

ARTICLE VII.—*On a Collection of Birds made by Mr. Clark P. Streator in British Columbia, with Field Notes by the Collector.* By FRANK M. CHAPMAN.

The collection on which this paper is based was made by Mr. Clark P. Streator, who visited the region under consideration in the interests of the American Museum of Natural History. Mr. Streator was in the field from April 21 to November 15, 1889, and collected about 1000 birds. The localities visited by him, with quotations from his MS. notes on their prominent physical characteristics, are as follows :

1. Westminster Junction, B. C., April 21 to May 28.

"Westminster Junction is situated about three miles from the head of Burrard's Inlet, and ten miles north of the United States boundary. The country is characterized by gigantic coniferous forests, with trees frequently reaching to the height of over three hundred feet. Underneath these trees spring up many smaller deciduous ones, such as maple, alder, and many others. In most cases the trees as well as the ground and fallen logs are laden with moss and ferns, forming an almost impenetrable mass. There is very little open country except on the overflowed lands of the Frazer River. Here there is little timber but cottonwoods and willows."

2. Mt. Lehman, B. C., May 29 to June 15, and September 4 to 23.

"Mt. Lehman is twenty miles east of Westminster Junction, on the south side of the Frazer River. This locality differed little from the former, but the timber was less dense."

3. Ashcroft, B. C., June 16 to July 15.

"Ashcroft is located one hundred miles north of the United States boundary, and two hundred miles east of the western terminus of the Canadian Pacific Railway. This place is almost a desert ; only sage-brush, small cactus, and now and then a few stunted trees and plants, are to be seen. But the mountains, two thousand feet high, are covered with scattering pine forests."

4. Ducks, B. C., July 16 to September 3.

"Ducks is sixty miles east of Ashcroft. The region is covered with a scattering coniferous forest, with bunch grass growing abundantly underneath."

5. Duncan's Station, Vancouver Island, September 27 to October 10.

"Duncan's station is situated forty miles north of Victoria, on the Esquimalt and Nanaimo Railway. It is on the edge of one of the most improved and fertile valleys on the island. On all sides are numerous and extensive lakes. The land which has been cleared was formerly covered with heavy forests, which were largely coniferous."

6. Kalama, Wash., October 14 to 20.

7. Ilwaco, Wash., October 24 to November 15.

"Kalama is situated sixty miles from the mouth of the Columbia River; Ilwaco is at the mouth of this river. Collections here were made after nearly all the summer residents had gone south."

From these notes it will be seen that Mr. Streater collected both on the coast, and also in the interior east of the coast range at Ducks and Ashcroft, two regions differing widely in climate and physical characteristics; the coast, with a rainfall heavier than that of any other part of North America, and a resulting dense forest growth, the interior with a minimum of rainfall and vegetation comparatively desert-like in character.

The following table of the precipitation of rain and melted snow compiled from Schott's memoir and data kindly furnished me by Mr. W. A. Stewart, Acting Director of the Meteorological Service of Canada, will serve to illustrate how great are the climatic differences which separate these two regions.

In view of our lack of exact information on the bird-life of this part of North America, an attempt to analyze the relationships of these two regions can be considered little more than preliminary. So far as published records go Mr. Streater collected in an almost new field, and while, as his collections show, his efforts were remarkably successful, they represent the work of but one individual over an extended area during a single season. I know of no reliable faunal lists of the birds of this region with which to compare some apparent anomalies in distribution made evident by his labors. Before dwelling on the influence which the coast climate has on the avi-fauna of the region, I may first briefly outline the territory which this climate affects. In Oregon, Washington, British Columbia and Alaska, this may be done with some approach to accuracy.

TABLE GIVING MEAN AMOUNT, IN INCHES, OF PRECIPITATION IN RAIN AND MELTED SNOW
FOR EACH SEASON AND THE YEAR.

	Lat.	Long.	Height.	Spring.	Summer.	Autumn.	Winter.	Year.
San Francisco, Cal.....	37° 48'	122° 25'	130	5.03	0.22	3.05	13.19	21.49
Camp Wright, Cal.....	39° 48'	123° 17'	8.26	0.27	8.17	27.27	43.97
Fort Humboldt, Cal.....	40° 45'	124° 10'	50	9.36	0.73	6.49	19.33	35.91
Astoria, Oregon.....	46° 11'	123° 48'	52	18.90	5.72	18.19	34.80	77.61
Cape Disappointment, Wash.....	46° 17'	124° 08'	30	14.97	5.97	20.46	29.84	71.24
New Westminster, B. C.....	49° 12'	122° 53'	33	13.09	2.04	5.58	27.00	62.96
Port Simpson, B. C.....	54° 30'	129° 20'	16	20.74	15.52	41.01	26.95	104.22
Sitka, Alaska.....	57° 03'	135° 20'	20	15.37	14.56	30.28	21.38	81.59
Spence's Bridge, B. C.....	50° 25'	121° 30'	770	2.11	2.06	1.51	2.16	7.84
Clinton, B. C.....	51° 6'	122° 48'	2978	.80	1.57	.89	2.76	6.02
Soda Creek, B. C.....	52° 20'	122° 19'	2225	1.14	2.85	1.44	2.26	7.69

Having for a western boundary the coast line with its outlying islands, the eastern boundary is almost as clearly determined by the mountains of the Coast and Cascade ranges. Here the summits intercepting the moisture-laden winds which arise from the warm currents of the Pacific cause the heavy precipitation, consequent higher temperature, and dense forest growth which characterize this region.

The northern boundary, as defined by Mr. Nelson is his admirable "Report on Natural History Collections made in Alaska," reaches to and includes the island of Kadiak. To quote from this work: "From the west comes the warm water of the northern border of the Japanese current, which flowing about Kadiak Island, bathes the coast thence east and south" (l. c., p. 24).

In the present condition of our knowledge the southern limits of this region can be determined with but slight approximation. The abrupt lines which restrict the climatal conditions of the northern, eastern and western boundaries are wanting on the southern boundary, and we have here a more gradual transition from the coast area of heavy rainfall southward into southern California. It is very probable, however, that a comparison of series of breeding specimens from the true northwest coast region and this southern California extension, will show that while the differences in coloration exhibited may not in every case be worthy of recognition in nomenclature, the birds from the more northern region of heavier rainfall will average darker than those from the south.

On the California coast the southern limits of the northwest coast fauna may probably be drawn in the vicinity of Cape Mendocino, in Humboldt County, at about latitude $40^{\circ} 30'$, or near the annual iso-hyetal line of 38 in. In the interior of the State the annual iso-hyetal line of 20 in. may more or less closely coincide with the breeding ranges of those "coast forms" which occur in California. For the present, at least, it will be useless to attempt to draw this line more closely. Full series of breeding birds, labeled with the altitude at which they were collected, are needed for comparison with more northern specimens before their relationships can be thoroughly understood. To

return, however, to British Columbia where faunal lines are not so complicated, and to the effects of the climate there existing on the avi-fauna of the region.

Climatal influence is here exerted in two ways. First, in differentiation ; second, in extension or restriction of habitat.

Of the thirty-one birds which may be enumerated as "north-west coast forms" all have been differentiated from their congeners, and show the effects of this moist, humid climate in much the same manner, and without exception these forms are darker, more richly colored, or more heavily barred or streaked, than any other representative of their respective genera. In producing this result heavy rainfall and humidity are primary factors, but the more immediate agents are the dense vegetation and clouded skies of a moist region which afford protection from the "bleaching" rays of the sun. In every instance these coast forms are represented in contiguous regions by more or less closely-related allies. While several bear full specific titles, their rank is due rather to the failure of zoölogical nomenclature to properly express their relationships than to any valid claim of specific distinctness. Two alone have been sufficiently differentiated to be recognized as species, *Perisoreus obscurus* and *Parus rufescens*.

The following table of coast forms with their interior representatives will show how extended has been the influence of the coast climate, and at the same time exhibit their relationships :

<i>Species and Subspecies of the Northwest Coast Fauna.</i>	<i>Represented East of the Coast Range by</i>
<i>Dendragapus obscurus fuliginosus</i>	{ <i>Dendragapus o. richardsoni</i> .
	{ <i>Dendragapus franklini</i> .
<i>Bonasa umbellus sabini</i>	{ <i>Bonasa u. togata</i> .
	{ <i>Bonasa u. umbelloides</i> .
<i>Accipiter atricapillus striatulus</i>	<i>Accipiter atricapillus</i> .
<i>Falco peregrinus pealei</i>	<i>Falco p. anatum</i> .
<i>Falco columbarius suckleyi</i>	<i>Falco columbarius</i> .
<i>Megascops asio kennicotti</i>	<i>Megascops asio</i> subsp.
<i>Bubo virginianus saturatus</i>	<i>Bubo v. subarcticus</i> .
<i>Dryobates villosus harrisi</i>	{ <i>Dryobates v. hyloscopus</i> .
	{ <i>Dryobates v. leucomelas</i> .
<i>Dryobates pubescens gairdneri</i>	{ <i>Dryobates p. oreocus</i> .
	{ <i>Dryobates pubescens</i> .
<i>Colaptes cafer saturator</i>	<i>Colaptes cafer</i> .
<i>Otocoris alpestris strigata</i>	{ <i>Otocoris a. leucolæma</i> .
	{ <i>Otocoris a. merrilli</i> .
<i>Cyanocitta stelleri</i>	<i>Cyanocitta s. annectens</i> .

