a New Species of Bird of the Genus *LARUS* Linn. < Ann. Lyc. Nat. Hist. New York VI, March 1854, pp. 79-80.
Larus Californicus; type from "San Joachin River, near Stockton."
1855. Cassin, J. Notes on North American Falconidæ, with descriptions of new Species. < Proc. Ac. Nat. Sc. Phil. VII, February 1855, pp. 277-284.
Includes the original description of *Buteo elegans* (= *Buteo lineatus elegans*) from "California", and accredits to the State several other species.
1855. Prevost, Fl., et Des Murs, O. Oiseaux [pp. 177-279] < Voyage | autour du Monde | Sur la Frégate | La Vénus | Commandée | Par Abel du Petit-Thouars | Capitaine de Vaisseau, Commandeur de la Legion d'honneur. | — | Zoologie | Mammifères, Oiseaux, Reptiles et Poissons | Paris | Gide et J. Baudry, Editeurs | Rue Bonaparte, 5 | — | 1855; 8vo, pp. 1-351.
The birds upon which this article is based are said to have been obtained by Dr. Néboux, surgeon of the "Venus". Among the localities mentioned are the coast of Peru, Chili, the Galapagos Islands, San Blas, and Monterey in Upper California. Eleven species are accredited to the latter place. But no less than six of these are tropical species, unknown as birds of our State. So that it seems very probable that localities were confused. I have no confidence in any of these Monterey records, therefore, no more in that of *Larus furcatus* (p. 277, Pl. X of Atlas) than in any of the others, such as "*Sturnella militaris*" or the "Caracara". *Larus* (= *Creagrus*) *furcatus* has been included as a North American species on the basis of the "Venus" record, now with little doubt to be considered erroneous. I examined the above work in the library of the Academy of Natural Sciences of Philadelphia, January 10, 1908.
1855. Taylor, A. S. Note on the Great Vulture of California (*Cathartes vel Sarcophagus Californianus*). < Zoologist XIII, 1855, pp. 4632-4635.
Account of its capture "on the beach" at Monterey, and habits, mostly on hearsay.
1856. Brewer, T. M. [Red-tailed Hawks of California] < Proc. Bost. Soc. Nat. Hist. V, September 1856, pp. 385-386.
Critical: *Buteo montanus* (= *B. borealis calurus*).
1856. Cassin, J. Notes on North American Birds in the Collection of the Academy of Natural Sciences, Philadelphia, and National Museum, Washington. < Proc. Ac. Nat. Sc. Phil. VIII, February 1856, pp. 39-42.
Includes the original description of *Spizella breweri* from "California". Also accredits *Spizella pallida* to this State, but this record remains unconfirmed.
1856. Cassin, J. Illustrations | of the | Birds | of | California, Texas, Oregon, British and | Russian America. | Intended to Contain Descriptions and Figures | of all | North American Birds | not given by former American authors, | and a | General Synopsis of North American Ornithology. | By | John Cassin, | Member [etc., 5 lines]. | 1853 to 1855. | — | Philadelphia: | J. B. Lippincott & Co. | 1856. Large 8vo, pp. i-viii, 1-298, pl. 1-50. Originally issued in parts.
The particularly Californian species figured and discussed are: *Melanerpes formicivorus*, p. 7, pl. 2 (= *M. f. bairdi*); *Larus heermanni*, p. 28, pl. 5; *Chamaea fasciata*, p. 39, pl. 7 (the plate shows a very dark bird, probably *Ch. f. rufula*, from "the neighborhood of San Francisco"); *Ammodramus ruficeps*, p. 135, pl. 20 (= *Aimophila ruficeps*); *Archibuteo ferrugineus*, p. 159, pl. 26; *Ptilogonyx nitens*, p. 169, pl. 29 (= *Phainopepla nitens*); *Troglodytes mexicanus*, p. 173, pl. 30 (= *Catherpes mexicanus punctulatus*); *Melanerpes thyro-*

ideus, p. 201, pl. 32 (= *Sphyrapicus thyroideus*); *Ammodramus rostratus*, p. 226, pl. 38; *Toxostoma rediviva*, p. 260, pl. 42 (evidently of the dark brownish coast bird *T. redivivum redivivum*). The biographies of many species are quoted from previous writers, and also from heretofore unpublished statements by McCall, Heermann and others. There is thus considerable original information. Two supposed new species are described, from California specimens: *Falco nigriceps* and *Falco polyagrus* (part containing these, issued in December, 1853); both names have proven synonyms of *Falco peregrinus anatum*.

1856. Cassin, J. Descriptions and Notes on Birds in the Collection of the Academy of Natural Sciences of Philadelphia and in the National Museum, Washington. < Proc. Ac. Nat. Sc. Phil. VIII, October 1856, pp. 253-255.

Includes the original descriptions of *Sitta aculeata* (= *Sitta carolinensis aculeata*) from "California", and *Buteo cooperi*, the validity of which latter is now questioned.

1856. Grayson, A. J. The "Road-runner". < Hutchings' California Magazine I, November 1856, pp. 201-202; fig.

1856. [Hutchings, J. M.] The Farallone Islands. < Hutchings' California Magazine I, August 1856, pp. 49-57; with cuts of Murre and egg, Tufted Puffin, rocks, etc.

Including an extended account of the seabirds.

1856. Lawrence, G. N. Descriptions of New Species of Birds of the Genera Chordeiles, Swainson, and Polioptila, Selater. < Ann. Lyc. Nat. Hist. New York VI, December 1856, pp. 165-169.

Polioptila melanura (= *P. plumbea*), in part, from California.

1857. [Anonymous] California Quail—Male and Female. < Hutchings' California Magazine II, December 1857, pp. 241-242.

1857. Bolle, C. Der californische Condor, *Sarcorhamphus californianus*. < Journal für Ornithologie V, January 1857, pp. 50-54.

Translated: from Taylor in the *Zoologist*.

1857. Brewer, T. M. Smithsonian Contributions to Knowledge. | — | North American | Oology; | Being an account of the habits and geographical distribution of the birds of North | America during their breeding season; with figures and | descriptions of their eggs. | By | Thomas M. Brewer, M. D. | — | Part I. | — | Washington City. | Published by the Smithsonian Institution: | 1857. | New York: D. Appleton & Co. [Part I.—Raptores and Fisirostres.] 4to, pp. i-viii, 1-132, pll. I-V.

The California material incorporated in this work is as far as I can see nearly or quite all quoted from previously published accounts.

1857. Brewer, T. M. List and Descriptions of Eggs Obtained in California by E. Samuels. < Proc. Bost. Soc. Nat. Hist. VI, April 1857, pp. 145-149.

At Petaluma; 16 species.

1857. Cassin, J. Notes on the North American species of Archibuteo and Lanius, and description of a new species of Toucan, of the genus Selenidera, Gould. < Proc. Ac. Nat. Sc. Phil. IX, December 1857, pp. 211-214.

Includes notes on *Lanius elegans*, etc.

