

The brilliant colors of these feathers have often been ascribed to irregularities of surface, the traces of the cell cavities being mistaken for pits on the surface. That this is an error is at once shown by examining a section.

Before leaving the subject I cannot refrain from calling attention to the wonderful diversity of means employed, as well as their complexity in the production of feather colors. Among the Parrots we have the most skilful painting combined with accidental colors. Yet all ornithologists base specific differences on slight variations of color, and this in spite of the fact that birds may change their color according as they are wet or dry, owing to the nature of their food, or to slight differences in the quantity of pigment.

In this they are no doubt often right, but when we come to varieties based on the very faintest distinctions of color and form, we may well pause till more is known of avian physiology.

#### EXPLANATION OF PLATE I.

*Fig. 1.* Diagrammatic representation of the effect of a film on light.

*Fig. 2.* Transverse section of a barb of *Chlorophanus atrocristatus*; Hartnack 3-9 im. the light part yellow, the dark part dark brown.

*Fig. 3.* Transverse section of a barb of *Cyanocitta cristata*. Hart. 3-9 im.

*Fig. 4.* Same of *Cyanospiza cyanea* ♂.

*Fig. 5.* Two sections of a barbule of a Peacock.

*Fig. 6.* Section of barb of *Sialia sialis* much magnified.

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### ON A COLLECTION OF BIRDS LATELY MADE BY MR. F. STEPHENS IN ARIZONA.

BY WILLIAM BREWSTER.

(Continued from p. 94.)

33. **Peucedramus olivaceus** (*Giraud*) *Cones*. OLIVE-HEADED WARBLER. — The Olive-headed Warbler, one of Giraud's famous "sixteen" Texas species, has found an unquestioned place in our fauna only on the strength of three Arizona specimens, taken by Mr. Henshaw at Mount Graham, in Septem-

ber, 1874. Accordingly the acquisition of the fine series catalogued below can scarcely fail to be a matter of much interest. As will appear from the accompanying data, Mr. Stephens met with the bird in only a single locality in the Chiricahua Mountains where it was apparently not uncommon in March; but he writes of a previous specimen (an adult male) taken among the Santa Catarina Mountains, in February, 1880, a date which seems to imply that the species winters in the latter range. His observations throw no light on its still unknown breeding haunts.

The specimens obtained during the past season were found in pine woods on the mountain sides at an elevation of from ten to twelve thousand feet. Although individuals often occurred not far from one another, two were rarely seen in actual companionship. The only exception to this is noted under date of March 24, when a small flock was met with on a steep slope near the summit of one of the mountains. In their actions these Warblers reminded Mr. Stephens of *Dendroica occidentalis*. They spent much of their time at the extremities of the pine branches where they searched among the bunches of needles for insects, with which their stomachs were usually well filled. Occasionally one was seen to pursue a falling insect to the ground, where it would alight for a moment before returning to the tree above. The only song heard consisted of "a few low notes" which were rarely uttered, but a peculiar "cheerp" was repeated at frequent intervals.

The examples before me illustrate a fact which I do not find mentioned by previous writers, viz., that during the first year the males wear a plumage similar to that of the females. I have three in this condition; two of them, although in unworn dress, are absolutely undistinguishable from adults of the opposite sex; the third (No. 77), however, has the throat appreciably tinged with the brownish-saffron of the adult male. The females show some variation in respect to the dusky patch on the side of the head. In most of them it is confined to the auriculars, and even there is much mixed with yellow; but No. 46 has a continuous, dull-black stripe extending from the bill through the eye, and spreading over the auriculars in a broad, well-marked patch. Nos. 94 and 101 differ from the others in having the crown so slightly washed with olive-green that the whole upper surface is nearly uniform, a condition which I take to be the immature one of this sex. The adult males show but little individual variation. Both sexes and all ages have the basal half of the lower mandible light brown.

44. ♂ ad., Morse's Mill, Chiricahua Mountains, March 14. Length, 5.10; extent, 9; wing, 3.12; tail, 2.35; culmen, .56; tarsus, .72.



45. ♂ ad., same locality and date. Length, 5.40; extent, 9.20; wing, 3.16; tail, 2.55; culmen, .55; tarsus, .69. Iris dark brown.
72. ♂ ad., Morse's Mill, March 19. Length, 5.40; extent, 8.90.
91. ♂ ad., Morse's Mill, March 24. Length, 5.40; extent, 9; wing, 3.08; tail, 2.50; culmen, .55; tarsus, .75.
92. ♂ ad., same locality and date. Length, 5.20; extent, 8.90.
102. ♂ ad., Morse's Mill, March 25. Length, 5.30; extent, 8.80; wing, 3.10; tail, 2.44; culmen, .56; tarsus, .75.
77. ♂ im., Morse's Mill, March 20. Length, 5.20; extent, 8.90; wing, 3.03; tail, 2.37; culmen, .55; tarsus, .77. In plumage of the ♀.
90. ♂ im., Morse's Mill, March 24. Length, 5.10; extent, 8.50; wing, 2.85; tail, 2.30; culmen, .56; tarsus, .71. Same remarks.
103. ♂ im., Morse's Mill, March 25. Length, 5.10; extent, 8.50; wing, 2.90; tail, 2.33; culmen, .57; tarsus, .67. Same remarks.
46. ♀ ad., Morse's Mill, March 14. Length, 5.20; extent, 8.50; wing, 2.93; tail, 2.35; culmen, .56; tarsus, .73.
47. ♀ ad., same locality and date. Length, 5; extent, 8.30; wing, 2.87; tail, 2.18; culmen, .58; tarsus, .73.
81. ♂ ad., Morse's Mill, March 21. Length, 5; extent, 8.50; wing, 2.76; tail, 2.35; culmen, defective; tarsus, .72.
93. ♀ ad., Morse's Mill, March 24. Length, 5.20; extent, 8.80.
94. ♀ ad., same locality and date. Length, 5; extent, 8.20; wing, 2.84; tail, 2.18; culmen, defective; tarsus, .71.
101. ♀ ad., Morse's Mill, March 25. Length, 5.10; extent, 8.50; wing, 2.87; tail, 2.22; culmen, .58; tarsus, .75.