<i>Perisoreus canadensis fumifrons</i>	<i>Perisoreus canadensis</i> .
<i>Perisoreus obscurus</i> *.....	<i>Perisoreus c. capitalis</i> .
<i>Carpodacus purpureus californicus</i>	<i>Carpodacus purpureus</i> ?
<i>Ammodramus sandwichensis</i>	<i>Ammodramus a. alaudinus</i> ?†
<i>Junco hyemalis oregonus</i>	<i>Junco h. shufeldti</i> .
<i>Melospiza fasciata rufina</i>	<i>Melospiza</i> , subsp.?
<i>Melospiza fasciata guttata</i>	<i>Melospiza f. guttata</i> .
<i>Passerella iliaca unalaschensis</i>	{ <i>Passerella iliaca</i> .
	{ <i>Passerella</i> , subsp.?
<i>Pipilo maculatus oregonus</i>	<i>Pipilo m. megalonyx</i> .
<i>Helminthophila celata lutescens</i>	<i>Helminthophila celata</i> .
<i>Sylvania pusilla pileolata</i>	<i>Sylvania pusilla</i> .
<i>Troglodytes hyemalis pacificus</i>	<i>Troglodytes hyemalis</i> ?
<i>Certhia familiaris occidentalis</i>	<i>Certhia f. montana</i> .
<i>Parus atricapillus occidentalis</i>	<i>Parus a. septentrionalis</i> .
<i>Parus rufescens</i>	<i>Parus hudsonicus</i> .
<i>Psaltriparus minimus</i>	— — —
<i>Regulus satrapa olivaceus</i>	<i>Regulus satrapa</i> .
<i>Turdus ustulatus</i>	<i>Turdus u. swainsoni</i> .
<i>Turdus aonalaschke</i>	<i>Turdus a. auduboni</i> .

We may now consider the effect of the coast climate on the distribution of species. As before remarked, this is exhibited in two ways, extension and restriction of habitat. Extension of habitat is perhaps most markedly shown by the intrusion of Californian species which range some distance up the coast, but do not occur and have no representative in the interior. *Sphyrapicus ruber*, *Glaucidium gnoma californicus*, and *Psaltriparus minimus* are excellent examples of this class, and perhaps *Coccyzus americanus*, *Habia melanocephala*, *Dendroica nigrescens*, and *D. townsendi* may also be included.

Extension of habitat is also shown by species which, having a representative, or occurring in both regions, are found farther north on the coast than they are in the interior. *Buteo borealis calurus*,† *Megascops asio kennicotti*, *Trochilus rufus*,† *Empidonax difficilis*,† *Corvus caurinus*,† and *Melospiza fasciata rufina* perhaps constitute most, if not all, the birds of this class.

Restriction of habitat is apparently caused solely by the character of the vegetation. The coast does not offer a suitable environment for some species which are found in corresponding latitudes of the interior. Thus such plain or prairie loving birds

* Mr. Streater's collection contains no specimens of this genus. The Sitkan form is given by Nelson as *Perisoreus canadensis fumifrons*, which, according to the same author, with *P. canadensis*, is also found in the interior of Alaska.

† Our knowledge of the distribution and forms of the Savanna Sparrow is too incomplete to make this arrangement more than provisional.

‡ Cf. Nelson, Report on Natural History Collections made in Alaska, p. 26.

as *Pediocætes phasianellus*, *P. p. columbianus*, *Poocætes gramineus*, and *Spizella socialis arizonæ*, have no place in the heavily-wooded coast. Nor do we find there *Salpinctes obsoletus* which occurs in the cactus regions of the interior.

Mr. Streater's collections from the interior develop two interesting facts. First, a reappearance here west of the Rockies of the eastern type; second, a westward extension in the range of certain eastern species.

Those species, which in the western United States exhibit the "bleaching" effects of a dry and arid region, and are thus differentiated from their eastern allies, in several instances appear in British Columbia in a plumage which more nearly, if not exactly, resembles that of the eastern form.

Thus the *Chordeiles* is *virginianus*, not *C. v. henryi*; the *Poocætes* is *gramineus*, not *P. g. confinis*; while the *Spizella* shows this reappearance to be due to change in climatal conditions rather than a westward migration, by being intermediate between *socialis* and *arizonæ*.

The eastern species, which occur in British Columbia, but do not apparently breed west of the Rockies in the United States, may reach this region by journeying westward along the northern border of the great plains. Mr. Streater found *Tyrannus tyrannus*, *Vireo olivaceus*, and *Galeoscoptes carolinensis*, common in the interior, while the first and last were met with on the coast.

With these introductory remarks we may pass to a detailed consideration of the species contained in the collection. In every instance specimens have been received unless a statement is made to the contrary, when the record is given on the authority of Mr. Streater. Mr. Streater's field notes are given in quotation marks.

1. *Æchmophorus occidentalis*. WESTERN GREBE.—"This species was frequently seen during the summer months about the mountain lakes of the interior, where it doubtless breeds."

No specimens received.

2. *Colymbus holboëlli*. HOLBELL'S GREBE.—"One specimen was taken at the mouth of the Columbia, November 3, 1889."

3. *Urinator imber*. LOON.—"Observed under the same circumstances as *Æchmophorus occidentalis*."

No specimens received.

[September, 1890.]

4. **Brachyramphus marmoratus.** MARBLED MURRELET.—“A male was found dead on the beach at Ilwaco, November 8, 1889, after a storm.”

5. **Larus glaucescens.** GLAUCOUS-WINGED GULL.—“Abundant at Ilwaco.”

6. **Larus occidentalis.** WESTERN GULL.—“Not very common at Ilwaco.”

7. **Larus californicus.** CALIFORNIA GULL.—“Rather common at Ilwaco.”

8. **Larus brachyrhynchus.** SHORT BILLED GULL.—“Common at Ilwaco.”

9. **Larus heermanni.** HEERMAN'S GULL.—“Common at Ilwaco only once, after a heavy storm.”

10. **Larus philadelphia.** BONAPARTE'S GULL.—“Very common at Ilwaco.”

11. **Fulmarus glacialis glupischa.** PACIFIC FULMAR.—“Large numbers of this species were found dead on the beach at Ilwaco after a heavy storm.”

Five specimens without sex mark, four in dark or sooty, and one in white plumage, collected at Ilwaco from October 30 to November 10, are considerably smaller than five specimens collected by Dr. Stejneger at Copper and Bering Islands, the comparative measurements being as follows :

Copper Island specimens, * wing, 12.73 ; tail, 4.87 ; tarsus, 1.96 ; culmen, 1.41.
Ilwaco specimens, wing, 10.58 ; tail, 4.30 ; tarsus, 1.79 ; culmen, 1.37.

12. **Phalacrocorax pelagicus robustus.** VIOLET-GREEN CORMORANT.—“Common at Ilwaco.”

One specimen received.

13. **Pelecanus californicus.** CALIFORNIA BROWN PELICAN.—“A few small flocks were seen at Ilwaco.”

No specimens received.

14. **Lophodytes cucullatus.** HOODED MERGANSER.—“Generally common.”

15. **Anas boschas.** MALLARD.—“Breeds in suitable localities throughout the Province; probably more numerous in the interior.”

* Orn. Explor. in Commander Islands. Bull. 29, U. S. Nat. Mus., 1885, p. 94.

16. *Anas carolinensis*. GREEN-WINGED TEAL.—“Observed only in the autumnal migration, when they were common.”

17. *Aix sponsa*. WOOD DUCK.—“Common in the coast region. Breeds.”

Two immature specimens received.

18. *Aythya americana*. RED-HEAD.—“A single pair observed in July near Ashcroft on a small lake.”

No specimens received.

19. *Charitonetta albeola*. BUFFLE-HEAD.—“A few were seen in nearly all the localities visited.”

20. *Oidemia perspicillata*. SURF SCOTER.—“Common about Burrard’s Inlet during the latter part of April. Abundant at Ilwaco.”

21. *Anser albifrons gambeli*. AMERICAN WHITE-FRONTED GOOSE.—“One specimen was shot from a flock of thirty or more at Duncan’s on Vancouver.”

22. *Olor columbianus*. WHISTLING SWAN.—A male was taken at Ilwaco, November 11.

23. *Botaurus lentiginosus*. AMERICAN BITTERN.—“One specimen was brought me while east of the Coast Range, and several were seen near the mouth of the Frazer River.”

No specimens received.

24. *Ardea herodias*. GREAT BLUE HERON.—“Rather common about the lakes and rivers. A settler informed me that two years before he was at a logging camp about ten miles from Mt. Lehman, and found a large number of this species nesting in the locality. In May I visited this place, and although I found no Herons, the large number of nests in the surrounding tree tops gave unmistakable evidence of their former abundance.”

No specimens received.

25. *Grus canadensis*. LITTLE BROWN CRANE.—“One specimen, collected at Kalama.”

26. *Porzana carolina*. SORA.—“Rather common east of the mountains; chicks were seen running about during the month of July.”