1857. G[rayson], A. J. The White Breasted Squirrel Hawk. < Hutchings' California Magazine I, March 1857, pp. 393-396; fig.
Extended account and description of "*Buteo Californica*" (= *Archibuteo ferrugineus*).
1857. Newberry, J. S. Pacific Railroad Reports, Vol. VI, 1857. > Part IV, No. 2. Report upon the Zoology of the Route. By J. S. Newberry, M. D. > Chapter II. Report upon the Birds, pp. 73-110, 2 pll.
Includes field-notes on birds observed from San Francisco thru the Sacramento Valley and northeastern California into Oregon.
1857. Sclater, P. L. Notes on the Birds in the Museum of the Academy of Natural Sciences of Philadelphia, and other Collections in the United States of America. < Proc. Zool. Soc. XXV, 1857, pp. 1-8.
Includes the original description (p. 4) of *Glaucidium californicum* from "California".
1857. Sclater, P. L. List of Birds collected by Mr. Thomas Bridges, Corresponding Member of the Society, in the Valley of San José, in the State of California. < Proc. Zool. Soc. XXV, 1857, pp. 125-127.
A technically annotated list of 33 species.
1857. Wiepken, C. F. Ein brütendes Männchen von *Callipepla californica*. < Naumannia, 1857, pp. 264-266.
1858. Baird, S. F., Cassin, J., and Lawrence, G. N. Pacific Railroad Reports, Vol. IX, 1858. = [sub-title] Explorations and Surveys for a Railroad Route from the Mississippi River to the Pacific Ocean. | War Department. | = | Birds: | By Spencer F. Baird. | Assistant Secretary Smithsonian Institution. | With the co-operation of | John Cassin and George N. Lawrence. | — | Washington, D. C. | 1858. 4to, pp. i-lvi, 1-1005.
Contains a great amount of technical matter relating to California birds, including original descriptions of *Empidonax difficilis* BAIRD (specimens listed from Washington as well as California), *Carpodacus californicus* BAIRD, *Melospiza heermanni* BAIRD (from Tejon Pass), *M. gouldi* BAIRD (locality of type not known), *Passerella megarhynchus* BAIRD (Fort Tejon), *Pipilo megalonyx* (Fort Tejon), *Herodias egretta*, var. *californica* BAIRD (San Diego), *Aegialitis nivosa* CASSIN (San Francisco), *Pelionetta trowbridgii* BAIRD (San Diego), *Podiceps clarkii* LAWRENCE, and perhaps others.
1858. Baird, S. F. [New Sparrow Collected by Mr. Samuels in California] < Proc. Bost. Soc. Nat. Hist. VI, October 1858, pp. 379-380.
Ammodromus Samuelis (= *Melospiza melodia samuelis*) from Petaluma.
1858. Cassin, J. United States | Exploring Expedition. | During the years | 1838, 1839, 1840, 1841, 1842. | Under the Command of | Charles Wilkes, U. S. N. | — | Mammalogy | and | Ornithology. | By | John Cassin, | Member [etc., 5 lines]. | With a Folio Atlas [of 42 plates]. | — | Philadelphia: | J. B. Lippincott & Co. | 1858. 4to, pp. i-viii, 1-466.
Includes considerable mention of certain birds of California, some of the information being previously unpublished.
1858. Sclater, P. L. Notes on California Birds. By Thomas Bridges, Corresponding Member. Communicated, with Remarks, by Philip Lutley Sclater. < Proc. Zool. Soc. XXVI, 1858, pp. 1-3; pl. CXXXI (Aves).

Eleven species, of which *Melanerpes rubrigularis* (= *Sphyrapicus thyroideus*) is described as new; from Trinity Valley.

1858. Xantus, J. Descriptions of two new species of Birds from the vicinity of Fort Tejon, California. < Proc. Ac. Nat. Sc. Phil. X, May 1858, p. 117.

Original descriptions of *Tyrannula hammondii* (= *Empidonax hammondi*) and *Vireo cassinii* (= *Lanivireo solitarius cassinii*).

1859. Baird, S. F. Notes on a collection of Birds made by Mr. John Xantus, at Cape St. Lucas, Lower California, and now in the Museum of the Smithsonian Institution. < Proc. Ac. Nat. Sc. Phil. XI, November 1859, pp. 299-306.

Mention of several species from "Upper California".

1859. Cooper, J. G., and Suckley, G. The | Natural History | of | Washington Territory, | with much relating to | Minnesota, Nebraska, Kansas, Oregon, and California, | between the thirty-sixth and forty-ninth parallels of latitude, | being those parts of the final reports | on the survey of the northern Pacific railroad route, | containing the climate and physical geography, with full catalogues and descriptions | of the plants and animals collected from 1853 to 1857. | By J. G. Cooper, M. D., and Dr. G. Suckley, U. S. A., | Naturalists to the Expedition. | This edition contains a new preface, giving a sketch of the explorations, a classified | table of contents, and the latest additions by the authors. | With Fifty-Five New Plates of Scenery, Botany, and Zoology, and an Isothermal Chart of the Route. | — | New York: | Bailliére Brothers, 440 Broadway. | London:—H. Bailliére, 219 Regent Street. | Paris:—J. B. Bailliére et Fils, Rue Hautefeuille. | Madrid:—C. Bailly-Bailliére, Calle del Principe. | 1859. 4to, 8 ll. (explanatory notice, and errata), frontispiece (Black Brant from Cassin's "Illustrations"), pp. i-viii (contents, and preface), 1-72 (botany), 1-399 (zoology), 57 plates.

The above title is from a copy in my library. In spite of the claims in the title, the bird matter, at least, is identical with that in Vol. XII, Book II, of the Pac. R. R. Reports. (See 1860.) There are, however, three additional plates of birds, one (the frontispiece) from Cassin's "Illustrations", and two from Vol. IX, Pac. R. R. Reports.

1859. Heermann, A. L. Pacific Railroad Reports, Vol. X, 1859. > Part IV. Routes in California, to connect with the Routes near the thirty-fifth and thirty-second parallels [etc.] in 1853. > No. 2. Report upon the Birds Collected on the Survey. By A. L. Heermann, M. D. Pp. 29-80, 7 pll.

This list, with more or less extensive annotations, is the result of observations made by the author during the surveys from Fort Yuma to San Francisco. It yet remains one of the best local lists we have. Many species from the desert region are for the first time recorded from the State.

1859. Kennerly, C. B. R. Pacific Railroad Reports, Vol. X, 1859. > Part VI. Route near the thirty-fifth parallel, explored by Lieutenant A. W. Whipple, topographical engineers, in 1853 and 1854. > No. 3. Report on Birds collected on the Route. Pp. 19-35, 11 pll.

A briefly-annotated list, of which a number of species are accredited to southern California or vicinity of San Francisco.

1859. Sclater, P. L. A Synopsis of the Thrushes (Turdidæ) of the New World. < Proc. Zool. Soc. XXVII, 1859, pp. 321-347.

Some from "California."

1859. Suckley, G. [See Cooper and Suckley.]
1859. Taylor, A. S. The Egg and Young of the California Condor. < Hutchings' California Magazine III, June 1859, pp. 537-540; with 3 figg. (of egg, young and adult).
From the Santa Lucia Mountains.
1859. Taylor, A. S. The Great Condor of California. < Hutchings' California Magazine III, June 1859, pp. 540-543; IV, July 1859, pp. 17-22; August 1859, pp. 61-64; fig.
An extended general account.
1859. [Taylor, A. S.] [Notice of the Discovery of the Egg of the California Vulture] < Ibis I, October 1859, pp. 469-470.
Extract from article by A. S. Taylor.
1859. Xantus, J. Catalogue of Birds collected in the vicinity of Fort Tejon, California, with a description of a new species of *Syrnium*. < Proc. Ac. Nat. Sc. Phil. XI, July 1859, pp. 189-193.
A nominal list of 144 species actually obtained at Fort Tejon. Includes the original description of *Syrnium occidentale*, one specimen having been secured at Fort Tejon.
1860. Cooper, J. G., and Suckley, G. Pacific Railroad Reports, Vol. XII, Book II, 1860. > Part III. Route near the forty-seventh and forty-ninth parallels, explored by I. I. Stephens, Governor of Washington Territory, in 1853-'55. > No. 3. Report upon the Birds collected on the Survey. Chapter I. Land Birds, by J. G. Cooper, M. D. Chapter II. Water Birds, by Dr. G. Suckley, U. S. A. Pp. 140-291, 8 pll.
This is primarily based on observations in Washington and Oregon, but numerous California references are included. Here is Cooper's account (p. 148) of the capture of the unique specimen of *Buteo cooperi* CASSIN at Mountain View, Santa Clara County.
1860. [Gruber, F.] The Birds of the Farallone Islands. < Hutchings' California Magazine V, October 1860, p. 173.
Brief quotation from a "paper"; *Uria occidentalis* (= *Cerorhinca monocerata*) found nesting on the Farallones.
1860. Sclater, P. L. Note on the Egg and Nestling of the California Vulture. < Ibis II, July 1860, p. 278; pll. VIII (of egg) and IX (of young).
1860. Suckley, G. [See Cooper and Suckley.]
1861. [Anonymous] The Carpintero. *Melanerpes formicivorus*. (Sw.) < Hutchings' California Magazine V, January 1861, pp. 289-291; fig.
1861. [Anonymous] California Birds. < Hutchings' California Magazine V, February 1861, pp. 330-334; April 1861, pp. 436-438; with 4 cuts (of European species!)
Text mostly copied from Wilson: species not of California!
1861. Baird, S. F. Report | upon the | Colorado River of the West, | Explored in 1857 and 1858 by | Lieutenant Joseph C. Ives, | Corps of Topographical Engineers, | Under the Direction of the Office of Explorations and Surveys, | A. A. Humphreys, Captain Topographical Engineers, in Charge. | — |

By Order of the | Secretary of War. | — | Washington: | Government Printing Office. | 1861. 4to. > Part V. Zoology. By Professor S. F. Baird. Pp. 1-6. > List of Birds Collected on the Colorado Expedition. Pp. 5-6.