34. *Dendroeca aestiva* (Gmel.) Baird. YELLOW WARBLER.

210. ♂ ad., Cienega Station, April 16. Length, 5; extent, 7.50; wing, 2.75; tail, 2.20; tarsus, .74. "Iris dark brown; bill dark horn color above, lighter below; legs pale brown. Common in the migrations."

35. *Dendroeca coronata* (Linn.) Gray. YELLOW-RUMPED WARBLER. — Chiricahua Mountains; a single specimen, taken March 26.

From its general dispersion over North America, the Yellow-rumped Warbler was of course to be expected in Arizona, at least as a visitor, but I cannot learn that it has been previously detected within the limits of that Territory. Mr. Stephens, however, sends me an adult female which must be referred to *coronata*, although it is in some respects peculiar, if not intermediate between that species and *auduboni*. The wing-bands are as distinctly separated as in *coronata* (with females and immature males of both species this character is not always well-defined), and the throat, generally, is equally white, but on its left side, adjoining the maxillary line, there is a small patch of the faintest possible yellow. The light superciliary stripes, which should be at least indicated in female *coronata*, are also entirely wanting.

114. ♀ ad., Chiricahua Mountains, March 26. Length, 5.50; extent, 8.70; wing, 2.98; tail, 2.52. "Iris brown."

36. *Dendroeca auduboni* (Townsend) Baird. AUDUBON'S WARBLER.

343. ♂ ad., Tucson, May 7. Length, 5.80; extent, 9.52; wing, 3.05; tail, 2.75. "Iris dark brown; bill and legs black."

37. *Dendroeca nigrescens* (Townsend) Baird. BLACK-THROATED GRAY WARBLER. — On April 1, Mr. Stephens secured five males of this species among the Chiricahua Mountains. The only additional specimens in the collection are two females taken late in the season (No. 203, ♀ ad., Cienega Station, April 15. No. 357, Santa Rita Mountains, May 12.).

38. *Dendroeca townsendi* (Nutt.) Baird. TOWNSEND'S WARBLER.

2.98, ♀ ad., Tucson, April 28. Length, 5.10; extent, 7.70; wing, 2.45. "Iris dark brown; bill and legs black; soles of the feet yellow. Among mesquites."

373, ♂ ad., Santa Rita Mountains, May 13. Length, 5.30; extent, 8.10; wing, 2.64.

374, ♀ ad., same locality and date. Length, 4.90; extent, 7.40; wing, 2.44. "Iris dark brown; soles of feet yellowish. Water oaks of foot-hills; very fat."

Even the most adult males of this species seem to have the throat-patch slightly sprinkled with yellow. At least I have yet to see one with the black absolutely pure and unmixed.

39. *Siurus naevius* (Bodd.) Coues. NORTHERN WATER THRUSH. — A single specimen taken May 4, at Tucson. It was among willows on the borders of a stream.

This example differs from New England ones in being darker above and less yellowish beneath. In these respects, as well as some minor ones, it resembles a rather peculiar style from West Virginia to which I once called attention.\* Mr. Ridgway kindly furnishes the following opinion regarding its relationship with *S. notabilis*. "The *Siurus* from Tucson is very different in proportions from the type of *notabilis*, with which I have compared it, but it may be a small individual of that form. The wing is about the same length, but the bill and tail are very much shorter, and the tarsi more slender. The color above is grayer, the streaks beneath much narrower, and the spots on the throat much smaller." *Notabilis*, based as it is on a single specimen, and instituted in a species which varies to an unusual degree in size, color and markings, seems to me, however, to be, at best, a very doubtful race.

329, ♂ ad., Tucson, May 4. Length, 6.20; extent, 9.50; wing, 3.10; tail, 2.32; tarsus, .85; culmen, .64. "Iris brown; bill black above, brown below; legs light brown. Very fat. Stomach contained insects."

\* Annals N. Y. Lyceum Nat. Hist., Vol. XI, p. 136.



40. **Geothlypis macgillivrayi** (Aud.) Baird. MACGILLIVRAY'S WARBLER.—Two specimens collected at Tucson (♀ April 20, ♂ June 8). "I have not found it common in either Arizona or New Mexico."

41. **Geothlypis trichas** (Linn.) Caban. MARYLAND YELLOW-THROAT.—Mr. Stephens found this species "abundant along streams," an experience at variance with that recorded by Mr. Henshaw, who met with it but twice while in Arizona.

The only specimen taken agrees closely with some examples from the Truckee River, Nevada, and differs from my eastern representatives, in having the upper parts yellowish-olive instead of olive-green; the crown-band much broader and creamy white in color; the wings and tail longer; the yellow beneath richer, and extending more over the abdomen. Mr. Ridgway has already called attention\* to some of these differences which, as he now writes me, would be enough to warrant the varietal separation of the western bird, were it not that specimens from both sections of the country occasionally vary in such a manner as to invalidate any characters that could at present be proposed. With the acquisition of better series, however, it is probable that the representatives of two regions, as yet undefined, will be found to present sufficiently constant characteristics to deserve distinctive names.

219. ♂ ad., Cienega Station, April 17. Length, 5.40; extent, 6.90; wing, 2.16; tail, 2.40; culmen, .55. "Iris brown; bill black, bluish beneath; legs pale brown."

42. **Icteria virens longicauda** (Lawr.) Coues. LONG-TAILED CHAT.—This bird was observed only in the vicinity of Tucson. The first specimen was taken April 30, and it soon afterwards became abundant.

310. ♂ ad., Tucson, April 30. Length, 7.50; extent, 9.40; wing, 3.12; tail, 3.52. "Bill and legs black."

318. ♂ ad., Tucson, May 3. Length, 7.70; extent, 9.60; wing, 3.05; tail, 3.61.

