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A REVISION OF THE GENUS EUPSYCHORTYX.

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Plates V-VI.

INTRODUCTION.

WHEN, some three years ago, the writer had occasion to take up for identification the gradually increasing series of South American Crested Quails in the collection of the Carnegie Museum, he experienced great difficulty in reaching definite conclusions. Discrepancies were evident between the specimens in hand and the published descriptions consulted, and it soon became apparent that the group was sadly in need of revision. Preliminary studies made at that time resulted in the publication of two forms believed to be new. More recently he has been led to take up the whole matter afresh in connection with a new faunal study of the birds of the Santa Marta region of Colombia. For various reasons it has seemed desirable to present the results of this particular investigation in a separate paper, and to go into the subject in more detail than would otherwise be permissible, the more so in view of the fact that the status of the newly described forms has recently been questioned, and that there still seems to be a great deal of uncertainty regarding the relationships and nomenclature of the older forms as well. Such a study has been made possible only through the courtesy of other institutions and individuals in the loan of material, and I have to thank the authorities of

The American Museum of Natural History, the U. S. National Museum, the Museum of Comparative Zoology, the Museum of the Brooklyn Institute, the Academy of Natural Sciences of Philadelphia, and Mr. James H. Fleming, of Toronto, Ontario, for favors extended. No less than one hundred and ninety-two specimens have been examined, including considerable typical and topotypical material, and a representation of all the known forms. My acknowledgments are also due to Mr. George M. Sutton for the very excellent painting which forms the basis of the plate which accompanies this paper, and for plotting both of the maps illustrating the distribution of the various forms. None of the references appearing in the paper have been taken at second-hand, and I have to thank Mr. E. W. Nelson, Dr. Harry C. Oberholser, and Dr. Charles W. Richmond for verifying a few of those here quoted. All measurements are in millimeters, and the length of the bill is that of the exposed culmen. Free use has been made of Mr. Ridgway's 'Color Standards and Color Nomenclature' in preparing descriptions.

Genus **Eupsychortyx** Gould.

- Eupsychortyx* GOULD, Mon. Odontophorinæ, 1850, 15 (diag.; list of species; no type designated).—GRAY, Cat. Genera and Subgenera Birds, 1855, 107 (*Tetrao cristatus* Linnaeus designated as type).—GRAY, Hand-List Birds, II, 1870, 273 (list of species).—GIEBEL, Thes. Orn., II, 1875, 141 (diag.; list of species).—WATERHOUSE, Index Genera Avium, 1889, 78 (ref. orig. diag.).—OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 99, 407 (diag.; *E. leucopogon* given as type).—SHARPE, Hand-List Birds, I, 1899, 45 (list of species).—DUBOIS, Syn. Avium, II, 1907, 819 (list of species).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, III, 1903, 295 (diag.; references).—KNOWLTON, Birds of the World, 1909, 296 (range).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 173, in text (crit.).
- Eupsichortyx* (emendation) BONAPARTE, Compt. Rend., XLII, 1856, 883 (list of species).

The first species of this group to receive a binomial name was the *Tetrao cristatus* of Linnaeus, 1766, based on Brisson. Curiously enough, the true habitat of this form remained unknown

up to 1892, when the late Count von Berlepsch received it from Curaçao, one of the Dutch West Indies, and it has since been traced to the mainland. The Guiana bird was at first supposed to be the same, but in 1815 Temminck distinguished it under the name *Perdix sonnini*, although as late as 1892 we find von Berlepsch arguing the question. In 1830 Vigors described two supposed new quails as *Ortyx affinis* and *Ortyx ncoxenus*, but it is practically certain that these names refer to the same species already named by Temminck and Linnæus respectively. In 1842 Lesson described a bird from "San Carlos in Central America" as *Ortyx leucopogon*, and the following year Gould followed with the description of *Ortyx parvieristatus* and *Ortyx leucotis* from Colombia. Specimens were few and far between at this time, as Gould discovered when he undertook to bring together material for his work on the Odontophorinæ or American Partridges, which appeared in 1850. In this work Gould proposed to split up *Ortyx*, which had superseded *Perdix* as the generic designation of the American Quails, into several generic groups. He placed the five accepted forms above mentioned in his new genus *Eupsychortyx*, together with the *Ortyx affinis* of Vigors, which he considered doubtful.