A bare list of 55 species with localities only; 26 species from "Fort Yuma" which is on the California side; others indefinitely from the "Colorado Valley" or "Colorado River".

1861. Bryant, H. Monograph of the Genus *Catarractes*, Moehring. < Proc. Bost. Soc. Nat. Hist. VIII, July 1861, pp. 134-143; 12 figg. (of beaks).

Includes original description of *Catarractes californicus* (= *Uria troile californica*) from "Farrellones Islands."

1861. Cooper, J. G. New California Animals. < Proc. Cal. Ac. Nat. Sc. II, July 1861, pp. 118-123.

Records from southeastern California: *Panyptila melanoleuca* (= *Aeronautes melanoleucus*), *Chordeiles texensis*, *Tyrannus vociferans*, *Vireo belli* (= *V. b. pusillus*), *Harporhynchus leontii*, *Icterus cucullatus*, and *Hydrochelida plumbea* (= *H. n. surinamensis*).

1861. Malherbe, A. Monographie des Picedées [etc.]. Folio, Vol. I, 1861, pp. 1-213; Vol. II, 1862, pp. 1-325; Vols. III and IV, pll. 1-121.

Picus Turati, Vol. I, p. 125, pl. 29, described from two specimens killed near Monterey. (= *Dryobates pubescens turati*).

1862. Cassin, J. Catalogue of Birds collected by the United States North Pacific Surveying and Exploring Expedition, in command of Capt. John Rodgers, United States Navy, with notes and descriptions of new species. < Proc. Ac. Nat. Sc. Phil. XIV, June 1862, pp. 312-328.

Includes the records of numerous species, mostly water-birds, taken in the vicinity of San Francisco.

1862. Coues, E. Revision of the GULLS of North America; based upon species in the Museum of the Smithsonian Institution. < Proc. Ac. Nat. Sc. Phil. XIV, June 1862, pp. 291-312.

A systematic treatise on all the species of gulls of North America. Includes original description of *Larus Smithsonianus* (= *L. argentatus*) mentioning typical specimens from San Francisco Bay.

1862. Coues, E. Supplementary note to a "Synopsis of the North American Forms of the COLYMBIDÆ and PODICEPIDÆ." < Proc. Ac. Nat. Sc. Phil. XIV, September 1862, p. 404.

Remarks on "*Æchmophorus Clarkii*" from San Francisco.

1862. Coues, E. A Review of the TERNS of North America. < Proc. Ac. Nat. Sc. Phil. XIV, December 1862, pp. 535-559.

Critical treatise: "*Sterna Pikei*," etc.

1862. [Slater, P. L.] [Cooper on new Californian Birds] < Ibis, 1st Ser. IV, April 1862, pp. 187-188.

Brief review.

1862. Slater, P. L. Catalogue | of | a Collection | of | American Birds | Belonging to | Philip Lutley Slater, M. A., Ph. D., F. R. S., | Fellow [etc., 3 lines]. | [Vignette] | [Quotation] | London: | N. Trubner and Co., Paternoster Row. | 1862. 8vo, pp. i-xvi, 1-338, pll. I-XX.

A few specimens listed from "California", usually without precise locality.

1863. Cassin, J. Notes on the PICIDÆ, with descriptions of new and little known species. < Proc. Ac. Nat. Sc. Phil. XV, July 1863, pp. 194-204.
Includes descriptions of plumages of several Californian woodpeckers.
1863. Cassin, J. Notes on the PICIDÆ. < Proc. Ac. Nat. Sc. Phil. XV, November 1863, pp. 322-328.
Plumages of certain Californian species.
- 1864-1866. Baird, S. F. Review of American Birds, in the Museum of the Smithsonian Institution. Part I. =Smithsonian Miscellaneous Collections. 181. 8vo, pp. i-vi, 1-478; figg.
Includes lists of specimens, with critical remarks, of numerous Californian species.
1864. Coues, E. A critical Review of the Family PROCELLARIDÆ: Part I., embracing the PROCELLARIÆ, or Stormy Petrels. < Proc. Ac. Nat. Sc. Phil. XVI, March 1864, pp. 72-91.
Includes original description of *Cymochorea* (= *Oceanodroma*) *homochroa* from the Farallone Islands.
1864. Coues, E. A Critical Review of the Family PROCELLARIDÆ:—Part II; embracing the PUFFINÆ. < Proc. Ac. Nat. Sc. Phil. XVI, April 1864, pp. 116-144.
Includes the original description of *Puffinus creatopus* from San Nicolas Island, and quotes the record of *Adamastor* (= *Puffinus*) *cinereus* from "off Monterey."
1864. Lawrence, G. N. Descriptions of New Species of Birds of the Families CÆREBIDÆ, TANAGRIDÆ, ICTERIDÆ, and SCOLOPACIDÆ. < Proc. Ac. Nat. Sc. Phil. XVI, April 1864, pp. 106-108.
Includes the original description of *Ereunetes occidentalis* (= *E. mauri*); "Habitat.—Pacific coast; California, Oregon."
1865. Cassin, J. An examination of the Birds of the genus CHRYSOMITRIS, in the Museum of the Academy of Natural Sciences of Philadelphia. < Proc. Ac. Nat. Sc. Phil. XVII, May 1865, pp. 89-94.
1865. Cooper, J. G. On a new CORMORANT from the Farallone Islands, California. < Proc. Ac. Nat. Sc. Phil. XVII, January 1865, pp. 5-6.
Graculus Bairdii (= *Phalacrocorax pelagicus resplendens*).
1865. Feilner, J. Exploration in Upper California in 1860, under the Auspices of the Smithsonian Institution. < Annual Report of the Smithsonian Institution for 1864. 1865; pp. 421-430.
Accounts of about 20 species of birds observed between Fort Crook and Klammath Lakes.
1866. Coues, E. List of the BIRDS of Fort Whipple, Arizona: with which are incorporated all other species ascertained to inhabit the Territory; with brief critical and field notes, descriptions of new species, etc. < Proc. Ac. Nat. Sc. Phil. XVIII, March 1866, pp. 39-100.
Several species, for the first time recorded from the State, found at Fort Yuma on the California side of the Colorado River.

1866. Coues, E. From Arizona to the Pacific. < Ibis, 2nd Ser. II, July 1866, pp. 259-275.
A running account of seventy-five species of birds observed along the Colorado River, the Mojave River, and at San Pedro.
1866. Jackson, C. T. [Account of a Scientific Journey through California and Nevada] < Proc. Bost. Soc. Nat. Hist. X, April 1866, pp. 224-229.
Includes a discussion of the acorn-storing habit of the California Woodpecker.
1868. [Cooper, J. G.] The | Natural Wealth | of | California | comprising | Early History; Geography, Topography, and Scenery; Climate; Agriculture and Commercial | Products; Geology, Zoology, and Botany; [etc., 9 lines]. | By | Titus Fey Cronise. | San Francisco: | H. H. Bancroft & Company. | 1868. Large 8vo, pp. i-xvi, 1-696. > Chapter VII. Zoology. Pp. 434-501. > Birds. Pp. 448-480.
A running account of 353 species of birds, giving briefly their distribution and most notable characteristics. Dr. Cooper's name appears only in the preface where his "valuable assistance rendered" in the department of zoology is acknowledged.
1868. Cooper, J. G. Some Recent Additions to the Fauna of California. < Proc. Cal. Ac. Sc. IV, November 1868, pp. 3-13.
Mention of 45 species, some of them for the first time recorded from the State; critical remarks.
1868. Coues, E. A Monograph of the ALCIDÆ. < Proc. Ac. Nat. Sc. Phil. XX, January 1868, pp. 2-81.
Several California references.
1868. [Jackson, C. T.] [Habits of *Melanerpes formicivorus*] < Ibis, 2nd Ser. IV, January 1868, pp. 116-117.
Extract from article in Proc. Bost. Soc.
1869. Canfield, C. S. Habits of the Burrowing Owl of California. < Am. Naturalist II, January 1869, pp. 583-586.
1869. Cooper, J. G. The Naturalist in California. < Am. Naturalist III, June 1869, pp. 182-189.
Field notes on many birds observed on the Los Angeles Plains, Cajon Pass and Mojave River.
1869. Cooper, J. G. The Naturalist in California. < Am. Naturalist III, November 1869, pp. 470-481.
Field observations made at Fort Mojave, which, however, is on the Arizona side of the Colorado River. Includes numerous references to the birds of California.
1869. Ridgway, R. Notices of certain obscurely known species of American Birds. < Proc. Ac. Nat. Sc. Phil., June 1869, pp. 125-135.
Notes on thrushes, etc.; technical.
1870. Baird, S. F. The Birds | of | North America; | The Descriptions of Species Based Chiefly on the Collections | in the | Museum of the Smithsonian Institution. | By | Spencer F. Baird, | Assistant Secretary of the Smithsonian Institution, | with the Co-operation of | John Cassin, | of the Academy of Natural Sciences of Philadelphia, | and | George N. Lawrence, | of the Lyceum of