335. ♂ ad., Tucson, May 5. Length, 7.30; extent, 9.70; wing, 3.12; tail, 3.45.

521. ♂ ad., Tucson, June 11. Length, 7.10; extent, 9.40; wing, 3.15; tail, 3.36.

43. **Myiodioctes pusillus pileolatus** (Pall.) Ridgw. PILEOLATED WARBLER.

Although Mr. Henshaw referred all his Arizona Black-capped Flycatchers to *pusillus*, mine are absolutely typical of *pileolatus*; in fact they are brighter than some specimens from Nicasio (California), the yellow below being richer, and the upper surface more yellowish, while the bill is equally

\* Hist. N. A. Birds, Vol. I, 1874, pp. 297-298.

narrow and several shades lighter in color. Compared with eastern examples they of course present an even greater contrast. Dr. Coues was undoubtedly right in saying (Birds of the Colorado Valley, p. 327) that *pileolatus* "is not confined to the Pacific coast region"; but I cannot agree with him in thinking it an inconstant form. On the contrary, I find its characters, as proposed by Mr. Ridgway, so well maintained that any one of my western birds can be separated at a glance when placed in a series of twenty-one specimens from the Atlantic States.

221, ♂ ad., Cienega Station, April 17. Length, 4.70; extent, 6.80; wing, 2.17; tail, 2.23; width of bill below nostrils, .12. "Iris brown; bill dark above, pale brown below. Common here in willows and underbrush along streams."

257, ♂ ad., Tucson, April 21. Length, 4.90; extent, 7; wing 2.27; tail, 2.30; width of bill below nostrils, .12.

44. **Setophaga picta** Swains. PAINTED REDSTART.— During the past season this beautiful species was met with only among the Chiricahua and Santa Rita Mountains, but in 1876 Mr. Stephens found it in New Mexico, a Territory from which I believe it has not previously been reported. In the Chiricahua Mountains it was not uncommon after March 21, and many specimens were taken near Morse's Mill, at an elevation of fully seven thousand feet. They occurred most numerous among pines, in a cañon where they had been previously observed in April, 1880. This experience, it will be observed, differs somewhat from that recorded by Mr. Henshaw, who says: "It appears not to inhabit the high mountains nor the extreme lowlands, but to occupy an intermediate position, and to find the rocky hills covered with a sparse growth of oak most congenial to its habits."

In the Santa Rita Mountains, where it was rather common in May, Mr. Stephens had the good fortune to find its previously unknown nest and eggs. The nest, which is now before me, is large, flat and shallow. It is composed of bark, coarse fibres from weed-stalks, and fine, bleached grasses, the latter, with a few hairs, forming a simple lining. The cup measures 2.10 inches in width by 1 inch in depth; while the external diameter of the whole structure is rather more than 5 inches, and its depth about 1.50. The eggs, which were three in number, measure respectively .64 × .51; .64 × .50; and .66 × .49. They are clear, dead white, delicately spotted with light reddish-brown, the markings being sparsely distributed over the general surface of the egg, and handsomely wreathed about its larger end. Neither nest



nor egg resembles that of *S. ruticilla*. But a greater surprise is the character of the nesting-site, which was "under a projecting stone, in a bank near a small stream." This position is so unexpected that, from an unproved collector, I should hesitate to accept the accompanying evidence of identification, which is a simple statement that the parent was sitting, and was distinctly seen. But knowing as well as I do Mr. Stephens' unusual accuracy and conscientiousness in such matters I cannot doubt the correctness of his determination, especially as the Painted Redstart is a bird of such striking colors and markings that it could not possibly be mistaken by one who is so familiar with its appearance in life.\* After all the case is not more peculiar than that presented among *Helminthophilæ* by Lucy's warbler which, as has just been shown, departs from the normal nesting habits of the genus and builds in holes, behind loose bark and in all sorts of unexpected places. The nest above described was taken May 18, when the eggs were sufficiently advanced in incubation to show that the clutch was complete.

Mr. Henshaw comparing the sexes, says: "The adult plumage of the sexes differs little, though the coloration in the female is quite perceptibly duller throughout. The black is less lustrous; the wings are blackish brown instead of pure black; the white on the wing confined to the coverts, and only just visible on the edges of the secondaries." These differences, however, are not always maintained for one of the two adult females before me is quite as bright as the average male, while the black is not less lustrous, and the white edging on the secondaries is even broader. The other is more like those examined by Mr. Henshaw, but seems to be peculiar in having the sides, with a broad collar across the nape, fine stone-gray.

\* A letter just received from Mr. Stephens contains the following very satisfactory confirmation of the above evidence. "The identification of your nest of *S. picta* is positive. I saw the parent plainly, and could easily have shot her. Indeed I should never have found the nest had not my attention been called to it by the birds flying from it as I brushed past almost within touching distance. When first found, the nest contained three eggs. I thought it best to leave them until next day to see if more might not be laid. \* \* \* When I returned, however, the bird was not at home and as it was a long, rough walk to camp, I took the nest, their being no occasion to visit the spot again. \* \* \* The locality was a wide part of a cañon between the two Santa Rita peaks, perhaps two miles from the top of the high ridge connecting them. Up this cañon passed an old Mexican road to the pine timber above. It had not been used for many years. In its course it cut through an occasional projecting bank, and in one of these places was the nest. It was under a small boulder in the side of a nearly perpendicular bank, which was but two or three feet high. The vicinity was heavily timbered with oak and sycamore. I regard the position as exceptional: still, it may be the rule."

45. **Vireo gilvus** (Vieill.) Bonap. WARBLING VIREO.— Found among all the well-timbered mountains visited, but nowhere as a common bird.

Of the several characters which are said to distinguish var. *swainsoni* from *gilvus* proper, I can appreciate only the slightly different shape of the bill. The relative length of the wing-quills is an absolutely inconstant characteristic with birds from any of the localities represented in my series, while I do not find that western specimens— at least California and Arizona ones— are either paler or grayer than many we get in the Atlantic States. Indeed, nearly the darkest one in my whole suite comes from Arizona. In view of these facts I cannot regard *swainsoni* as worthy of varietal recognition.