27. *Crymophilus fulicarius*. RED PHALAROPE.—“A specimen was taken at Ilwaco, November 9, 1889.”

28. *Gallinago delicata*. WILSON'S SNIPER.—“Common during the summer about the mountain lakes and streams east of the Coast Range, where it probably breeds.”

29. *Macrorhamphus scolopaceus*. LONG-BILLED DOWITCHER.—“A female taken at Mt. Lehman, September 17, 1889.”

30. *Tringa minutilla*. LEAST SANDPIPER.—“Common in the interior during the autumnal migrations.”

31. *Tringa alpina pacifica*. RED-BACKED SANDPIPER.—“Very abundant at Ilwaco.”

32. *Ereunetes pusillus*. SEMIPALMATED SANDPIPER.—A male taken at Ducks, August 18, measures as follows: No. 47,259, wing, 3.55; tarsus, .83; culmen, .73 in.

33. *Ereunetes occidentalis*. WESTERN SANDPIPER.—A male taken at Ducks, August 22, measures as follows: No. 47,258, wing, 3.65; tarsus, .89; culmen, .83 in. While these measurements are slightly below the limit assigned to this species, the breeding plumage still worn by this specimen permits its identification with the western form.

34. *Totanus flavipes*. YELLOW-LEGS.—“Probably not uncommon in the interior; a specimen was collected and others seen near Ducks.”

35. *Totanus solitarius cinnamomeus*. CINNAMON SOLITARY SANDPIPER.

Totanus solitarius cinnamomeus BREWSTER, Auk, VII, Oct., 1890.

“Summer resident in the interior. At Ducks I saw individuals that were not able to fly well, and must have been hatched in the vicinity.”

No. 47,262, a male taken August 15, one of two specimens received from Ducks, agrees in coloration with an example of *cinnamomeus* from Lower California, loaned me for comparison by Mr. Brewster, but is slightly smaller and lacks the grayish mottling of the inner web of the first primary. This, however, is very probably

a more or less variable character; I find it excellently shown by a typical specimen of *solitarius* from Long Island.

No. 47,261, a female taken August 9, is intermediate between *solitarius* and *cinnamomeus*, but more closely approaches *solitarius* with which it agrees in size. The inner web of the first primary is without grayish mottling, but the light spots of the upper surface, while not so brown as in typical *cinnamomeus*, are browner than in *solitarius*.

36. *Actitis macularia*. SPOTTED SANDPIPER.—“Summer resident in the interior.”

37. *Agialitis vocifera*. KILDEER.—“The cry of this species was heard a number of times during the summer months in the interior.”

No specimens received.

38. *Oreortyx pictus*. MOUNTAIN PARTRIDGE.—“A flock of about twenty birds was seen at Kalama.”

No specimens received.

39. *Dendragapus obscurus fuliginosus*. SOOTY GROUSE.—“On my arrival on the coast in the month of April, the calls of the males of this species could be heard nearly throughout the day. They were almost invariably found in the highest tree tops where it was very difficult to locate, and still more difficult to shoot them. On Vancouver Island they are said to breed in the valleys, but in September return to the mountains. They are much sought for by gunners.”

40. *Dendragapus obscurus richardsonii*. RICHARDSON'S GROUSE.—“This species was found abundant in the interior, where it appears to take the place of the preceding. They remain in the mountains except in the breeding season, when they descend to the valleys. At this time they become so tame they may be killed with sticks or stones.”

The collection contains only six adult females taken from June 28 to July 7, and three nearly half-grown young taken July 12 and 13. In the adult specimens the tail has an indistinct but appreciable grayish terminal band.

41. *Bonasa umbellus togata*. CANADIAN RUFFED GROUSE.—“Common in the interior. Found about thickets which border running water.”

Four specimens agree with examples from New Brunswick loaned me for comparison by Mr. J. Dwight, Jr. They are also similar to a specimen in the American Museum collected at Fort Klamath by Capt. Bendire. Half-grown young were taken at Ducks, July 18 and August 9.

41 bis. *Bonasa umbellus sabini*. OREGON RUFFED GROUSE.—“One of the most abundant birds of the coast region. On Vancouver Island it is common and generally distributed.”

One of three adult specimens from Mt. Lehman, taken June 6, is clearly intermediate between this form and the preceding. A nearly half-grown young bird, taken at Mt. Lehman, June 16, is indistinguishable from *togata* in nearly the same stage of plumage.

42. *Pediocætes phasianellus columbianus*. COLUMBIAN SHARP-TAILED GROUSE.—“Common in some places in the interior, but said by residents to be rapidly diminishing in numbers. They remain about the cultivated districts throughout the year.”

43. *Columba fasciata*. BAND-TAILED PIGEON.—“A very common summer resident on the coast district. They commence to arrive in the latter part of April, and remain for some time in flocks before nesting. They are a source of great annoyance to the settlers, especially at the time of their arrival. Flocks of several hundred were seen at times sitting on trees watching the farmer sow his oats, and upon his leaving the spot they would invariably take possession. On Vancouver Island a single one was seen, and at Kalama one bird was found.”

44. *Zenaidura macroura*. MOURNING DOVE.—“Not uncommon in the interior. None were seen on the coast.”

45. *Cathartes aura*. TURKEY VULTURE.—“A few were met with.”

No specimens received.

46. *Circus hudsonius*. MARSH HAWK.—“Common on the coast and abundant in the interior.”

The three specimens received are from Ducks.

47. *Accipiter velox*. SHARP-SHINNED HAWK.—“Common everywhere. Abundant during the migrations.”

Four specimens received from Ducks, and one from Westminster.

48. *Accipiter cooperi*. COOPER'S HAWK.—“Met with only at Ducks. Rare.”

49. *Accipiter atricapillus*. AMERICAN GOSHAWK.—“Rather common; more numerous in the interior than on the coast.”

Two immature specimens from Ducks are referable to this species. The coast bird which Mr. Streator mentions, but of which he sent no specimens, is probably *A. a. striatulus*.

50. *Buteo borealis calurus*. WESTERN RED-TAIL.—“Rare. One specimen was brought me at Ducks, and two or three others seen.”

No specimens received.

51. *Aquila chrysaetos*. GOLDEN EAGLE.—“Rare. A few specimens seen about the higher mountains near Ducks. I examined a freshly-skinned specimen said to have been shot within fifty miles of Ducks.”

No specimens received.

52. *Haliaeetus leucocephalus*. BALD EAGLE.—“Very common about the rivers, especially during August, when many dead salmon may be seen drifting. Common on Vancouver Island and at Kalama.”

No specimens received.

53. *Falco peregrinus anatum*. DUCK HAWK.—“One specimen was sent me for identification from the interior, and a few others were seen.”

No specimens received.

54. *Falco columbarius*. PIGEON HAWK.—“One specimen taken on Vancouver Island, and probably a few others seen.”

55. *Falco sparverius*. AMERICAN SPARROW HAWK.—“Rare on the coast, but very abundant in the interior.”

Six adult females from Ducks appear to be very heavily marked below.

56. *Pandion haliaëtus carolinensis*. AMERICAN OSPREY.—
“Very common.”

57. *Asio accipitrinus*. SHORT-EARED OWL.—“Found only on the coast. A male, taken at Westminster, May 14, at mid-day, was flying a few feet above the ground apparently looking for field mice. Remains of two mice were found in the stomach.”

58. *Bubo virginianus subarecticus*. WESTERN HORNED OWL.—“Common. Young birds were taken at Ashcroft, June 20.”

59. *Nyctea nyctea*. SNOWY OWL.—“A rather remarkable migration of this species occurred at the mouth of the Columbia River. Ten specimens were taken during my stay, and Dr. T. H. Parks, of Ilwaco, writes me that he killed six more soon after I left. The birds were always found sitting on the drift wood along the ocean beach, and were very tame.”

60. *Glaucidium gnoma californicum*. CALIFORNIA PIGMY OWL.—“Common in the coast region. Very common during the migration. A nest found at Mt. Lehman about the middle of May was placed in a Woodpecker’s deserted hole about ten feet from the ground. It contained one egg which had been broken by school boys the day before my arrival.”

Three specimens from Mt. Lehman prove, on comparison with examples loaned me by Mr. Ridgway, to be typical of this race.”

61. *Coccyzus americanus*. YELLOW-BILLED CUCKOO.—
“While being transferred across the Frazer River at Mt. Lehman we passed near an island where I heard the unmistakable notes of a Cuckoo. I at once directed the boat to the spot; the bird was seen, and I feel positive it was the above species.

“Mr. Fannin, of the Provincial Museum at Victoria, informed me that this species has been taken in British Columbia, and I therefore consider it safe to give this record.”

No specimens received.

62. *Ceryle alcyon*. BELTED KINGFISHER.—“Found abundant everywhere, probably on account of its having an endless food supply.”

63. *Dryobates villosus leucomelas*. NORTHERN HAIRY WOODPECKER.—“Common throughout the interior. Breeds.”

Two males from Ashcroft measure as follows: No. 47,337, June 24; wing, 5.40; tail, 3.60; culmen, 1.30. No. 47,338, July 3; wing, 5.20; tail, 3.35; culmen, 1.35. No. 47,337 is fairly typical of *leucomelas*, and has the greater and lesser wing-coverts and tertiaries spotted with white. No. 47,338 shows an evident approach towards *hyloscopus*; there are few white markings on either wing-coverts or tertiaries. It is probable that these two forms intergrade in this region.