Natural History of New York. | With an Atlas of One Hundred Plates. | Text. | ——— | Philadelphia: J. B. Lippincott & Co. | 1860. | Salem: Naturalist's Book Agency. | 1870. 4to, pp. i-lvi, 1-1005. Atlas, 4to, 100 pll.

This is practically the same as Vol. IX, Pac. R. R. Report, 1858, which see. The Atlas, however, contains many new plates besides those previously appearing in the Pac. R. R. Reports and the Mex. Boundary Survey.

1870. Cooper, J. G. The Fauna of California and its Geographical Distribution. < Proc. Cal. Ac. Sc. IV, February 1870, pp. 61-81.

Contains separate lists of birds for different regions, including those observed on several of the Santa Barbara Islands.

1870. Cooper, J. G. Geological Survey of California. | J. D. Whitney, State Geologist. | ——— | Ornithology. | Volume I. | Land Birds. | Edited by S. F. Baird, | from the Manuscript and Notes of | J. G. Cooper. | ——— | Published by Authority of the Legislature. | 1870. Large 8vo, pp. i-xi, 1-592; figg.

Includes birds of all the region west of the Rocky Mountains. Many species are given as occurring "undoubtedly" in California but of which no specific instances are known. These, of course, cannot be considered as definite records of the species for California. Also the "Habitat" of several southwestern species is stated to be "Colorado Valley, California." But Cooper's observations are in most cases expressly stated as having been made in that region at Fort Mojave, which is on the Arizona side. (See Auk VII, April 1890, 214.) The biographical accounts of the species entered in this work are mostly meager, and there is really very little new information of any sort. The technical parts were prepared by Baird.

1870. Ridgway, R. A New Classification of the North American FALCONIDÆ, with Descriptions of Three New Species. < Proc. Ac. Nat. Sc. Phil., December 1870, pp. 138-150.

Includes original description of *Onychotes gruberi*, said to have come from "California."

1871. Allen, J. A. On the Mammals and Winter Birds of East Florida, with an Examination of certain assumed Specific Characters in Birds, and a Sketch of the Bird-Faunæ of Eastern North America. < Bull. Mus. Comp. Zool. II, 1871, pp. 161-450, pll. IV-VIII.

Includes critical notes on Shrikes, Hermit Thrushes, Savanna Sparrows, Red-winged Blackbirds, etc., from California.

1871. Cooper, J. G. Monterey in the Dry Season. < Am. Naturalist IV, February 1871, pp. 756-758.

Brief mention of 30 species observed in the vicinity of Monterey. Among those of especial note is *Ossifraga gigantea* (?).

1871. [Kneeland, S.] [Observations made on voyage from Panama to California] < Proc. Bost. Soc. Nat. Hist. XIV, March 1871, pp. 137-139.

Puffinus cinereus (?), on second day from San Francisco.

1871. [Kneeland, S.] A Zoologist on the Pacific Coast. < Am. Naturalist V, July 1871, pp. 312-313.

Puffinus cinereus (?) off California.

1871. V[errill, A. E.] Geological Survey of California; Ornithology, Vol. I. < Am. Journ. Sc., 3rd Ser. I, January 1871, p. 70.

Review.

1872. Coues, E. Studies of the Tyrannidæ.—Part I. Revision of the Species of *Myiarchus*. < Proc. Ac. Nat. Sc. Phil., June 25, 1872, pp. 56-81.

Technical notes on *Myiarchus cinerascens*.

1872. Coues, E. Key | to | North American Birds | Containing a Concise Account of Every Species of | Living and Fossil Bird | at Present Known from the Continent North of the Mexican | and United States Boundary. | Illustrated by 6 Steel Plates, and Upwards of 250 Woodcuts. | By | Elliott Coues, | Assistant Surgeon United States Army. | ——— | Salem: Naturalists' Agency. | New York: Dodd and Mead. | Boston: Estes and Lauriat. | 1872. Imp. 8vo, pp. 4, 1-361, pll. I-VI, figg. 1-238.

Includes observations as to the status of certain species accredited to California.

- 1872-1873. Ridgway, R. On the relation between Color and Geographical Distribution in Birds, as exhibited in Melanism and Hyperchromism. < Am. Journ. Sc., 3rd Ser. IV, December 1872, pp. 454-460; V, January 1873, pp. 39-44.

Includes original description of *Cyanura stelleri* var. *frontalis* (= *Cyanocitta stelleri frontalis*), from the Sierra Nevada; also critical notes on several other California forms.

1873. Ridgway, R. Catalogue of the Ornithological Collection of the Boston Society of Natural History. Part II. Falconidæ. < Proc. Bost. Soc. Nat. Hist. XVI, May 1873, pp. 43-72.

Specimens from various localities in California.

1873. Ridgway, R. On Some New Forms of American Birds. < Am. Naturalist VII, October 1873, pp. 602-619.

Myiodiocetes pusillus, var. *pileolata* (= *Wilsonia pusilla pileolata*); from San Francisco.

1873. Ridgway, R. The Grouse and Quails of North America. Discussed in Relation to their Variation with Habitat. < Forest & Stream I, December 1873, pp. 289-290.

Includes reference to the races of *Oreortyx pictus* in California.

1874. Baird, S. F., Brewer, T. M., and Ridgway, R. A | History | of | North American Birds | by | S. F. Baird, T. M. Brewer, and R. Ridgway | Land Birds | Illustrated by 64 Plates and 593 Woodcuts | Volume I [-III]. | [vignette] | Boston | Little, Brown, and Company | 1874. Small 4to; Vol. I, pp. i-xxviii, 1-596, i-vi, cuts, pll. I-XXVI; Vol. II, pp. 1-590, i-vi, cuts, pll. XXVII-LVI; Vol. III, pp. 1-560, i-xxviii, cuts, pll. LVII-LXIV.

The biographical accounts relative to California birds contained in this great work, altho quite extensive, are based almost entirely on previously published material of the various explorers. The Appendix at the end of Volume III, however, includes a number of Cooper's field observations made after the publication of his "Ornithology of California"; and some of these are of especial importance.

1874. Brewer, T. M. [See Baird, Brewer and Ridgway.]

1874. Cooper, J. G. Animal Life of the Cuyamaca Mountains. < Am. Naturalist VIII, January 1874, pp. 14-18.

Brief mention of 84 species of birds observed in the vicinity of the Cuyamaca Mountains, San Diego County.

1874. Cooper, J. G. "Verbal Remarks." < Proc. Cal. Ac. Sc. V, December 1874, pp. 414-415.

Specimens of *Uria lomvia* (—young of *Uria troile californica*) and *Stercorarius parasiticus* from the coast of California.

1874. Coues, E. Field | Ornithology. | Comprising a | Manual of Instruction | for | Procuring, Preparing and Preserving Birds | and a | Check List of North American Birds. | By | Dr. Elliott Coues, U. S. A. | [vignette] | Salem: | Naturalists' Agency. | Boston: Estes & Lauriat. | New York: Dodd & Mead. | 1874. 8vo, pp. i-iv, 1-116, 1-137.

In the "Appendix to Check List", pp. 123-137, the status of several California species is noted.