46. **Vireo solitarius cassini** (Xantus) Ridgw. CASSIN'S VIREO.— Common among the foot-hills of the mountains.

Mr. Henshaw has so satisfactorily defined\* the characters which respectively distinguish the Cassin's and Plumbeous Vireos from *solitarius* proper, as well as from each other, that there is no room for any further remarks on what, previous to his examination, was a very tangled problem. The specimens mentioned below are all unmistakably referable to *cassini*, although one or two of them present slight approaches to *plumbeus*. It is a singular fact that Mr. Stephens did not meet with any typical examples of the latter race.

209, ♂ ad., Cienega Station, April 16. Length, 5.40; extent, 8.70. "Iris brown; bill dark horn-color above, lighter below; legs dark bluish."

214, ♀ ad., same locality and date. Length, 5.60; extent, 9.10; wing, 3; tail, 2.44.

236, ♀ ad., Tucson, April 19. Length, 5.60; extent, 8.70; wing, 2.89; tail, 2.41.

316, ♀ ad., Tucson, May 2. Length, 5.30; extent, 8.50; wing, 2.71; tail, 2.26.

346, ♀ ad., Tucson May 7. Length, 5.30; extent, 9; wing, 2.76; tail, 2.23. "Very fat. Would not have laid for a long time."

354, ♂ ad., Santa Rita Mountains, May 11. Length, 5.10; extent, 8.80; wing, 2.82; tail, 2.27. "Iris brown; bill nearly black, bluish at base below; legs lead-color."

47. **Vireo huttoni stephensi** var. nov. STEPHENS' VIREO.

CH. SP.— ♂ ♀ Similis *V. huttoni* sed rostro robustiori, alis longioribus. Supra griseo-cinereus, infra fusco-albidus. Uropygio et marginibus caudæ sordide virenti-olivaceis. Alis albo bifasciatis; remigibus albo-marginatis. Loris et orbe circum-oculari (macula fusco-brunnea in palpebra superiori excepta), cinereo-albis.

Adult ♂ (No. 5728, author's collection— collector's No., 41— Chiricahua Mountains, Arizona, March 14, 1881. F. Stephens). Bill stout; wings from .30 to .40 inches longer than tail. Above grayish-ash; the crown,

\* U. S. Geol. Surveys W. 100 Merid., 1879, pp. 291-293.



vertex and sides of head and neck nearly pure; the back faintly tinged with olive; the rump and an edging on the tail-feathers, dull olive-green. Wings with two nearly confluent bands on the coverts, and the outer edges of the inner secondaries, broadly white; outer quills edged more narrowly with the same color. Beneath brownish or smoky-white, with a mere wash of yellowish on the sides and crissum. Upper eyelid dusky brown; remainder of orbital region, with the lores, ashy-white in decided contrast with the nearly clear cinereous of the head generally. Lining of wings white.

*Dimensions.* Length, 5.20; extent, 8.50; wing, 2.90; tail, 2.25; culmen, .50.

*Habitat.* Arizona and New Mexico.

Four additional specimens offer no variations affecting any of the characters above detailed.

In its generally dull, grayish coloration, with little trace of olive or yellow shades, this Vireo is curiously like *V. pusillus*, but the under parts are obscured with brownish, while the differences in size and proportions are too evident to require detailed comparison. From the smaller, much brighter-colored *V. huttoni*, which is unmistakably its nearest United States relative, it may be distinguished by the following diagnoses.

*V. huttoni.*—Wing, 2.28 to 2.37. Olive-green above and olivaceous-yellowish beneath. No clear white anywhere.

*V. huttoni stephensi.*—Wing, 2.55 to 2.90. Grayish-ash above with no decided olive-green excepting on the rump and tail. Beneath brownish-white, untinged with yellowish excepting on the sides and crissum. Wing-bands pure white and nearly confluent.

It will be observed that the above differences are closely parallel to those which separate *Vireo belli* and *V. pusillus*, while they are in no respect less important. Indeed were I disposed to emphasize certain peculiarities presented in the wing-formula of my type, it would not be difficult to make out an equally good case of specific distinctness, but unfortunately, the relative length of the wing-quills (including the spurious primaries) proves to be quite as variable in *V. huttoni* and its Arizona race, *stephensi*, as I find it to be in *V. pusillus* and *V. belli*, and, I might add, in all closely allied species which I have so far studied. In short, I am convinced that this feature, if ever of any diagnostic value, is so with only a small proportion of the birds to which it has been so freely and confidently applied.

In naming this Vireo after its discoverer, Mr. F. Stephens, I have paid but a deserved compliment to that gentleman's zeal and energy as a field ornithologist. He notes the bird as "not uncommon in scrub-oaks" among both the Chiricahua and Santa Rita Mountains. He also writes me that he has taken specimens in New Mexico, where, near Fort Bayard, a nest with four eggs was obtained in 1876. In both Territories it seems to be confined to the mountain ranges, where it undoubtedly breeds in all suitable localities.

41. ♂ ad., Morse's Mill, Chiricahua Mountains, March 14. Length, 5.20; extent, 8.50; wing, 2.90; tail, 2.25; tarsus, .73; culmen, .50; depth of bill at nostrils, .15. "Iris brown."

50. ♂ ad., Morse's Mill, March 16. Length, 4.90; extent, 8; wing, 2.55; tail, 2.20; tarsus, .73; depth of bill at nostrils, .15.

118. ♂ ad., Morse's Mill, March 28. Length, 5; extent, 7.90; wing, 2.68; tail, 2.30; tarsus, .70; culmen, .50; depth of bill at nostrils, .15.

140. ♂ ad., Chiricahua Mountains, March 31. Length, 5.10; extent, 8.40; wing, 2.65; tail, 2.25; tarsus, .73; culmen, .49; depth of bill at nostrils, .15.