64. *Dryobates villosus harrisi*. HARRIS'S WOODPECKER.—
"Abundant everywhere throughout the coast region. Breeds."

Examination of twenty-two specimens of this species collected on the coast by Mr. Streater shows that the diagnostic character of unspotted wing-coverts cannot be depended upon. In only three specimens of this series are the lesser coverts absolutely without spots, while the amount of variation shown by the lot ranges from this condition to a degree of spottedness not differing from *villosus*. Without reference to these parts, however, *harrisi* may always be distinguished from either *D. villosus*, *leucomelas*, or *hyloscopus* by the sooty suffusion of the white parts of the plumage. While this coloration may originally have been acquired through contact with the moist and lichen-covered tree trunks of a humid region, there can be no doubt that it has now become permanent and inherent. This is proved by (1) the adult specimens, which in fresh and unworn plumage exhibit the usual amount of sootiness, and (2) by young birds still wearing the red crown-cap, which have the whitish areas both above and below fully as dark as the average specimen of this series.

Mr. Ridgway has kindly sent me for comparison the Alaskan specimens of this genus contained in the U. S. National Museum. As might be expected, the birds from east of the coast range are referable to *D. v. leucomelas*, but I cannot agree with Mr. Nelson* in referring specimens from the "southeastern coast of Alaska" to *D. villosus*. A male and female in the U. S. National Museum from Sitka, numbers 45,848 and 45,850, very probably the same birds on which Mr. Nelson's record is based, I should refer without hesitation to *D. v. harrisi*. They are characterized by the sooty coloration peculiar to northwest coast specimens, which

* Report on Natural History Collections made in Alaska, p. 155.

is not as intense, however, as in some British Columbia specimens, and while No. 45,848 has the wing-coverts heavily spotted, they are no more so than in an example from Westminster, and in No. 45,850 these markings agree with those of the average British Columbia bird. Further than this, the known distribution of the two forms, *villosus* and *leucomelas*, would not account for the presence of the former on the south Alaskan coast where *harrisi* should naturally be found. Measurements of coast and interior specimens are here appended :

	Sex.	Wing.	Tail.	Exposed Culmen.
<i>Dryobates v. harrisi.</i>				
Kalama, Wash.....	♂	5.15	3.32	1.16
Vancouver Island.....	♂	5.02	3.16	1.22
" " " ".....	♀	4.94	3.28	1.14
Westminster, B. C.....	♀	4.84	3.06	1.02
" " " ".....	♂	5.06	3.00	1.20
Mt. Lehman, B. C.....	♂	5.10	3.10	1.05
Sitka, Alaska.....	♂	4.88	3.02	1.08
" " " ".....	♀	4.92	3.30	1.01
<i>Dryobates v. leucomelas.</i>				
Ashcroft, B. C.....	♂	5.40	3.60	1.30
Fort Liard.....	♂	5.30	3.44	1.40
Fort Reliance, Alaska.....	♀	5.24	3.25	1.30

65. *Dryobates pubescens gairdneri*. GAIRDNER'S WOOD-

PECKER.—“Rather common throughout the coast region. Breeds.”

From Westminster, Mt. Lehman, Vancouver Island and Kalamá, Mr. Streater sends in all twelve birds. They agree among themselves, and show uniformly the characteristic sooty coloration which also distinguishes the preceding form. While some specimens have more or less white marking on both wing-coverts and tertiaries, these spots are generally more restricted than in the series of *D. v. harrisi* previously mentioned.

In the Alaskan series sent me by Mr. Ridgway, only two specimens are from the Sitkan District, and these from Kadiak Island, its northern limit. Both these specimens are *pubescens*. I cannot, however, consider them as representatives of the Sitkan District where it is probable *gairdneri*, or a close ally, will be found.

66. *Dryobates pubescens oreocus.* BATCHELDER'S WOOD-

PECKER.—“Very common throughout the interior. Breeds.”

Two adults and a young bird, the first in worn, the latter in partially completed plumage, received from Ducks and Ashcroft.

After comparison with specimens of *oreæcus* loaned me by Mr. Batchelder I provisionally refer these interior birds to that race, but we require more and better material before their relationships can be accurately determined. In the white markings of the wing-coverts and tertiaries they resemble *pubescens*, but the under tail-coverts are apparently without black markings, and are similar, therefore, to those of *oreæcus*. The birds are thus evidently intermediate between the two.

67. *Picoides arcticus*. ARCTIC THREE-TOED WOODPECKER.—“Common at Ducks in August, when they were on their southern migration.”

68. *Sphyrapicus varius nuchalis*. RED-NAPED SAPSUCKER.—“Found common everywhere in the interior. Breeds.”

69. *Sphyrapicus ruber*. RED-BREASTED SAPSUCKER.—“Found only on the coast. Rare. One pair was collected at Westminster, May 19, and a few others seen.”

70. *Ceophlœus pileatus*. PILEATED WOODPECKER.—“Common in the coast region, where it breeds. On Vancouver Island they were not very common.”

Seven specimens from Westminster, Mt. Lehman and Vancouver Island, agree exactly in coloration with Florida examples. In size there is a remarkably slight variation, the average measurements of seven specimens from each region being as follows :

Streator specimens, wing, 9.16 ; tail, 6.37 ; exposed culmen, 1.97.

Florida specimens, wing, 8.70 ; tail, 6.06 ; exposed culmen, 1.76.

71. *Melanerpes torquatus*. LEWIS'S WOODPECKER.—“Abundant in the interior. Breeds.”

72. *Colaptes cafer*. RED-SHAFTED FLICKER.—Five specimens received from Ashcroft. No. 47,412, a bird of the year taken June 22, has wings and tail similar to those of *C. auratus*, while the head and neck agree in coloration with *cafer*.

73. *Colaptes cafer saturator*. NORTHWESTERN FLICKER.—“Abundant on the coast.”

In a series of sixteen specimens, a female taken at Westminster, May 8, has three other tail feathers on one side as in *C. auratus*.

74. *Chordeiles virginianus*. NIGHTHAWK.—“Abundant summer resident in the interior. Breeds.”

Eight adult specimens from Ashcroft agree in coloration with average eastern examples of *virginianus*.

75. *Trochilus rufus*. RUFOUS HUMMING BIRD.—“Moderately common everywhere.”

Specimens received from Ducks (July 20), Mt. Lehman (June 20), and Westminster (April 21, May 1 and 11).

76. *Tyrannus tyrannus*. KINGBIRD.—“Abundant in the interior and decreasing in numbers towards the coast. First arrivals were noted about June 5. Breeds.”

Specimens from Ducks and Mt. Lehman are indistinguishable from eastern examples. Comparative average measurements of four British Columbia and the same number of eastern specimens are as follows :

British Columbia, wing, 4.73 ; tail, 3.34 ; exposed culmen, .65.

Atlantic States, wing, 4.73 ; tail, 3.42 ; exposed culmen, .67.

77. *Tyrannus verticalis*. ARKANSAS KINGBIRD.—“Not common on the coast. At Ashcroft it was more abundant than *T. tyrannus* ; at Ducks it was less abundant than that species.”

Nine specimens from Ashcroft agree in size and coloration with examples from Pinal County, Arizona. The average measurements of five males and five females from each locality are as follows :

Pinal Co., Arizona, males, wing, 5.14 ; tail, 3.54 ; exposed culmen, .81.

Ashcroft, B. C., males, wing, 5.10 ; tail, 3.68 ; exposed culmen, .77.

Pinal Co., Arizona, females, wing, 4.87 ; tail, 3.37 ; exposed culmen, .78.

Ashcroft, B. C., females, wing, 4.77 ; tail, 3.38 ; exposed culmen, .74.

78. *Sayornis saya*. SAY'S PHŒBE.—“Common in the interior. Abundant during the migrations.”

79. *Contopus borealis*. OLIVE-SIDED FLYCATCHER.—“A not uncommon and generally distributed summer resident. They commenced to arrive about May 1, and for a time were very shy. They were nearly always found perched on the topmost point of a dead tree where they would sit calling for half an hour. Under favorable circumstances I have heard them quite plainly when half a mile distant.”

Specimens received from Ducks and Westminster.

80. *Contopus richardsoni*. WESTERN WOOD PEWEE.—“Not common on the coast, but abundant in the interior. Breeds.”

81. *Empidonax difficilis*. WESTERN FLYCATCHER.—“Common in the coast region, and more so in the interior. Breeds.”

82. *Empidonax pusillus trailli*. TRAILL'S FLYCATCHER.—“Much more common in the interior than on the coast. Breeds.”

Five specimens from Mt. Lehman, New Westminster and Ashcroft I am forced to refer to the eastern form. Two of them, one from Mt. Lehman and one from Ashcroft, are darker than specimens from Carlisle, Pa., and Hoboken, N. J., with which the remaining three British Columbia specimens agree.

83. *Empidonax hammondi*. HAMMOND'S FLYCATCHER.—“Rather common. Breeds.”

Specimens received from Ashcroft, Ducks, Mt. Lehman and Westminster.