In 1855, J. E. Gray designated *Tetrao cristatus* Linnæus as the type of *Eupsychortyx*. Later authors have, as a rule, accepted the genus without question, while Mr. Ogilvie-Grant, who was the next author to deal critically with the group, enlarged it to include two Central American forms that had heretofore been referred to *Ortyx*, namely, *O. leylandi* Moore and *O. nigrogularis* Gould, including here also *Eupsychortyx hypoleucus*, described by Gould in 1860. Salvin and Godman also adopted the same limits in the "Biologia Centrali-Americana." Very recently Dr. Chapman has sought to merge *Eupsychortyx* with *Colinus* (the equivalent of the old *Ortyx*), and there is certainly much to be said in favor of his views, so much, indeed, that the present writer finds himself in full accord with the principles there laid down. In practice, however, so long as we recognize so many other generic groups with no better characters, we are justified in provisionally recognizing *Eupsychortyx*, at least until such time as a consistent scheme for evaluating generic groups can be devised. But even with this

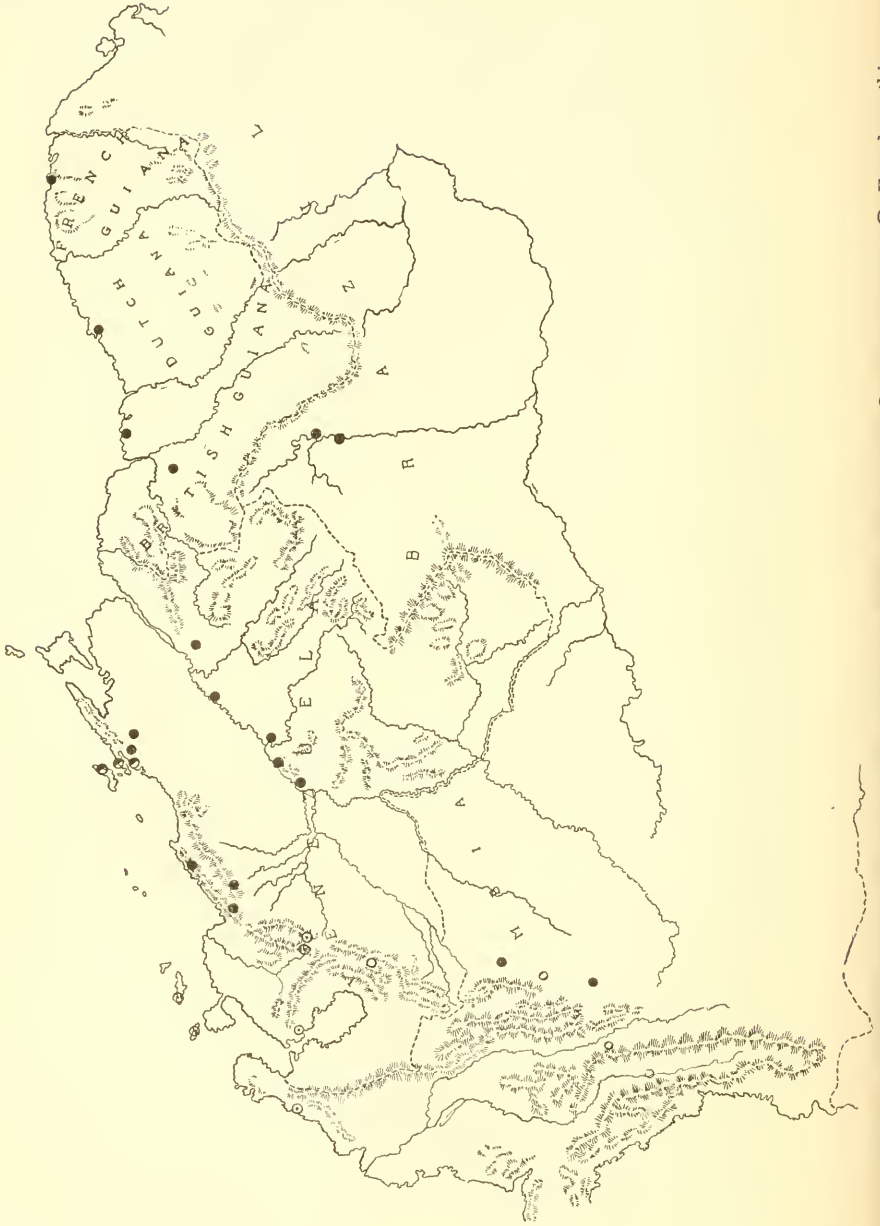


Fig. 1. Distribution of *Eupsychortyx* ● *E. s. sonnini*, ● *E. s. mocquerysi*, ○ *E. c. cristatus*, ○ *E. c. horvathi*.

understanding *Eupsychortyx* can only be recognized by restricting it to the forms occurring from Panama southward, in which the crest (when fully developed) is longer than the head and slightly recurved at the tip. The relative length of the first primary, upon which Mr. Ogilvie-Grant lays so much stress, unfortunately does not correspond with the character of the crest. As a matter of fact *Ortyx leylandi* Moore, *Ortyx nigrogularis* Gould, and *Eupsychortyx hypoleucus*¹ Gould agree much better with the type of *Colinus* (*C. virginianus*) than with *Eupsychortyx* as here restricted, all three having the short, decumbent crest of the former.

The close relationship existing among the various forms of this group is indicated by the general agreement in their style of coloration, and in particular by the close resemblance of the females, which are sometimes difficult to discriminate. Three specific types, depending for their characters on the color of the throat, and superciliary and malar stripes, and the spotted condition of the breast, can be discriminated. The distribution of these three types seems as a rule to be sharply defined by mountain