353. ♂ ad., Santa Rita Mountains, May 11. Length, 5; extent, 8.10; wing, 2.74; tail, 2.25; tarsus, .70; culmen, .48; depth of bill at nostrils, .15.

Seven California specimens of *V. huttoni* measure as follows:—

1443. ♂, Nicasio. Wing, 2.35; tail, 2.20; tarsus, .75; culmen, .50; depth of bill, .11.

1445. ♂, Nicasio. Wing, 2.31; tail, 2.15; tarsus, .76; culmen, .51; depth of bill, .11.

1444. ♀, Nicasio. Wing, 2.35; tail, 2.25; tarsus, .76; culmen, .49; depth of bill, .10.

1446. ♀, Nicasio. Wing, 2.32; tail, 2.28; tarsus, .74; culmen, .50; depth of bill, .14.

6800. ♂, Berkeley Co. Wing, 2.37; tail, 2.30; tarsus, .75; culmen, .46; depth of bill, .11.

6801. ♀, Berkeley Co. Wing, 2.28; tail, 2.15; tarsus, .75; culmen, .51; depth of bill, .11.

6339. ♀, Riverside. Wing, 2.34; tail, 2.14; tarsus, .75; culmen, .52; depth of bill, .14.

48. **Vireo pusillus** Coues. LEAST VIREO. — An abundant summer species frequenting willows along streams and near Tucson, thickets of mesquites. "It is active, restless and very noisy."

Numerous nests were taken. The only one sent me is a shallow, but nevertheless rather more elaborate structure, than that of *V. belli* to which, however, it bears a strong resemblance. It is mainly composed of fibrous shreds, apparently obtained from the stalks of some herbaceous plant. The lining is of delicate, bleached grasses, which are very neatly arranged. The eggs are white with a cluster of small black spots about the larger ends. The clutch comprised three, a number which was not exceeded in any of the other nests. The notes relating to this set are as follows: "Tucson, June 11. Nest pensile between the forks of a small mesquite branch, about five feet from the ground, in a



thicket of weeds and brush. Incubation commenced. Female shot. This species seems to abandon a nest if it is found before any eggs are laid."

205, ♂ ad., Cienega Station, April 15. Length, 5; extent, 7.10; wing, 2.21; tail, 2.25. "Iris dark brown; bill, dark above, light below; legs dark."

235, ♀ ad., Tucson, April 19. Length, 5.10; extent, 7.30; wing, 2.23; tail, 2.25.

262, ♂ ad., Tucson, April 22. Length, 6; extent, 7.10; wing, 2.28; tail, 2.34.

275, ♂ ad., Tucson, April 25. Length, 5; extent, 7; wing, 2.21; tail, 2.25.

276, ♀ ad., same locality and date. Length, 4.90; extent, 6.90; wing, 2.18; tail, 2.25.

282, ♂ ad., same locality and date. Length, 5; extent, 7.10; wing, 2.30; tail, 2.30.

461, ♀ ad., Camp Lowell, May 31. Length, 5; extent, 6.90; wing, 2.21; tail, 2.25. "Laying."

499, ♀ ad., Tucson, June 7. Length, 5; extent, 6.90. Skin lost.

589, ♀ ad., Camp Lowell, June 24. Length, 4.80; extent, 6.80; wing, 2.21; tail, 2.25.

49. **Vireo vicinior** *Coues*. GRAY VIREO.—The only individuals met with were a male and female—apparently a mated pair—which were taken at Tucson, on April 26. "They were in low brush and were very shy."

286, ♀ ad., Tucson, April 26. Length, 5.60; extent, 8.20; wing, 2.63; tail, 2.67; tarsus, .80.

287, ♂ ad., same locality and date. Length, 5.60; extent, 8.30; wing, 2.58; tail, 2.70; tarsus, .80. "Iris dark brown; bill plumbeous, darkest above; legs light plumbeous."

50. **Lanius ludovicianus excubitorides** (*Sw.*) *Coues*. WHITE-RUMPED SHRIKE.—"Common and generally distributed."

It is unfortunate that so much prominence has been given to the white rump of *excubitorides* as a distinguishing character, for I have yet to see a good series of Shrikes from any Western locality, excepting, possibly, Arizona, which did not afford a considerable percentage of dark-rumped birds; and conversely, it is by no means difficult to find light-rumped specimens in the East. The same instability also affects most of the other characters which have been assigned to *excubitorides*, as is sufficiently shown by the various conflicting rulings of the authorities regarding the precise definition and limits of distribution of this troublesome race. The only differential points which seem to me to hold good with any number of specimens, are the lighter, purer ash of the upper parts as compared with those of *ludovicianus*, and the smaller and very much weaker bill.

But if these alone are to be depended upon, it becomes necessary to limit the distribution of *ludovicianus* proper to the Gulf States, Georgia and the Carolinas, if not strictly to Florida, and to refer all representatives from the United States at large, east of California, to *excubitorides*: and this course, I believe, will ultimately have to be adopted. The proper position of the dark California form which is so curiously like *ludovicianus* remains to be satisfactorily determined.

51. **Ampelis cedrorum** (Vieill.) Baird. CEDAR WAX-WING.—Met with but once, at Galeysville, where on January 12, 1881, several were shot from a small flock. Mr. Henshaw took a single specimen near Camp Apache, in September, 1873.

52. **Progne subis** (Linn.) Baird. PURPLE MARTIN.—“Common.”

438, ♂ ad., Tucson, May 26. Length, 7.6; extent, 15.7; wing, 5.45. “Iris dark brown; bill black; legs blackish.”

53. **Petrochelidon lunifrons** (Say) Lawr. CLIFF SWALLOW.—At Yuma. “They were breeding abundantly along a bluff above the town.

54. **Tachycineta bicolor** (Vieill.) Caban. WHITE-BELLIED SWALLOW.—“Common in the migrations.”

195, ♂ ad., Cienega Station, April 15. “Iris dark brown; bill black; legs brown.”