84. *Otocoris alpestris merrilli*. DUSKY HORNED LARK.—“Observed only in the interior, at favorable localities. A number of pairs were found on a grass-covered mountain about two thousand feet above Ashcroft in the month of July, and were doubtless breeding.”

85. *Pica pica hudsonica*. AMERICAN MAGPIE.—“Found common everywhere. Breeds about Ashcroft.”

86. *Cyanocitta stelleri*. STELLER'S JAY.—“Abundant resident throughout the Province. These birds are very destructive to garden vegetables, especially potatoes, which they dig up, eat, and destroy at every opportunity. Their habits cause them to be disliked by the residents, who shoot them whenever they can. On Vancouver Island they are abundant.”

A young bird in first plumage, taken at Mt. Lehman, June 18, has the wings and tail fully grown, and resembles the adult in coloration, but lacks the blue frontal streaks.

For remarks on the Vancouver Island specimens (“*Cyanocitta liitoralis*” Mayn.) see the Auk, III, 1890, p. 91.

87. *Cyanocitta stelleri annectens*. BLACK-HEADED JAY.—“This species was met with only high up in the mountains near Ducks. In August they were more common as they were then on their southward migration.”

Six specimens taken in August at Ducks, the only ones received from the interior, I refer to this form. The plumage lacks the bluish cast seen in the coast specimens, and in each at least a trace of the whitish supra-ocular spot may be observed.

88. *Corvus americanus*. AMERICAN CROW.

89. *Corvus caurinus*. NORTHWEST CROW.—Whatever distinguishing characters are possessed by the sixteen Crows Mr. Streater collected are fully shown by the appended table of measurements. Coloration is apparently of no diagnostic value—examples which measurements proclaim *caurinus* are as glossy as any of the larger birds, while some of these are as lustreless as any bird in the series. Mr. Streater's notes are of little assistance. He found Crows breeding at Mt. Lehman and at Ashcroft, and says the nests were "commonly placed in small shrubs and bushes within hand's reach from the ground." On inquiry he further says, the voices of the coast and interior Crows differ very much from each other, the former resembling more that of the Raven, but he does not remember whether any differences existed in the construction of the nest.

There is, of course, no doubt that *caurinus* has an equal claim with *ossifragus* to specific rank. Nevertheless the fact remains that however distinct they may be in life, in this series of sixteen dried skins, the extremes of which may be respectively called *caurinus* and *americanus*, no constant character can be found which will permit the identification of every specimen with certainty.

	Sex.	Wing.	Tail.	Tarsus.	Exposed Culmen.
Ashcroft, B. C.		11.12	7.05	2.15	1.56
" "		11.75	7.00	2.35	1.75
" "	♀	11.95	6.75	2.12	1.68
Westminster, B. C.	♂	10.90	6.12	1.80	1.76
" "	♂	10.40	6.62	2.01	
" "	♂	11.00	6.60	1.85	1.60
Mt. Lehman, B. C.	♀	11.00	6.80	2.00	1.62
Vancouver Island.	♀	11.20	6.50	1.90	1.62
" "	♂	11.15	6.60	1.94	1.70
" "	♀	10.50	5.90	1.89	1.55
" "	♂	11.40	6.30	2.00	1.68
" "		11.40	6.50	1.96	1.68
" "	♂	9.75	5.30	1.89	1.46
Cape Disappointment, Wash.		11.50	6.60	1.80	1.63
Kalama, Wash.	♂	12.05	6.75	2.16	1.80

90. *Picicorvus columbianus*. CLARKE'S NUTCRACKER.—“Abundant summer residents throughout the coniferous forests of the interior. During my acquaintance with them, from about June 15 to September 1, they were invariably associated in flocks.”

91. *Sturnella magna neglecta*. WESTERN MEADOW LARK.—“Common on the coast where there are meadows. Very abundant in the interior. Wherever I collected I was voluntarily informed by the older white settlers, that this species had appeared only in the last few years. On Vancouver Island it was numerous about cleared land.”

Specimens from the interior agree with those from the coast, and both are typical of *neglecta*.

92. *Icterus bullocki*. BULLOCK'S ORIOLE.—“I met with this bird only at Ashcroft, where one specimen was taken and a few more seen. I think this is about the northern limit of this bird's range.”

93. *Scolecophagus cyanocephalus*. BREWER'S BLACKBIRD.—“Generally distributed, but not common.”

94. *Coccothraustes vespertina montana*. “Met with in the interior only. In August they were passing southward in flocks of considerable size.”

95. *Carpodacus purpureus californicus*. CALIFORNIA PURPLE FINCH.—“Common in the coast region. Few specimens were taken in purple plumage.”

96. *Loxia curvirostra minor*. AMERICAN CROSSBILL.—“From July 16 to September, pairs were seen commonly about Ducks, flying from tree to tree, looking for food. Later, a few flocks were seen on the coast flying southward.”

A female taken at Ducks, August 8, is in the streaked plumage of the young bird.

97. *Spinus pinus*. PINE SISKIN.—“Extremely abundant; arriving and departing in enormous flocks.”

98. *Poocætes gramineus*. VESPER SPARROW.—“Very common in the interior. Breeds.”

Seven examples from Ashcroft are slightly larger, but otherwise apparently indistinguishable from the eastern bird. The com-

parative measurements of six Ashcroft specimens, with an equal number from the vicinity of New York, are as follows :

Ashcroft specimens, wing, 3.30 ; tail, 2.48 ; exposed culmen, .42.

Eastern specimens, wing, 3.24 ; tail, 2.40 ; exposed culmen, .41.

99. *Ammodramus sandwichensis*. SANDWICH SPARROW.—
“Common on the coast in the fall.”

Mr. Streator's series, consisting of twenty-nine specimens, taken on the coast from April 12 to October 26, contains, as might be expected, examples ranging in size from the smaller resident *alaudinus*, which may winter in reduced numbers, to the larger *sandwichensis*, which comes down from the north at this season. A comparison of the following measurements with those given under the next species will illustrate how completely these two forms intergrade.

MEASUREMENTS OF FALL SPECIMENS OF *Ammodramus*,

ARRANGED ACCORDING TO SIZE.

Date.	Sex.	Wing.	Tail.	Exposed Culmen.
October 1, 1889.....	♀	2.62	1.94	.40
“ 2, “.....	♀	2.80	1.94	.42
“ 2, “.....	♀	2.80	2.05	.44
“ 17, “.....		2.80	1.96	.41
September 22, 1889.....	♀	2.82	2.00	.36
October 26, “.....	♀	2.83	2.05	.42
September 28, “.....	♀	2.86	2.06	.41
“ 28, “.....		2.90	2.08	.44
“ 19, “.....		2.91	2.08	.39
October 1, “.....	♀	2.92	2.05	.43
“ 15, “.....	♂	2.92	2.09	.40
“ 26, “.....	♀	2.92	2.12	.42
“ 1, “.....	♂	2.94	2.06	.42
September 17, “.....	♀	2.95	2.06	.44
“ 17, “.....	♀	2.95	2.12	.44
October 17, “.....	♂	2.98	2.12	.42
September 19, “.....	♂	3.02	2.35	.40
“ 17, “.....		3.03	2.20	.45

100. *Ammodramus sandwichensis alaudinus*. WESTERN
SAVANNA SPARROW.—“Abundant summer resident on the coast.”

Mr. Ridgway, to whom I have sent specimens of this bird for comparison, writes me that he considers them typical of *alaudinus*, and that they agree very closely both in size and coloration with breeding specimens from Nevada and Utah.

A specimen taken at Ducks, September 3, may also be referred to this form. The average measurements of nine specimens taken at Westminster and Mt. Lehman during May and June, and also, for comparison, two Alaskan specimens of true *sandwichensis*, are as follows :

Alaudinus, wing, 2.68 ; tail, 1.85 ; exposed culmen, .40.

Sandwichensis, wing, 3.00 ; tail, 2.12 ; exposed culmen, .45.

101. *Zonotrichia leucophrys intermedia*. INTERMEDIATE SPARROW.—“Rare spring and fall migrant.”

102. *Zonotrichia coronata*. GOLDEN-CROWNED SPARROW.—“Very abundant spring and fall migrant.”

103. *Spizella socialis arizonæ*. WESTERN CHIPPING SPARROW.—“Found only in the interior, where it breeds abundantly.”

Specimens from Ashcroft are intermediate between typical *socialis* and *arizonæ*. In color they are nearer *arizonæ*, but are not so pale as Arizona specimens ; in size they are nearer *socialis*. Comparative measurements of four specimens each, of *socialis*, *arizonæ*, and the Ashcroft examples, are given below.

Socialis, wing, 2.77 ; tail, 2.27 ; exposed culmen, .35.

Ashcroft, wing, 2.75 ; tail, 2.32 ; exposed culmen, .35.

Arizonæ, wing, 2.83 ; tail, 2.42 ; exposed culmen, .35.

104. *Junco hyemalis oregonus*. OREGON JUNCO.—“One of the most common birds in the Province. Found everywhere. Breeds.”