1874. Coues, E. Birds of the Northwest: A Hand-book of the Ornithology of the Region Drained by the Missouri River and its Tributaries. =Miscellaneous Publications No. 3. U. S. Geol. Surv. of the Terr. Washington: 1874. 8vo, pp. i-xi, 1-791.

The greater part of the California matter in this work is quoted from previous writers. The accounts of a few species, however, are from Coues' personal observations at Fort Yuma, Mojave River and San Pedro.

1874. Pioneer. [Albino Robin at Nicasio] < Forest & Stream II, April 1874, p. 123.

1874. Pioneer. The Scent Question. < Forest & Stream II, August 1874, p. 405.

Relates to the California Quail.

1874. Ridgway, R. Notes upon American Water Birds. < Am. Naturalist VIII, February 1874, pp. 108-111.

Ægialitis microrhynchus, "new species", from San Francisco (—*Æ. dubia*); also original description of "*Rallus elegans*, var. *obsoletus*" (= *R. obsoletus*) from San Francisco; and *Porzana Jamaicensis*, var. *coturniculus* (—*Creciscus coturniculus*) from the Farallone Islands.

1874. Ridgway, R. On Local Variations in the Notes and Nesting Habits of Birds. < Am. Naturalist VIII, April 1874, pp. 197-201.

Reference to certain California species.

1874. Ridgway, R. [See Baird, Brewer and Ridgway.]

1874. Ridgway, R. Two Rare Owls from Arizona. < Am. Naturalist VIII, April 1874, pp. 239-240.

With California references.

- 1874-1875. Ridgway, R. Lists of Birds Observed at Various Localities Contiguous to the Central Pacific Railroad, from Sacramento City, California, to Salt Lake City, Utah. < Bull. Essex Inst. VI, October 1874, pp. 169-174; VII, January 1875, pp. 10-24; February 1875, pp. 30-40.

Includes nominal lists of 50 species found at Sacramento; 13 species of the plains between Sacramento and the western foothills of the Sierras; 9 species of the foothills; 13 species of the pine forests of the west slope; and 4 species found at the summit. This paper is merely a preliminary abstract of the complete report of 1877.

1874. Sharpe, R. B. Catalogue of the Accipitres, or Diurnal Birds of Prey, in the Collection of the British Museum. =Cat. Bds. I, 1874, 8vo, pp. i-xiii, 1-479; pll. I-XIV, figg.
Many specimens listed from California.
1875. Allen, C. A. Abnormal Plumage of the California Quail. < Forest & Stream V, December 1875, p. 308.
1875. Cooper, J. G. Notes on Californian Thrushes. < Am. Naturalist IX, February 1875, pp. 114-116.
Corrections: *Turdus ustulatus* and "*T. nanus*".
1875. Cooper, J. G. New Facts relating to California Ornithology—No. 1. < Proc. Cal. Ac. Sc. VI, December 1875, pp. 189-202.
Extended critical and biographical notes on a number of the less known species.
1875. E[stey], T. H. [Note on weights of California Quail] < Forest & Stream III, January 1875, p. 391.
1875. Est[e]y, T. H. White California Quail. < Forest & Stream IV, February 1875, p. 5.
Partial albino from Nicasio.
1875. [E[stey], T. H.] Habits of the White Pelican. < Forest & Stream V, December 1875, p. 260.
Near Sacramento.
1875. Henshaw, H. W. Appendix I 2. Annotated List of the Birds of Arizona, by H. W. Henshaw, Ornithological Assistant. < Ann. Rep. Geol. Surv. West 100th Mer. by George M. Wheeler = App. LL of the Ann. Rep. Chief of Engineers for 1875. Pp. 153-166.
Unimportant references to California, mostly quoted from Coes and Cooper.
1875. Hinckley, W. M. Flora and Fauna of California. < Forest & Stream V, October 1875, p. 146.
Brief mention of a few wild fowl in Ventura County.
1875. Nelson, E. W. Notes on Birds observed in portions of Utah, Nevada, and California. < Proc. Bost. Soc. Nat. Hist. XVII, January 1875, pp. 338-365.
Includes a briefly-annotated list of 72 species "observed in the vicinity of Nevada City, Cal., between August 15th and December 15th, 1872."
1875. Ridgway, R. On *Nisus Cooperi* (Bonaparte), and *N. Gundlachi* (Lawrence). < Proc. Ac. Nat. Sc. Phil., March 1875, pp. 78-85.
Specimens of *Nisus* (= *Accipiter*) *cooperi* from California; technical.
1875. Sharpe, R. B. Catalogue of the Striges, or Nocturnal Birds of Prey, in the Collection of the British Museum. =Cat. Bds. II, 1875, 8vo, pp. i-xi, 1-325; pll. I-XIV, figg.
Specimens listed from California.
1876. Allen, Mrs. C. A. [Note] < Forest and Stream V, February 1876, p. 404.
Several species of birds nesting in one tree.

1876. Allen, C. A. Notes from California. < Forest & Stream VII, August 1876, p. 4.
Nesting of several birds at Nicasio.
1876. Allen, J. A. Anser Rossii in Oregon. < Bull. Nutt. Orn. Club I, July 1876, p. 52.
Refers to Coues' record for California.
1876. Chambers, V. T. The Chaparral Cock. < Am. Naturalist X, June 1876, p. 373.
Food habits.
1876. Cooper, J. G. Early Nesting of the Anna Humming-Bird. < Am. Naturalist X, January 1876, pp. 48-50.
In vicinity of Haywards.
1876. Cooper, J. G. California Garden Birds. < Am. Naturalist X, February 1876, pp. 90-96.
Running account of about 40 species nesting in the vicinity of Haywards.
1876. Cooper, J. G. Nesting Habits of the California House Wren (*Troglodytes aedon* var. *parkmanni*) < Bull. Nutt. Orn. Club I, November 1876, pp. 79-81.
1876. Estey, T. H. Hybrid Ducks. < Forest & Stream V, January 1876, p. 388.
1876. Henshaw, H. W. On Two Empidonaces, Traillii and Acadicus. < Bull. Nutt. Orn. Club I, April 1876, p. 15.
Refers to "*E. traillii* var. *pusillus*" as occurring in southern California.
1876. Henshaw, H. W. Report on the Ornithology of the Portions of California Visited During the Field-Season of 1875 by H. W. Henshaw. < Ann. Rep. Geog. Surv. West 100th Mer. by George M. Wheeler = App. JJ of the Ann. Rep. Chief of Engineers for 1876. Pp. 224-278.
This important paper consists of an extensively annotated list of 204 species. These were observed from Los Angeles to Santa Barbara, on Santa Cruz Island, about Fort Tejon, Kernville and Walker Basin, and in the vicinity of Mt. Whitney.
1876. Hoffman, W. J. Habits of Western Birds. < Am. Naturalist X, April 1876, pp. 238-239.
Nesting of *Stellula calliope* in Owens Valley.
1876. Ridgway, R. Studies of the American Falconidæ. < Bull. U. S. Geol. & Geog. Surv. Terr. II, 1876, pp. 91-182.
Critical: *Onychotes gruberi*, etc.
1876. Stearns, R. E. C. Pelicans in San Francisco Bay. < Am. Naturalist X, March 1876, p. 177.
Pelecanus fuscus (*californicus*) and *P. erythrorhynchos*.
1877. A[llen], J. A. Californian Ornithology. < Bull. Nutt. Orn. Club II, July 1877, p. 76.
Remarks concerning Cooper's paper on "New Facts relating to Californian Ornithology—No. 1."