55. **Tachycineta thalassina** (Swains.) Caban. VIOLET-GREEN SWALLOW. “Common.”

212, ♀ ad., Cienega Station, April 16. “Iris dark brown; bill and legs black.

56. **Stelgidopteryx serripennis** (Aud.) Baird. ROUGH-WINGED SWALLOW.—Common. Breeds.

211, ♀ ad., Cienega Station, April 16. “Iris and legs dark brown.”

57. **Pyrranga ludoviciana** (Wils.) Bp. LOUISIANA Tanager.—Santa Rita Mountains. “They frequent oaks, and are not very common.”

408, ♂ ad., Santa Rita Mountains, May 18. Length, 7.30; extent, 7.60; wing, 3.80; tail, 3.17. “Iris dark brown; bill blackish horn-color above, greenish-yellow below.”

58. **Pyrranga hepatica** Swains. LIVER-COLORED Tanager.—This Tanager was not uncommon in the Santa Rita Mountains, where the first specimen was taken on May 12. “They range from the foot-hills, through the oaks to the lower pines on the mountains.”

359, ♀ ad., Santa Rita Mountains, May 12. Length, 7.80; extent, 12.10; wing, 3.75. “Bill black above, bluish horn-color below; legs lead-color; iris brown.



377, ♂ ad., Santa Rita Mountains, May 14. Length, 8.20; extent, 12.70; wing, 4.20.

380, ♀ ad., Santa Rita Mountains, May 14. Length, 8.10; extent, 12.40; wing, 4.07. "This bird would have laid in about ten days."

386, ♂ ad., Santa Rita Mountains, May 15. Length, 8.20; extent, 12.80; wing, 4.10.

59. *Pyrranga aestiva cooperi* Ridgw. COOPER'S TANAGER. — Mr. Stephens found this bird rather common at a point about five miles south of Tucson, where it frequented the cottonwoods along a small river. He also informs me that in May, 1875, he took several specimens on the Rio Grande River, between Albuquerque and Mesilla, and some others on the Gila, in New Mexico, during May and June.

227, ♂ ad., Tucson, April 19. Length, 8.10; extent, 12.40; wing, 3.83; tail, 3.50. "Iris brown; bill pale horn-color; legs pale brown. Skin very tender. The first seen this season."

268, ♂ ad., Tucson, April 23. Length, 8.20; extent, 12.40.

297, ♂ ad., Tucson, April 27. Length, 7.90; extent, 12.20; wing, 4; tail, 3.60.

515, ♂ ad., Tucson, June 10. Length, 8.10; extent, 12.20; wing, 3.85; tail, 3.60.

522, ♂ im. Tucson, June 11. Length, 8; extent, 12.20; wing, 3.78; tail, 3.46. In mixed yellow and red plumage.

526, ♂ ad., same locality and date. Length, 8.10; extent, 12.50; wing, 3.89; tail, 3.45.

579, ♂ ad., Camp Lowell, June 23. Length, 8; extent, 11.60; wing, 3.99; tail, 3.58.

339, ♀ ad., Tucson, May 7. Length, 7.90; extent, 12.20; wing, 3.75; tail, 3.39.

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## NOTES ON THE SUMMER BIRDS OF THE UPPER ST. JOHN.

BY CHARLES F. BATCHELDER.

(Concluded from page 111.)

41. *Carpodacus purpureus* (Gm.) Bd. PURPLE FINCH.—Common.

42. *Astragalinus tristis* (Linn.) Cab. GOLDFINCH.—Common.

Though somewhat beyond the limits of my subject, I quote the following from Mr. McLeod's notes: "This winter [1876-77] they have been abundant, although the season is very severe. I have seen them at this time of year but once before." The Goldfinch has been supposed not to winter north of Massachusetts.

43. *Chrysomitris pinus* (Wils.) Bp. PINE FINCH.—Seen in May at Grand Falls. Mr. H. A. Purdie tells me that he observed it at Houlton in June, 1878.

44. *Passerculus sandwichensis savanna* (Wils.) Ridgw. SAVANNA SPARROW.—Common in the pastures at Grand Falls. At Fort Fairfield it was common. It was found in grassy fields, especially along the roadsides.

45. *Poocetes gramineus* (Gm.) Bd. GRASS FINCH.—Common at Fort Fairfield. Some seen in the open fields at Grand Falls.

46. *Melospiza fasciata* (Gm.) Scott. SONG SPARROW.—Abundant at Grand Falls. It was common at Fort Fairfield.

47. *Melospiza palustris* (Wils.) Bd. SWAMP SPARROW.—“Not common” at Houlton. Not found at Fort Fairfield or Grand Falls.

48. *Junco hyemalis* (Linn.) Scl. BLACK SNOWBIRD; “BLUEBIRD.”—Very common at Fort Fairfield. At Grand Falls it was very abundant everywhere.

49. *Spizella socialis* (Wils.) Bp. CHIPPING SPARROW.—This bird was quite abundant at Grand Falls. The nests found were not the loose structures they are in Massachusetts, but were well lined with hair. It was rather common at Fort Fairfield.

50. *Zonotrichia albicollis* (Gm.) Bp. WHITE-THROATED SPARROW.—Very abundant at Grand Falls wherever there was dead wood on the ground. At Fort Fairfield also it was very abundant; this bird and *Junco hyemalis* were the commonest species. The nests were apt to be in a clearing near the edge of woods, and frequently were in damp places. They were often under a fallen branch, or at the foot of a sapling, and were but slightly concealed.

The White-crowned Sparrow is probably only a migrant through this section. With regard to its abundance, however, I quote the following from Mr. McLeod's notes: “These Sparrows make their first appearance from May 10th to 18th. Some seasons they are very abundant, scores of them at a time feeding in my garden. By June 1 they have disappeared. In the autumn I have seen but one flock of them.”

51. *Zamelodia ludoviciana* (Linn.) Coues. ROSE-BREADED GROSBILL.—Common in low hard woods at Grand Falls. Rather common at Fort Fairfield, apparently more so than in eastern Massachusetts. Rather common at Houlton.