Mr. Streater's series of Juncos referable to this form are all from the coast, and consists of six specimens taken on Vancouver Island and at Kalama in October, and eleven specimens taken during April, May, and June at New Westminster and Mt. Lehman. In addition to these, Mr. Ridgway has sent me the U. S. National Museum material, including the two original Townsend specimens taken on the Columbia River, October 5 and 16, 1834. The first of these, No. 1947, is labeled “Type of *Fringilla oregona* Towns.,” and is a somewhat extreme example of the coast bird ; the other, No. 1948, is an average example of the same form, leaving no room for doubt, therefore, as to the applicability of Townsend's name to the Junco inhabiting the northwest coast region.

[September, 1890.]

105. *Junco hyemalis shufeldti*. ROCKY MOUNTAIN JUNCO.

—The *Junco* breeding in the plateau region between the coast range and the Rockies and migrating south in winter to Arizona, New Mexico and Northern Texas, is evidently separable from the coast form, and is probably the bird which Mr. H. K. Coale has named *Junco hyemalis shufeldti*.^{*} Mr. Coale's type (No. 106,025 U. S. Nat. Mus.), kindly loaned me for examination by Mr. Ridgway, is not typical of this interior bird, indeed is intermediate between it and true *oregonus*; nor does his description clearly define the differences existing between the two birds. It seems more advisable, however, to accept his name for the interior form than to further complicate matters by giving it a new appellation.

In comparing *shufeldti* with *oregonus* the great seasonal changes these birds undergo must be borne in mind, and the specimens should be strictly comparable as regards date of collecting. At the conclusion of the fall moult, the black of the head, neck and throat is more or less obscured by the rusty or ashy edgings of the feathers, which, as the season advances, gradually disappear. In both forms these changes are the same and the differences which separate birds in the same stage of plumage consist in extent of the black markings and intensity of coloration. In fall male specimens of *oregonus* the black of head and neck is slightly deeper and averages of greater extent than in *shufeldti*; the reddish brown of the back is heavier and darker, and extends a little further down the back; and, as a rule, the two outer rectrices alone are white, this color only appearing occasionally as a more or less well-developed streak on the inner web of the third feather, while in *shufeldti* the opposite occurs, and it is unusual for the third feather to be without at least a streak of white, and at times it is nearly as white as the outer ones. In size *shufeldti* averages larger than *oregonus*, but the difference is too slight to be of diagnostic value. In spring and summer plumage I have an excellent series of fifteen specimens of *oregonus* from the coast, but the specimens of *shufeldti* are in much worn plumage or otherwise in too poor condition to be satisfactory. So far as they go, however,

^{*} Auk, IV, 1889, p. 330.

they indicate that the differences which distinguish the two forms in summer are of the same nature, but somewhat more pronounced than those which separate them in the winter. From Ashcroft Mr. Streater sends three worn adult birds, taken July 13, and a young bird in streaked plumage taken June 24. Mr. Ridgway has loaned me two specimens taken by Mr. R. McFarlane at Stuart's Lake, B. C., one of which, No. 117,010, is labeled by the collector as having been taken with "five eggs."

106. *Melospiza fasciata guttata*. RUSTY SONG SPARROW.—
"Common."

These Song Sparrows, unlike the Savanna Sparrows mentioned above, are apparently not migratory, but to some extent, at least, are resident in the coast region. Comparison shows that fall specimens do not appreciably differ in size from those taken during the summer. In the coloration of the upper parts several of the fall examples agree well with *rufina*, but below none are so heavily marked as the Sitkan form, which has the white throat patch confined to the chin and upper throat, whereas in *guttata* this white patch occupies the whole throat and extends to the upper breast.

It is not a little singular that three adults and a bird in first plumage taken at Ashcroft, June 6 to 16, are indistinguishable either in size or coloration from the coast form.

Comparative average measurements of fourteen summer and fifteen fall specimens in the Streater collection, with two Sitkan examples of *rufina*, are as follows :

Summer specimens, wing, 2.66 ; tail, 2.54 ; exposed culmen, .46.

Fall specimens, wing, 2.63 ; tail, 2.57 ; exposed culmen, .46.

M. f. rufina, wing, 2.87 ; tail, 2.75 ; exposed culmen, .51.

107. *Melospiza lincolni*. LINCOLN'S SPARROW.—"Common during the autumnal migration."

Mr. Streater sends a series of twelve Lincoln's Sparrows. Six were taken at Ducks, August 29 to September 1 ; four at Mt. Lehman, September 9 to 13, and two on Vancouver Island, October 6 and 7. These birds show considerable variation among themselves, and may be arranged in an almost unbroken series from the lightest-colored specimen to the darkest. Two of the

most heavily-marked examples, one from Mt. Lehman, taken September 13, and one from Vancouver, taken October 6, may be referred to *Melospiza lincolni striata*, a form whose standing is doubtful, but which may prove to be an imperfectly differentiated race, breeding in the coast region.

108. *Passerella iliaca unalaschensis*. TOWNSEND'S SPARROW.—“Not an uncommon spring and fall migrant.”

Fall specimens are of a uniform seal-brown color above, and are much darker than those taken in the spring.

No. 47,735, a male taken at Mt. Lehman, September 8, is apparently intermediate between *P. i. schistacea* and the present species. It may represent a new race. The measurements are as follows :

Wing, 3.11 ; tail, 2.62 ; exposed culmen, .42 ; height of bill at nostril, .31 in.

109. *Pipilo maculatus megalonyx*. SPURRED TOWHEE.—An adult male and female received from Ashcroft.

110. *Pipilo maculatus oregonus*. OREGON TOWHEE.—“Abundant on the coast. Breeds.”

The young in first plumage differs from the young of *megalonyx*, in about the manner and to the same degree as do the adults from each other. The lighter areas in *oregonus* are darker and more restricted than in *megalonyx*. This is particularly noticeable in the white markings of the greater wing-coverts, which in *megalonyx* occupy the terminal third of the outer web of the feather, but in *oregonus* are reduced to a small apical spot.

111. *Habia melanocephala*. BLACK-HEADED GROSBEAK.—“Common summer resident of the coast region. Breeds. Arrived about May 1.”

112. *Passerina amoena*. LAZULI BUNTING.—“Abundant summer resident in the interior ; less common on the coast. The last specimen seen was on August 26. Breeds.”

113. *Piranga ludoviciana*. LOUISIANA TANAGER.—“Abundant summer resident everywhere. On first arriving the males may be found at daybreak singing from the topmost branches of the highest trees, which often reach a height of three hundred feet.”

114. *Petrochelidon lunifrons*. CLIFF SWALLOW.—“Common everywhere in the interior. Breeds.”

An adult male and female taken at Ashcroft, June 25, agree with western specimens in having the frontal band slightly paler and wider than that of average eastern examples. Comparative average measurements of British Columbia and eastern specimens are as follows :

British Columbia, 2 specimens ; wing, 4.27 ; tail, 1.82 ; exposed culmen, .27.
Eastern, 2 specimens ; wing, 4.24 ; tail, 1.85 ; exposed culmen, .27.

115. *Chelidon erythrogaster*. BARN SWALLOW.—“Common everywhere. Breeds.”

116. *Tachycineta bicolor*. TREE SWALLOW.—“Common summer resident in the coast region. Breeds.”

Comparative average measurements of British Columbia and eastern specimens are as follows :

British Columbia, 5 specimens ; wing, 4.72 ; tail, 2.15 ; exposed culmen, .25.
Eastern, 5 specimens ; wing, 4.75 ; tail, 2.11 ; exposed culmen, .23.

117. *Tachycineta thalassina*. VIOLET-GREEN SWALLOW.—“Found only at Ashcroft. Breeds.”

118. *Stelgidopteryx serripennis*. ROUGH-WINGED SWALLOW.—“Common throughout the Province. Breeds.”

Comparative average measurements of eastern and British Columbia specimens are as follows :

British Columbia, 5 specimens ; wing, 4.24 ; tail, 1.91 ; exposed culmen, .26.
Eastern, 5 specimens ; wing, 4.32 ; tail, 1.98 ; exposed culmen, .23.

119. *Ampelis cedrorum*. CEDAR WAX-WING.—“Common wherever there is an abundant food supply. Breeds.”

120. *Lanius borealis*. NORTHERN SHRIKE.—“Seen only on Vancouver Island where two immature females were taken September 28.”

121. *Vireo olivaceus*. RED-EYED VIREO.—“Common at Ashcroft, and abundant at Ducks. They were found numerous about deciduous trees, which border creeks and lakes.”

This species has not apparently before been recorded from west of the Rockies. Six specimens from Ducks and Ashcroft do not differ in coloration from eastern examples.

Comparative average measurements of British Columbia and eastern specimens are as follows :

British Columbia, 7 specimens ; wing, 3.20 ; tail, 2.16 ; exposed culmen, .49.
Eastern, 7 specimens ; wing, 3.15 ; tail, 2.07 ; exposed culmen, .48.

122. *Vireo gilvus*. WARBLING VIREO.—“Very numerous everywhere. Breeds.”

Examples from Westminster, Mt. Lehman and Ashcroft agree with specimens from Pinal County, Arizona.

Comparative average measurements of British Columbia and eastern specimens are as follows :

British Columbia, 8 specimens ; wing, 2.45 ; tail, 1.95 ; exposed culmen, .35.
Eastern, 8 specimens ; wing, 2.79 ; tail, 2.08 ; exposed culmen, .40.