1877. Brewster, W. Two Undescribed Nests of California Birds. < Bull. Nutt. Orn. Club II, April 1877, pp. 37-38.
Carpodacus purpureus var. *californicus* (?) and *Peuceea ruficeps* at Nicasio.
1877. Cooper, J. G. On Seventy-five Doubtful West-coast Birds. < Bull. Nutt. Orn. Club II, October 1877, pp. 88-97.
 Remarks concerning numerous species attributed to California by early writers, but the occurrence of which is now doubtful.
1877. Coues, E. Note on *Podiceps dominicus*. < Bull. Nutt. Orn. Club II, January 1877, p. 26.
 Refers to Gambel's record as "perhaps erroneous".
1877. Coues, E. Eastward Range of the Ferruginous Buzzard (*Archibuteo ferrugineus*). < Bull. Nutt. Orn. Club II, January 1877, p. 26.
 Also southern California.
1877. Elliot, D. G. Remarks on *Selasphorus alleni*, Henshaw. < Bull. Nutt. Orn. Club II, October 1877, pp. 97-102; 2 figg.
 Nomenclatural technique: *Trochilus rufus* of Gmelin is argued to apply to the recently described *S. alleni*, while a new name, *S. henshawi*, is proposed for the rufous-backed species.
1877. Henshaw, H. W. Description of a New Species of Humming-bird from California. < Bull. Nutt. Orn. Club II, July 1877, pp. 53-58; 2 figg.
 The original description of *Selasphorus alleni*; type locality, Nicasio.
1877. Henshaw, H. W. Report on the Ornithology of Portions of Nevada and California, by Mr. H. W. Henshaw < Ann. Rep. Geog. Surv. West 100th Mer. by George M. Wheeler=App. N N of the Ann. Rep. Chief of Engineers for 1877. Pp. 1303-1322.
 Includes a briefly-annotated list of 69 species observed on the east slope of the Sierras in the vicinity of Lake Tahoe.
1877. Ridgway, R. United States Geological Exploration of the Fortieth Parallel | Clarence King, Geologist-in-charge | — | Part III. | Ornithology. | By | Robert Ridgway. [1877] 4to, pp. 303-669.
 The California bird matter relates to the vicinity of Sacramento and the Sierras and foothills immediately to the eastward. The nominal list of species had been previously published in the Proceedings of the Essex Institute for 1874-75. But in the present report more extended accounts are given together with lists of specimens and notes on them.
1877. Sharpe, R. B. Catalogue of the Passeriformes, or Perching Birds, in the Collection of the British Museum. Coliormorphæ, Containing the Families Corvidæ, Paradiseidæ, Oriolidæ, Dieruridæ, and Prionopidæ. = Cat. Bds. III, 1877, pp. i-xiii, 1-343; pl. I-XIV, figg.
1878. Allen, C. A. An Albino Anna Humming-Bird. < Bull. Nutt. Orn. Club III, October 1878, pp. 192-193.
1878. Allen, C. A. The Pygmy Owl (*Glaucidium californicum*) < Bull. Nutt. Orn. Club III, October 1878, p. 193.
 Nicasio: habits.

1878. Allen, J. A. Rufous-headed Sparrow (*Peucaea ruficeps*) in Texas. < Bull. Nutt. Orn. Club III, October 1878, pp. 188-189.
Reference to its occurrence in California.
1878. Bailey, H. B. Some new Traits for the Red-headed Woodpecker (*Melanerpes erythrocephalus*). < Bull. Nutt. Orn. Club III, April 1878, p. 97.
Reference to *Melanerpes formicivorus bairdi* in California.
1878. Belding, L. Nesting-Habits of *Parus montanus*. < Bull. Nutt. Orn. Club III, April 1878, pp. 102-103.
1878. Brewer, T. M. Nest and Eggs of *Zonotrichia coronata*. < Bull. Nutt. Orn. Club III, January 1878, pp. 42-43.
Breeding in Shasta Co. (?)
1878. Brewster, W. Note. < Bull. Nutt. Orn. Club III, January 1878, p. 10.
Note in regard to previous article on the California Purple Finch.
1878. Brewster, W. Descriptions of the First Plumage in Various Species of North American Birds. > 40. *Geothlypis macgillivrayi*. < Bull. Nutt. Orn. Club III, April 1878, p. 62.
1878. B[rewster], W. Ornithology of the Wheeler Expeditions of 1876 and 1877. < Bull. Nutt. Orn. Club III, July 1878, pp. 136-138.
An extended review of Henshaw's reports upon the ornithology of California and Nevada.
1878. Brewster, W. Descriptions of the First Plumage in Various Species of North American Birds. > 93. *Picus villosus harrisi*. < Bull. Nutt. Orn. Club III, October 1878, p. 179.
From Nicasio.
1878. Cooper, J. G. California Prairie Chickens. < Bull. Nutt. Orn. Club III, April 1878, p. 96.
On the status in California of *Tetrao columbianus* (= *Pediocetes phasianellus columbianus*).
1878. Cooper, W. A. Notes on the Breeding Habits of *Carpodacus purpureus* var. *californicus*, with a Description of its Nest and Eggs. < Bull. Nutt. Orn. Club III, January 1878, pp. 8-10.
1878. Cooper, W. A. Notes on the Breeding Habits of Hutton's Vireo (*Vireo huttoni*) and the Gray Titmouse (*Lophophanes inornatus*) with a Description of their Nests and Eggs. < Bull. Nutt. Orn. Club III, April 1878, pp. 68-69.
In the vicinity of Santa Cruz.
1878. [Coues, E.] Ridgway's Ornithology of the Fortieth Parallel. < Am. Naturalist XII, July 1878, p. 469.
Review.
1878. Coues, E. Birds of the Colorado Valley a repository of Scientific and Popular Information concerning North American Ornithology = Miscellaneous Publications — No. 11. U. S. Geol. Surv. of the Terr. Washington: 1878. 8vo, pp. i-xvi, 1-807; figg.
California matter nearly all quoted from previous publications. A "Bibliographical Appendix", pp. 566-784, includes many titles relating entirely or in part to California Ornithology. This "list of faunal publications" was nearly complete up to date.

1878. Grant, G. H. Oology from California. < Oologist IV, April 1878, pp. 9-10.
1878. Henshaw, H. W. On the Species of the Genus *Passerella*. < Bull. Nutt. Orn. Club III, January 1878, pp. 3-7.
An accurate demonstration of geographical variation in *Passerella*, showing that the four then recognized forms are but races of one species.
1878. Henshaw, H. W. Additional Remarks on *Selasphorus Alleni*. < Bull. Nutt. Orn. Club. III, January 1878, pp. 11-15.
Further discussion of nomenclature.
1878. Henshaw, H. W. Preliminary report on the Ornithology of Portions of California and Nevada, by H. W. Henshaw. Field Season of 1877. < Ann. Rep. Geog. Surv. W. 100th Mer. by G. M. Wheeler. = App. NN Ann. Rep. Chief of Engineers for 1878. Pp. 185-186.
Brief mention of a few species along the eastern border of California: Barn Owl, White-crowned Sparrow, and Varied Thrush.
1878. Jasper, T. Studer's Popular Ornithology. | — | The | Birds of North America: | Drawn and Colored from Life by | Theodore Jasper, A. M., M. D. | One Hundred and Nineteen Colored Plates, | representing upwards of seven hundred different species and | varieties of North American birds, including a popular | account of their habits and characteristics. | — | Columbus, Ohio: | Published by Jacob H. Studer & Co., | 1878. Large 4to (issued in 40 parts), pp. 182+8+2.
Western material wholly quoted from previously published accounts.
1878. Lockington, W. N. Rambles Round San Francisco. < Am. Naturalist XII, June 1878, pp. 347-354.
Mention of a few birds.
1878. Mitchell, H. M. California Mountain Quail. < Forest & Stream IX, January 1878, p. 413.
Adaptability to introduction into eastern states.
1878. Ridgway, R. Notes on Some of the Birds of Calaveras County, California, and Adjoining Localities. < Bull. Nutt. Orn. Club III, April 1878, pp. 64-68.
A list of 47 birds collected by Belding chiefly in Calaveras County; brief notes on the specimens.
1878. Ridgway, R. Review of the American Species of the Genus *Scops*, Savigny. < Proc. U. S. N. M. I, August 1878, pp. 85-117.
Including the Screech Owl from California.
1878. Ridgway, R. Studies of the American *Herodiones*. < Bull. U. S. Geol. & Geog. Surv. Terr. IV, 1878, pp. 219-251.
Critical: *Ardea herodias*.
1878. Stearns, R. E. C. The Prairie Chicken in California. < Am. Naturalist XII, February 1878, pp. 124-125.
In Surprise Valley. (= *Pedixcetes phasianellus columbianus*?)