52. *Dolichonyx oryzivorus* (Linn.) Swains. BOBOLINK.—Apparently not rare at Fort Fairfield. Found in grassy fields and meadows near the river. Not observed at Grand Falls. At Houlton “arrives by the 25th of May, common by June 15.” July 2, on our return from Fort Fairfield, Mr. Dwight and I saw them at several places along the St. John River above Fredericton.

53. *Agelæus phœniceus* (Linn.) Vieill. RED-WINGED BLACKBIRD.—“Quite common at Eel River, ten miles from Houlton” (R. R. McL.). It does not occur at Fort Fairfield or Grand Falls.



54. *Quiscalus purpureus æneus* Ridgw. CROW BLACKBIRD.—Common at Fort Fairfield, in the town, along the river, and about a small pond back in the woods. At Grand Falls it was not uncommon about the town. "Very common" at Houlton.
55. *Corvus corax* Linn. RAVEN.—Rare at Grand Falls. Not met with at Fort Fairfield. "Very rare" at Houlton.
56. *Corvus americanus* Aud. CROW.—Common.
57. *Cyanocitta cristata* (Linn.) Strickl. BLUE JAY.—Common at Grand Falls. At Fort Fairfield it was rather common, but shy and seldom seen.
58. *Perisoreus canadensis* (Linn.) Bp. CANADA JAY.—At Houlton: "very common. These birds do not often appear in the thickly settled part of the town, but are very abundant around the lumber camps in this vicinity." This no doubt explains the fact that the species was not seen by any of us at Grand Falls and Fort Fairfield.\*
59. *Tyrannus carolinensis* (Linn.) Bd. KINGBIRD.—Rather common at Fort Fairfield. At Grand Falls several were seen, but it was not common.
60. *Myiarchus crinitus* (Linn.) Caban. GREAT CRESTED FLYCATCHER.—In June, 1878, Messrs. H. A. Purdie and Ruthven Deane observed a pair nest-building at a point in New Brunswick about six miles east of Houlton.
61. *Sayornis fuscus* (Gm.) Bd. PEWEE.—One was observed at Fort Fairfield, June 28. "Very rare" at Houlton.
62. *Contopus borealis* (Swains.) Bd. OLIVE-SIDED FLYCATCHER.—Common in the woods at Grand Falls. This species was rather common at Fort Fairfield. We usually saw them perched on the tops of tall dead trees in clearings. They were rather shy.
63. *Contopus virens* (Linn.) Caban. WOOD PEWEE.—At Fort Fairfield it appeared to be not uncommon. It was not met with, however, at Grand Falls.
64. *Empidonax flaviventris* Bd. YELLOW-BELLIED FLYCATCHER.—At Fort Fairfield this species was rather common in wet evergreen woods, especially in those that had small streams flowing through them. It was not observed at Grand Falls. Messrs. Purdie and Deane found it rather common at Houlton in June, 1878.†
65. *Empidonax trailli* (Aud.) Bd. TRAILL'S FLYCATCHER.—Not common at Grand Falls. They were to be found mostly where there were scattered dead trees. We did not find it at Fort Fairfield. Mr. H. A. Purdie informs me that it was not uncommon at Houlton in June, 1878.
66. *Empidonax minimus* Bd. LEAST FLYCATCHER.—Very abundant in hard woods at Grand Falls. At Fort Fairfield it was rather common.
67. *Caprimulgus vociferus* Wils. WHIP-POOR-WILL.—Mr. McLeod

\* For an account of the nesting of this species at Grand Falls, see this Bulletin, Vol. VII, p. —.

† For descriptions of the nesting of this species at Houlton and Fort Fairfield see this Bulletin, Vol. III, pp. 166-168, and Vol. IV, pp. 241, 242.

notes that there are a few at Houlton during the summer. The species was neither seen nor heard at Fort Fairfield and Grand Falls.

68. *Chordeiles popetue* (Viell.) Bd. NIGHT-HAWK.—Very abundant at Grand Falls. At Fort Fairfield it was common; they frequented burnt lands.

69. *Chætura pelagica* (Linn.) Bd. CHIMNEY SWIFT.—At Fort Fairfield they were common, breeding both in chimneys and in hollow trees. Common in the burnt country at Grand Falls. Not many were breeding in chimneys, the people disliking to have them there.

70. *Trochilus colubris* Linn. RUBY-THROATED HUMMINGBIRD.—Common at Grand Falls. At Fort Fairfield it was apparently rather common—we saw several.

71. *Ceryle alcyon* (Linn.) Boie. BELTED KINGFISHER.—Rather common at Fort Fairfield. At Grand Falls it was to be seen wherever there was good fishing ground.

72. *Picus villosus* Linn. HAIRY WOODPECKER.—Common.

73. *Picus pubescens* Linn. DOWNY WOODPECKER.—At Fort Fairfield this species was much less common than *P. villosus*. It was not uncommon at Grand Falls.

74. *Picoides arcticus* (Swains.) Gray. BLACK-BACKED THREE-TOED WOODPECKER.—Common at Grand Falls in burnt cedar swamps. At Fort Fairfield we shot two, all we saw.

75. *Sphyrapicus varius* (Linn.) Bd. YELLOW-BELLIED WOODPECKER.—Common—the commonest Woodpecker—at Fort Fairfield. They were generally found about recent clearings, or in the more open mixed woods. At Grand Falls they were common in hard woods.

76. *Hylotomus pileatus* (Linn.) Bd. PILEATED WOODPECKER.—At Grand Falls half a dozen pairs were seen. Probably there is too little of the heavy forest left in the immediate neighborhood of Fort Fairfield to suit their tastes, as we did not meet with them. “Common” at Houlton.

77. *Colaptes auratus* (Linn.) Sw. GOLDEN-WINGED WOODPECKER.—Rather common at Fort Fairfield. Not common at Grand Falls.