123. *Vireo solitarius cassinii*. CASSIN'S VIREO.—“Rare ; only two specimens collected.”

One specimen from Ashcroft, July 13, and one from Ducks, August 22.

124. *Helminthophila celata*. ORANGE-CROWNED WARBLER.—Two adults, male and female, and a young male, taken at Ducks, August 31 and September 2, and August 10, respectively. The young bird still shows traces of first plumage.

125. *Helminthophila celata lutescens*. LUTESCENT WARBLER.—Five specimens taken at Westminster, May 5 to 22, and one taken at Mt. Lehman, September 15, are typical of this coast form, and are at once distinguishable from the preceding.

126. *Dendroica æstiva*. YELLOW WARBLER.—“Very common everywhere. Breeds.”

Examples from the coast and interior agree with each other, and are indistinguishable from eastern specimens.

Comparative average measurements are as follows :

British Columbia, 8 specimens ; wing, 2.44 ; tail, 1.76 ; exposed culmen, .38.
Atlantic States, 8 specimens ; wing, 2.47 ; tail, 1.73 ; exposed culmen, .38.

127. *Dendroica coronata*. MYRTLE WARBLER.—“Not common, and found only near the coast. On Vancouver Island a few individuals were observed associating with *D. auduboni*.”

128. *Dendroica auduboni*. AUDUBON'S WARBLER.—“Abundant spring and fall migrant. I think a few breed in the coast

region, and also on the higher mountains of the interior. On Vancouver Island and at Kalama, it was found very common, migrating southward in large numbers."

129. *Dendroica nigrescens*. BLACK-THROATED GRAY WARBLER.—"Found in the coast region only. Not common."

130. *Dendroica townsendi*. TOWNSEND'S WARBLER.—"A single specimen was collected at Mt. Lehman, September 15, and a few others were seen."

131. *Seiurus noveboracensis notabilis*. GRINNELL'S WATER-THRUSH.—"Two specimens were taken at Ducks, August 7 and 9."

132. *Geothlypis macgillivrayi*. MACGILLIVRAY'S WARBLER.—"Common summer resident. Breeds."

Specimens received from Ducks, Mt. Lehman and Westminster.

133. *Geothlypis trichas occidentalis*. WESTERN YELLOW-THROAT.—"Common everywhere. Breeds."

Specimens from the coast and interior are apparently inseparable.

134. *Sylvania pusilla pileolata*. PILEOLATED WARBLER.—"More common in the coast region than in the interior. Breeds."

The eight specimens received are all from the coast. Probably the interior form is *Sylvania pusilla*.

135. *Setophaga ruticilla*. AMERICAN REDSTART.—"Common summer resident in the interior. Breeds."

Comparative average measurements of British Columbia and Atlantic Coast specimens are as follows :

British Columbia, 6 specimens, wing, 2.49 ; tail, 2.28 ; exposed culmen, .32.
Atlantic Coast, 6 specimens, wing, 2.57 ; tail, 2.25 ; exposed culmen, .34.

136. *Anthus pensilvanicus*. AMERICAN PIPIT.—"Large flocks were found about the meadows of the coast district during the fall migration."

137. *Cinclus mexicanus*. AMERICAN DIPPER.—"The only specimen seen was shot at Ducks, but before I could secure it it was unfortunately carried beyond my reach in the swift current of a creek."

138. Galeoscoptes carolinensis. CAT-BIRD.—“Very common summer resident of the interior, reaching the coast in reduced numbers. Arrived about June 5. Breeds.”

I am not aware that this species has been before recorded as breeding west of the Coast range.

Comparative average measurements of British Columbia and Atlantic Coast specimens are as follows :

British Columbia, 6 specimens, wing, 3.68 ; tail, 3.90 ; exposed culmen, .66.
Atlantic Coast, 6 specimens, wing, 3.62 ; tail, 3.84 ; exposed culmen, .63.

139. Salpinctes obsoletus. ROCK WREN.—“Rather common about Ashcroft. Breeds.”

An adult male in worn plumage taken June 20 is more heavily streaked below than any specimen in a series of thirty examples from Arizona and California. Fully grown young were taken July 9.

140. Thryothorus bewickii spilurus. VIGOR'S WREN.—“More common on the coast than in the interior. This is one of the superior song birds of the northwest. Not infrequently I have heard it sing while flying.”

The specimens received are all from the coast district, and agree with California examples.

141. Troglodytes ædon parkmani. PARKMAN'S WREN.—“Common summer resident everywhere. Breeds.”

With the exception of a young bird from Ducks the twelve specimens received are from the coast. It is a puzzling series. We would expect from this region a form darker than the Californian bird, while on the contrary we find these specimens average lighter, and that several are pale enough to be referred to fairly typical *aztecus*. The flanks, however, are not so heavily barred as they are in Arizona examples.

142. Troglodytes hiemalis pacificus. WESTERN WINTER WREN.—“Confined principally to the coast region. Breeds.”

The specimens received are all from the coast. A young bird, in first plumage was taken May 22.

143. Cistothorus palustris paludicola. TULE WREN.—“Found in the interior only. Common about the marshy borders of mountain lakes. Breeds.”

144. *Certhia familiaris occidentalis*. CALIFORNIA CREEPER.—“Not uncommon on the coast. Only one seen in the interior.”

The single specimen received from Ducks, a bird of the year, taken August 12, is perhaps referable to *C. f. montana*.

145. *Sitta carolinensis aculeata*. SLENDER-BILLED NUTHATCH.—“Very common in the interior. Breeds.”

146. *Sitta canadensis*. RED-BREASTED NUTHATCH.—“Common both on the coast and in the interior.”

Two specimens, one taken at Westminster, May 8, the other at Ducks, August 1, are sexed as “♀,” but have the crown jet black as in the male.

147. *Sitta pygmæa*. PYGMY NUTHATCH.—“Found only at Ducks, where it was as common as the two preceding species.”

148. *Parus atricapillus septentrionalis*. LONG-TAILED CHICKDEE.—“Common throughout the valleys of the interior. In the higher mountains it was usually replaced by *Parus gambeli*.”

Four specimens received from Ashcroft, three of which are birds of the year, are at once distinguished from adults of *Parus a. occidentalis* by their lighter coloration. On comparing these young birds with *occidentalis* in a similar stage of plumage, the differences in coloration are not so marked as in the adults but still are evident.

149. *Parus atricapillus occidentalis*. OREGON CHICKADEE.—“Common in the coast region.”

An almost fully-grown male was taken at Mt. Lehman, June 9.

150. *Parus gambeli*. MOUNTAIN CHICKADEE.—“Abundant about the mountains of the interior. Breeds.”

151. *Parus rufescens*. CHESTNUT-BACKED CHICKADEE.—“Common in the coast region. Breeds.”

Fall specimens have the throat black, the head with only a slight brownish cast.

152. *Regulus satrapa olivaceus*. WESTERN GOLDEN-CROWNED KINGLET.—“Very common spring and fall migrant; a few remain to breed.”

All the specimens received are from the coast. Young in first plumage were taken at Mt. Lehman, June 14 and 17.

153. *Regulus calendula*. RUBY-CROWNED KINGLET. —
 "Found only in the coast region during the autumnal migration."

The eleven specimens received differ from eastern specimens in the same manner and to about the same degree as does *Regulus satrapa olivaceus* from its eastern ally. That is, they *average* darker and smaller. The differences, however, are too inconstant to warrant their subspecific separation, and we may well leave this "incipient local form" for the "net" of future ornithologists. Comparative average measurements of five eastern and Pacific Coast specimens are as follows :

Pacific Coast specimens, wing, 2.20 ; tail, 1.66 ; exposed culmen, .29.

Eastern specimens, wing, 2.30 ; tail, 1.71 ; exposed culmen, .30.

154. *Turdus fuscescens salicicolus*. WILLOW THRUSH. —
 "Common in the interior. Breeds."

Captain Bendire informs me that the previously most northern discovery of the nest of the species is at Sassin near Spokane Falls, from where he has recently received a nest and four eggs, taken June 7, 1890, with the female, a capture which he permits me to record here.

Mr. Streater's observations further extend this bird's range, and show it to be a common summer resident at least as far north as Ducks and Ashcroft.

A specimen in fall plumage from Ducks is darker than spring birds from Ashcroft, and is remarkably close to spring specimens of *Turdus ustulatus* from the coast. A young male in spotted plumage, taken at the same locality, August 8, is very different from *Turdus fuscescens* of nearly the same age. The light centres to the feathers of the upper parts are buffy, not tawny, while the wings and tail are russet olive, not tawny brown. The differences are thus similar to those shown by the adults of both forms, but are more pronounced.

155. *Turdus ustulatus*. RUSSET-BACKED THRUSH. — "Very common in the coast region. Breeds." .

156. *Turdus aonalaschkæ*. DWARF HERMIT THRUSH. —
 "Found only during the autumnal migration, and in the coast region."

157. *Merula migratoria propinqua*. WESTERN ROBIN.—“Very common everywhere. Breeds.”

158. *Hesperocichla nœvia*. VARIED THRUSH.—“Common spring and fall migrant. A single pair was found breeding at Mt. Lehman.”