1878. Stearns, R. E. C. A Strange Flight of Hawks. < Am. Naturalist XII, March 1878, pp. 185-186.
Near Fulton.
1878. Stephens, F. Vireo vicinior in California. < Bull. Nutt. Orn. Club III, January 1878, p. 42.
At Campo, San Diego County.
1879. Allen, J. A. Recent Literature. > Belding and Ridgway's Birds of Central California. < Bull. Nutt. Orn. Club IV, July 1879, pp. 167-171.
Extended review.
1879. [Anonymous] The California Quail. < Forest & Stream XIII, December 1879, p. 894.
Popular account from sportsman's standpoint.
1879. Belding, L. A partial list of the Birds of Central California. < Proc. U. S. N. M. I, March 1879, pp. 388-449.
An extensively annotated list of 220 species, from observations made chiefly in the Sierras of Calaveras County, and at Stockton and Marysville. Technical remarks by Ridgway.
1879. Brewer, T. M. Notes on the Nests and Eggs of the Eight North American Species of Empidonacæ. < Proc. U. S. N. M. II, April 1879, pp. 1-10.
E. difficilis and *E. trailli* from California.
1879. Brewster, W. Description of the First Plumage in Various Species of North American Birds. < Bull. Nutt. Orn. Club IV, January 1879, pp. 39-46.
Several species from California.
1879. Brewster, W. Notes on the Habits and Distribution of the Rufous-crowned Sparrow (*Peucaea ruficeps*). < Bull. Nutt. Orn. Club IV, January 1879, pp. 47-48.
From Marin County.
1879. Cooper, W. A. Notes on the Breeding Habits of the California Pigmy Owl (*Glaucidium californicum*), with a Description of its Eggs. < Bull. Nutt. Orn. Club IV, April 1879, pp. 86-87.
Near Santa Cruz.
1879. Coues, E. History of the Evening Grosbeak. < Bull. Nutt. Orn. Club IV, April 1879, pp. 65-75.
An extended article on the life-history of *Coccothraustes vespertinus*, including references to its occurrence in California.
1879. Coues, E. Note on *Dendroica townsendi*. < Bull. Nutt. Orn. Club IV, April 1879, p. 117.
Wintering at Santa Cruz.
1879. Deane, R. Additional Cases of Albinism and Melanism in North American Birds. < Bull. Nutt. Orn. Club IV, January 1879, pp. 27-30.
California albinos of Audubon Warbler, Brewer Blackbird, Anna Hummingbird, Heermann Gull and Fulvous Tree Duck.

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- These two volumes are of particular value in California ornithology as containing Dr. J. G. Cooper's manuscript notes originally intended for Volume II of the "Ornithology of California," which volume never was published. There are thus more or less extended biographies pertaining strictly to this State, and probably including nearly all records up to the date of compilation. Here is the original description by Ridgway of *Pelecanus californicus*, and various other technical matter relating to western species.
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1885. Emerson, W. O. California Song Sparrow. < Orn. & Ool. X, September 1885, p. 143.
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1889. Bryant, W. E. A Specimen of *Passerella iliaca* taken in California. < Proc. Cal. Ac. Sc., 2nd Ser. II, October 1889, p. 90.
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1889. Davie, O. Nests and Eggs | of | North American Birds | by | Oliver Davie | The Fourth Edition | Introduction by J. Parker Norris. | Illustrations | by | Theodore Jasper, A. M., M. D. and W. Otto Emerson | — | Columbus | Hahn & Adair | 1889. 8vo, pp. [i-viii], 1-455, i-xii; pll. I-XIII.
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1889. Taylor, H. R. Nesting of the White-tailed Kite. < Orn. & Ool. XIV, June 1889, p. 90.
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1889. Taylor, H. R. The Identification of Californian Nests and Eggs of the Genus *Empidonax*. < Proc. Cal. Ac. Sc., 2nd Ser. II, October 1889, pp. 88-89.
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1890. Belding, L. Land Birds of the Pacific District = Occasional Papers of the California Academy of Sciences II. San Francisco: September 1890; 8vo, pp. 1-274.
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1890. Bryant, W. E. Notices of Supposed New Birds. < Zoe I, July 1890, pp. 148-150.
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1890. Keeler, C. A. Floating Feathers From the West. < Orn. & Ool. Semi-Annual II, January 1890, pp. 3-5.
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1892. Lillie, H. C. Phainopepla, or Black-crested Flycatcher. > Oologist IX, May 1892, pp. 132-134.
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1892. Osgood, W. H. After Golden Eagles. < Oologist IX, May 1892, pp.
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1898. J[ohnson], W. A. Birds of the Pacific Slope of Los Angeles County. < Osprey II, June 1898, p. 138.
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< Oologist XXIII, April 1906, p. 58.
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1907. D'Evelyn, F. W. Slaughter of Blue Jays < Condor IX, March 1907, pp. 62-63.
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1907. Emerson, W. O. *Puffinus creatopus* in Alameda County, California. < Condor IX, March 1907, p. 60.
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Seiurus noveboracensis notabilis in the San Bernardino Mountains as a migrant.
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Second edition, revised and enlarged, with photos by Finley and Bohlman.

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1907. Linton, C. B. The Horned Grebe in Southern California. < Condor IX, July 1907, p. 110.
1907. Linton, C. B. The Mew Gull in Southern California. < Condor IX, July 1907, p. 110.
Not *Larus canus*, but *Rissa tridactyla pollicaris* (see CONDOR IX, Nov. 1907, 199).
1907. Linton, C. B. Mexican Black Hawk in California. < Condor IX, July 1907, p. 110.
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1907. Linton, C. B. Correction. < Condor IX, November 1907, p. 199.
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1907. Mearns, E. A. Mammals of the Mexican Boundary | of the United States | A Descriptive Catalogue of the Species of Mam- | mals Occurring in that Re- | gion; with a | General Summary of the Natural | History, and a List of Trees | By | Edgar Alexander Mearns, M. D. | Major and Surgeon, U. S. Army | — | Part I | Families Didelphiidæ to Muridæ | [vignette] | Washington | Gov- | ernment Printing Office | 1907 = Smithsonian Institution | United States National Museum | Bulletin 56 (published April 13, 1907); 8vo, pp. i-xv, 1-530, pll. I-XIII, 126 text figg.
On pages 141 to 142 are lists of birds from San Clemente Island.
1907. Myers, H. W. Nesting Ways of the Western Gnatcatcher < Condor IX, March 1907, pp. 48-51.
As observed in Los Angeles County.
1907. Myers, H. W. Nesting Habits of *Phainopepla nitens* < Condor IX, July 1907, pp. 101-103.
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1907. Pierce, W. M. Experiences with the Dotted Canyon Wren < Condor IX, January 1907, pp. 16-17.
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1907. Pierce, W. M. Notes on the Pallid Wren-Tit < Condor IX, September 1907, pp. 151-152.
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1907. Ray, M. S. From Boulder to the Sea < Condor IX, November 1907, pp. 173-176, 3 hftt.
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INDEX TO BIRD NAMES

NOTE.—This is a page index to the scientific and vernacular names of birds, as occurring in the main Bibliography either in the titles or in my annotations. Should an author have been forgotten, an article may often be located by recalling that its title included the name of some particular bird, and then this index would prove of service. But it seems scarcely needful to warn the reader that this must not be depended upon to serve as a guide to even the important literature on any particular bird. For it may not mention a species treated of fully and in many places in the literature of California ornithology, tho not named in the titles, or mentioned in the annotations. Such an index would be a complete synonymy of every species, which this is not.

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AND ITS CONTINUATION

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HENRY BARROILHET KAEDING

A.C.M.M.S.S.A., M.A.I.M.E.,

M.C.A.S., M.C.O.C.



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INTRODUCTION.

The following pages contain the Index to the first ten volumes of the Bulletin of the Cooper Ornithological Club, of which only the first volume (1899) bears this title, the subsequent nine (1900-1908) being known as "The Condor." There have been no special features embodied in this work for the reason that the present chaotic state of the nomenclature of North American birds renders any system based thereupon exceedingly unstable. It has been thought advisable, therefore, to list species and subspecies exactly as they were found to occur in the text, with only minor changes as will be noted herein. The details of the arrangement are as follows:

1. *Authors*.—Titles of papers are in chronological order, the abbreviation "Rev." being used to indicate a review of the paper.

2. *Genera*.—Species and subspecies are indexed in alphabetical order under their respective genera, the Roman numeral in heavy type indicating the volume. The scientific names used are in the main taken from the "Auk" twenty-five year index; in the vernacular names the possessive has been discarded.