78. *Coccyzus erythrophthalmus* (Wils.) Bd. BLACK-BILLED CUCKOO.—Mr. McLeod records this bird in his notes, but without comments. It was not seen at Fort Fairfield or Grand Falls.

79. *Strix nebulosa* Forst. BARRED OWL.—“Very common” at Houlton. We were shown a mounted specimen by Mr. Frank P. Orcutt at Fort Fairfield. He considered it the commonest Owl.

80. *Nyctale acadica* (Gm.) Bd. SAW-WHET OWL.—This bird is not uncommon at Houlton. Mr. Frank P. Orcutt told us that it was tolerably common at Fort Fairfield.

81. *Bubo virginianus* (Gm.) Bd. GREAT HORNED OWL.—“Very common” at Houlton. Mr. Orcutt said it was rather common at Fort Fairfield.

82. *Circus hudsonius* (Linn.) Vieill. MARSH HAWK.—Rare at Houlton. One seen at Fort Fairfield.

83. *Accipiter cooperi* Bp. COOPER'S HAWK. Not common at Grand Falls. Not observed at Fort Fairfield or Houlton.



84. *Accipiter fuscus* (Gm.) Bp. SHARP-SHINNED HAWK.—“Not common” at Houlton.

85. *Falco sparverius* Linn. SPARROW HAWK.—Commonest Hawk at Grand Falls. Not met with at Houlton or Fort Fairfield, though Mr. Orcutt considers it common at the latter place.

86. *Buteo borealis* (Gm.) Vieill. RED-TAILED HAWK.—Not common at Grand Falls. Not observed at Fort Fairfield. “Common” at Houlton.

87. *Buteo pennsylvanicus* (Wils.) Bp. BROAD-WINGED HAWK.—Not common at Grand Falls. It was found breeding at Houlton, but not met with at Fort Fairfield.

88. *Haliaeetus leucocephalus* (Linn.) Savig. BALD EAGLE.—“Not common” at Houlton.

89. *Ectopistes migratorius* (Linn.) Sw. WILD PIGEON.—Breeding at Grand Falls, but not common.

90. *Canace canadensis* (Linn.) Bp. SPRUCE PARTRIDGE.—At Houlton “mostly found in the deep fir thickets, or in the swamps of firs and cedars.” Not met with at Fort Fairfield and Grand Falls, though of course it occurs there.

91. *Bonasa umbellus* (Linn.) Steph. RUFFED GROUSE.—Rather common at Fort Fairfield. At Grand Falls only a few were seen—in the hard woods.

92. *Ardea herodias* Linn. GREAT BLUE HERON.—“Common” at Houlton.

93. *Nyctiardea grisea naevia* (Bodd.) Allen. NIGHT HERON.—“Not common” at Houlton.

94. *Botaurus lentiginosus* (Montag.) Steph.—BITTERN.—“Common” at Houlton. One seen at Grand Falls.

95. *Philohela minor* (Gm.) Gray. WOODCOCK.—One seen on Little River Flats near Grand Falls. At Fort Fairfield we saw a specimen in the collection of Mr. Frank P. Orcutt, who considered it rare in that neighborhood. “A few breed in the vicinity” of Houlton.

96. *Rhyacophilus solitarius* (Wils.) Cass. SOLITARY SANDPIPER.—At Grand Falls some were seen along the river June 9 (J. A. J.).

97. *Tringoides macularius* (Linn.) Gray. SPOTTED SANDPIPER.—At Fort Fairfield it was very numerous along the Aroostook River, and was also noticed in one or two other places. It was abundant along the rivers at Grand Falls. At Houlton too it was very common.

98. *Porzana carolina* (Linn.) Bd. CAROLINA RAIL.—One seen at Fort Fairfield, June 20, in a wet meadow partly grown up with alder bushes (J. D.).

99. *Anas obscura* Gm. BLACK DUCK.—“Very common, breeding” at Houlton.

100. *Aix sponsa* (Linn.) Boie. WOOD DUCK.—“Quite common” at Houlton.

101. *Clangula glaucium americana* (Bp.) Ridgw. GOLDEN-EYE.—A few seen at Grand Falls.

102. *Mergus merganser americanus* (Cass.) Ridgw. SHELDRAKE.—  
Not uncommon at Grand Falls.
103. *Mergus serrator* Linn. RED-BREADED MERGANSER.—“Very  
common, breeding,” at Houlton.
104. *Larus argentatus smithsonianus*, Coues. HERRING GULL.—  
At Houlton it is common on the neighboring lakes, where it breeds.
105. *Podilymbus podiceps* (Linn.) Lawr. PIED-BILLED GREBE.—  
Rare, breeds, Houlton.

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A SKETCH OF THE HOME OF *HYLOCICHLA*  
*ALICIAE BICKNELLI*, RIDGWAY, WITH SOME  
CRITICAL REMARKS ON THE ALLIES OF THIS  
NEW RACE.

BY EUGENE P. BICKNELL.

That there remained unrecognized at this late day a bird regularly inhabiting one of the most populous portions of our country; or, indeed, that a species of eminently boreal habitat during its breeding season, and not known to occur at all at such time within the limits of the United States, should have a representative race regularly breeding in our midst, are facts for which we were little prepared. Mr. Ridgway's recent paper\* announcing these facts being necessarily of a technical nature, and confined to a formal description of the new Thrush, it has been thought well on the present occasion to allude more particularly to the character of the locality inhabited by the bird, and to some of its associates there, in connection with other sequential considerations. As the general physical character of the Catskill Mountains and the faunal features of the region will be treated by the writer elsewhere, it will be unnecessary to extend the range of the present relation from the summit of Slide Mountain in Ulster Co.,† where the new race was discovered.

On June 15, 1881, nearing the summit of this mountain, the forests of a more northern latitude were forcibly suggested. A shower had fallen during the ascent, and the sun was still obscured,

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\* "Descriptions of two new Thrushes from the United States." Proceedings U. S. National Museum, Vol. 374, pp. 374-9.

† The highest peak of the Catskills,—4,205 feet altitude.