159. *Sialia mexicana*. WESTERN BLUEBIRD.—“Not very common on the coast, but abundant summer resident in the interior.”

A male taken at Westminster, May 22, has only a trace of rufous in the scapulars, and the blue of the throat almost divides the chestnut collar below. This specimen, therefore, nearly agrees with the description of *Sialia m. anabelæ* Anthony, and also with Swainson's original description of *Sialia mexicana*, in which no mention is made of chestnut scapulars.

160. *Sialia arctica*. MOUNTAIN BLUEBIRD.—“I found one or two pairs of this species breeding in the mountains near Ashcroft. One male was collected.”

No specimens received.

TABLE GIVING THE NUMBER OF SPECIMENS OF EACH SPECIES CONTAINED
IN MR. STREATOR'S COLLECTION, AND ALSO THE LOCALITIES
AT WHICH THEY WERE OBTAINED.

	Westminster Junction, B. C.	Mt. Lehman, B. C.	Ashcroft, B. C.	Ducks, B. C.	Vancouver Isl., B. C.	Kalama, Wash.	Ilwaco, Wash.
<i>Colymbus holboëlli</i>	1						1
<i>Brachyramphus marmoratus</i>							1
<i>Larus glaucescens</i>							3
“ <i>occidentalis</i>							11
“ <i>californicus</i>						1	7
“ <i>brachyrhynchus</i>							7
“ <i>heermanni</i>							2
“ <i>philadelphia</i>						1	3
<i>Fulmarus g. glupischa</i>							5
<i>Phalacrocorax p. robustus</i>							1
<i>Lophodytes cucullatus</i>				1			
<i>Anas boschas</i>			1				
“ <i>carolinensis</i>			3				
<i>Aix sponsa</i>		2					
<i>Charitonetta albeola</i>	1						

	Westminster Junction, B. C.	Mt. Lehman, B. C.	Ashcroft, B. C.	Ducks, B. C.	Vancouver Isl., B. C.	Kalama, Wash.	Iiwaco, Wash.
<i>Oidemia perspicillata</i>							9
<i>Anser a. gambeli</i>					1		
<i>Olor columbianus</i>							1
<i>Grus canadensis</i>						1	
<i>Porzana carolina</i>			1	1			
<i>Crymophilus fulcarius</i>							1
<i>Gallinago delicata</i>				1			
<i>Macrorhamphus scolopaceus</i>				1			
<i>Tringa minutilla</i>				6			
“ <i>a. pacifica</i>							10
<i>Ereunetes pusillus</i>				1			
“ <i>occidentalis</i>				1			
<i>Totanus flavipes</i>				1			
“ <i>s. cinnamomeus</i>				2			
<i>Actitis macularia</i>				6			
<i>Dendragapus o. fuliginosus</i>	2						
“ <i>o. richardsonii</i>			8				
<i>Bonasa u. togata</i>				6			
“ <i>u. sabini</i>	3	6					
<i>Pediocætes p. columbianus</i>				8			
<i>Columba fasciata</i>	3						1
<i>Zenaidura macroura</i>				2			
<i>Circus hudsonius</i>				3			
<i>Accipiter velox</i>	1			5			
“ <i>cooperi</i>				3			
“ <i>atricapillus</i>				2			
<i>Falco columbarius</i>							1
“ <i>sparverius</i>				7			
<i>Pandion h. carolinensis</i>	1						
<i>Asio accipitrinus</i>	1						
<i>Bubo v. subarcticus</i>				1	1		
<i>Nyctea nyctea</i>							1
<i>Glaucidium g. californicum</i>		3					
<i>Ceryle alcyon</i>	2			6			
<i>Dryobates v. leucomelas</i>			2				
“ <i>v. harrisi</i>	10	6			4	2	
“ <i>p. gairdneri</i>	3	1			4	4	
“ <i>p. oreococcus</i>			1	3			
<i>Picoides arcticus</i>				7			
<i>Sphyrapicus v. nuchalis</i>			1	7			
“ <i>ruber</i>	2						
<i>Ceophloeus pileatus</i>	3				4		
<i>Melanerpes torquatus</i>			3	5			
<i>Colaptes cafer</i>			5				
“ <i>saturator</i>	5	3			5	3	
<i>Chordeiles virginianus</i>			8				
<i>Trochilus rufus</i>	4	1		1			
<i>Tyrannus tyrannus</i>	2			6			
“ <i>verticalis</i>			9				
<i>Sayornis saya</i>			1	6			

	Westminster Junction, B. C.	Mt. Lehman, B. C.	Ashcroft, B. C.	Ducks, B. C.	Vancouver Isl., B. C.	Kalama, Wash.	Ilwaco, Wash.
<i>Contopus borealis</i>	4						
“ <i>richardsoni</i>	1			5			
<i>Empidonax difficilis</i>	9	1					
“ <i>p. trailli</i>	1	2	2	1			
“ <i>hammondi</i>	2	1	3	3			
<i>Otocoris a. merrilli</i>			2				
<i>Pica p. hudsonica</i>			3	5			
<i>Cyanocitta stelleri</i>	14	3			5	1	
“ <i>annectens</i>				6			
<i>Corvus americanus</i>			4			1?	
“ <i>caurinus</i>	3	1			6		1
<i>Picicorvus columbianus</i>				8			
<i>Sturnella m. neglecta</i>	1	1	3	3		1	
<i>Icterus bullocki</i>			1				
<i>Scolecophagus cyanocephalus</i>		1		2			
<i>Coccothraustes v. montana</i>				4			
<i>Carpodacus p. californicus</i>	8	1			1	3	
<i>Loxia c. minor</i>		1		3			
<i>Spinus pinus</i>	10					2	
<i>Poocætes gramineus</i>			8				
<i>Ammodramus sandwichensis</i>		1			1	1	1
“ <i>alaudinus</i>	11	5		1	5	3	1
<i>Zonotrichia l. intermedia</i>	2	3		3	1		
“ <i>coronata</i>	5				2	4	
<i>Spizella s. arizonæ</i>			4	3			
<i>Junco h. oregonus</i>	7	6			4	1	
“ <i>h. shufeldti</i>			4				
<i>Melospiza f. guttata</i>	15	5	4		8	4	1
“ <i>lincolni</i>		4		7	1		
<i>Passerella i. unalaschensis</i>	1	1			2	1	3
<i>Pipilo m. oregonus</i>	7				4	2	
“ <i>m. megalonyx</i>			3				
<i>Habia melanocephala</i>	3	5					
<i>Passerina amoena</i>	1		6	1			
<i>Piranga ludoviciana</i>	3	6	2				
<i>Petrochelidon lunifrons</i>			2				
<i>Chelidon erythrogaster</i>	2						
<i>Tachycineta bicolor</i>	5						
“ <i>thalassina</i>			2				
<i>Stelgidopteryx serripennis</i>	5			2			
<i>Ampelis cedrorum</i>		1	2	5			
<i>Lanius borealis</i>					2		
<i>Vireo olivaceus</i>			2	6			
“ <i>gilvus</i>	7		3				
“ <i>s. cassinii</i>			1	1			
<i>Helminthophila celata</i>				3			
“ <i>lutescens</i>	4	1					
<i>Dendroica æstiva</i>	8	2	3	1			
“ <i>coronata</i>	1				2		
“ <i>auduboni</i>	4		1	2			

	Westminster Junction, B. C.	Mt. Lehman, B. C.	Ashcroft, B. C.	Ducks, B. C.	Vancouver Isl., B. C.	Kalama, Wash.	Ilwaco, Wash.
<i>Dendroica nigrescens</i>	2	6					
“ <i>townsendi</i>		1					
<i>Seiurus n. notabilis</i>				2			
<i>Geothlypis macgillivrayi</i>	4	2		2			
“ <i>t. occidentalis</i>	3			5			
<i>Sylvania p. pileolata</i>	4	4					
<i>Setophaga ruticilla</i>			1	6			
<i>Anthus pensilvanicus</i>		9				3	
<i>Galeoscoptes carolinensis</i>		2	1	3			
<i>Salpinctes obsoletus</i>			3				
<i>Thryothorus b. spilurus</i>	4	4			4	1	
<i>Troglodytes a. parkmani</i>	6	4		1			
“ <i>h. pacificus</i>	7	4			5	3	
<i>Cistothorus p. paludicola</i>			1	4			
<i>Certhia f. occidentalis</i>		7					
<i>Sitta c. aculeata</i>			1	6			
“ <i>canadensis</i>	4	1	1	2			
“ <i>pygmæa</i>				8			
<i>Parus a. septentrionalis</i>			4				
“ <i>a. occidentalis</i>	4			9		5	
“ <i>gambeli</i>			4	5			
“ <i>rufescens</i>	5	7			5		
<i>Regulus s. olivaceus</i>	1	5			2	1	
“ <i>calendula</i>	1	6				4	
<i>Turdus f. salicicolus</i>			2				
“ <i>ustulatus</i>	5	3					
“ <i>aonalaschkæ</i>		3					
<i>Merula m. propinqua</i>	5	2			6	1	
<i>Hesperocichla nævia</i>	4	4			2	4	
<i>Sialia mexicana</i>	2			6			