3. *New Species, etc.*—A separate list has been made of the new species and subspecies described, and in the body of the Index an original description is indicated by the abbreviation "desc."

The editor herewith extends heartfelt thanks to Prof. Joseph Grinnell for many valuable suggestions in the work, to his wife, Mary C. Kaeding, for aid in the drudgery of compilation, and to Mr. W. Otto Emerson and Mr. Howard Robertson, committee on ways and means for the publication of this work.

HENRY BARROILHET KAEDING.

LOS ANGELES, January 10, 1909.

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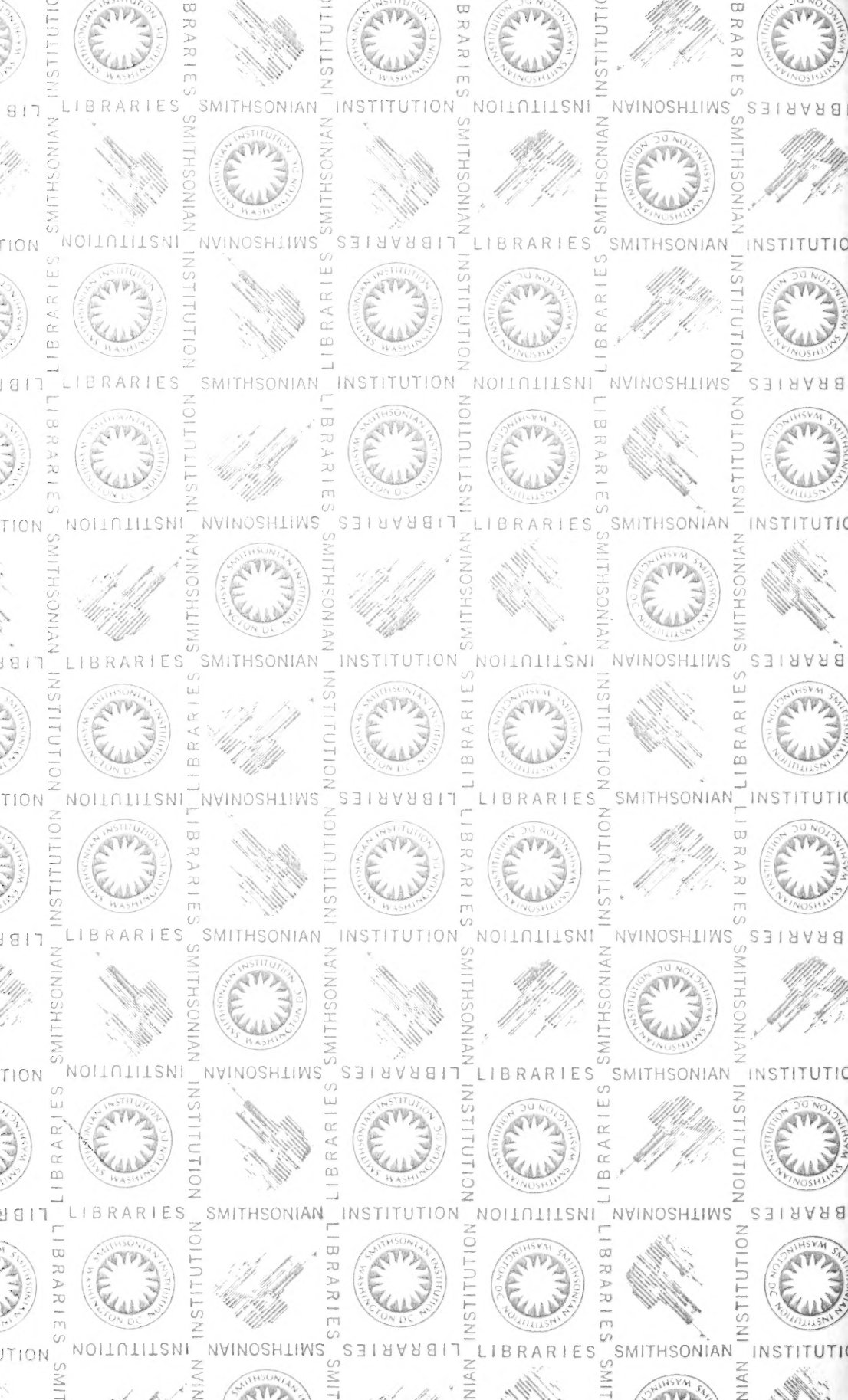
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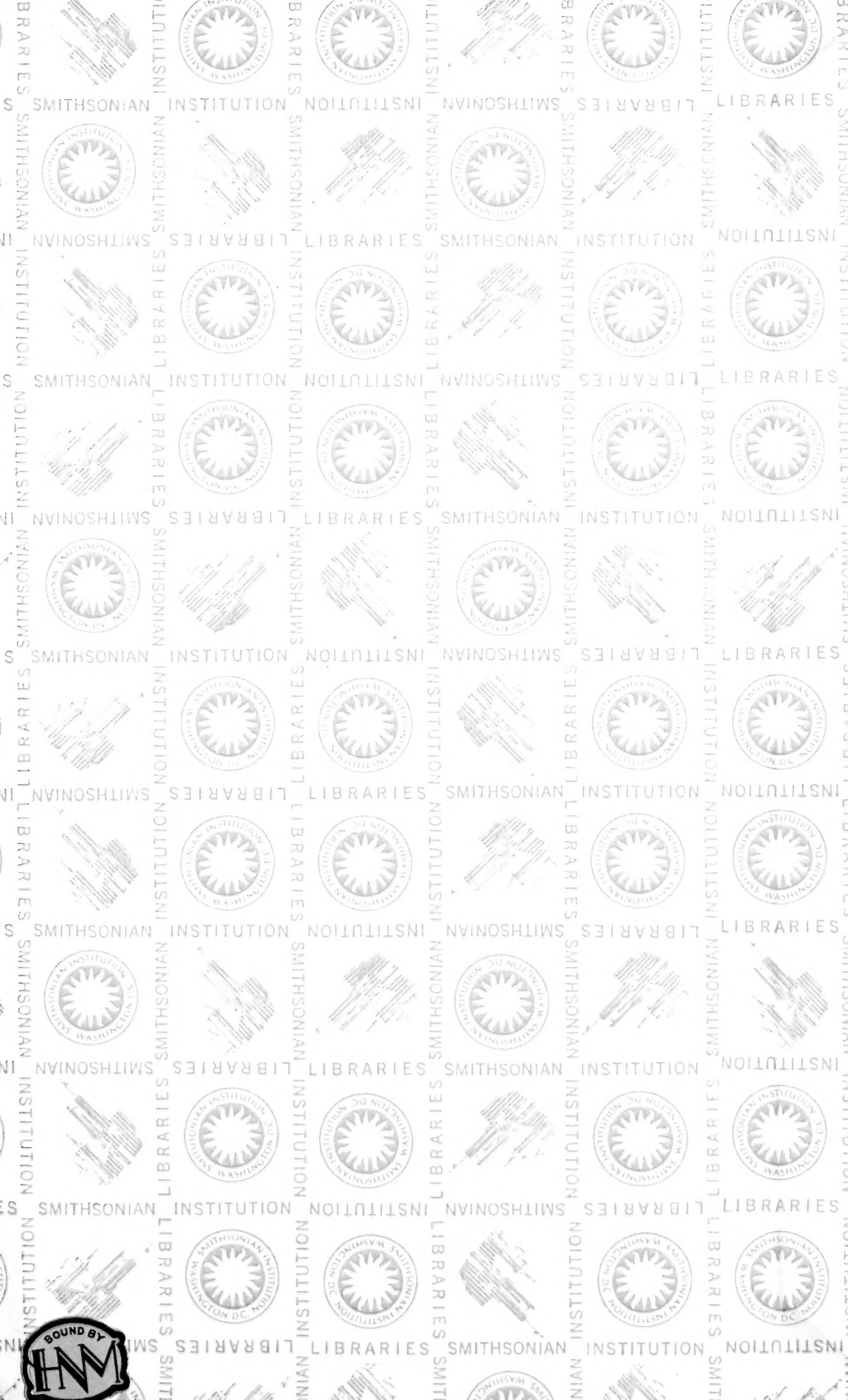
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