ranges, which they appear unable to pass, being birds of the Tropical or Subtropical Zone. Thus, *E. sonnini* enjoys an extensive range in Guiana and Venezuela, but is abruptly stopped by the Andean chain in Venezuela and Colombia. In the region around the Lake of Maracaibo, in the pocket between the Andes of Meridá and the Eastern Andes of Colombia, we find the second type, *E. cristatus*. In the valleys of the Andean region, and extending into the low country as far even as western Panama, a third type, *E. leucopogon*, occurs. All three of these types are subject to more or less geographic variation, while individual variation is excessive. A most interesting problem is presented in the case of *E. leucopogon* and *E. cristatus*, the respective ranges of which appear to approximate each other very closely, possibly overlapping. The possibility that *E. cristatus* and *E. sonnini* may also meet and intergrade in some restricted area in Venezuela is likewise to be considered. The phylogeny of the group will be more fully discussed, we hope, by the eminent authority to whom we are looking for an exhaustive study of the genus *Colinus*.

¹The only doubt in this case is with regard to this form, of which I have been able to examine but one male specimen.

Suffice it to say here that I regard *E. sonnini* as the primitive form.

Between the views of the latest writer, who would reduce all the described forms of this group to subspecies of *E. cristatus*, and those of previous authors, who retain them as distinct species, there would seem to be room for a safe and sane arrangement which will better express their real affinities. The results of my study of the group may be expressed in tabular form in the following:

Key to the Species and Subspecies of Eupsychortyx.

Based on Adult Males Only.

- A. Breast plain.
 - a. Above darker, crest shorter. *Eupsychortyx sonnini sonnini.*
 - a'. Above paler, crest longer. *Eupsychortyx sonnini mocquersyi.*
- A'. Breast spotted with white.
 - a. Superciliary and malar stripes amber brown.
 - b. Superciliary stripe without black spots or streaks intermixed.
 - c. White of head more extended, occupying anterior half of throat; breast less heavily spotted with white. *Eupsychortyx leucopogon leucopogon.*
 - c'. White of head more restricted, occupying chin, lores, and subloral region only; breast more heavily spotted with white. *Eupsychortyx leucopogon leucotis.*
 - b'. Superciliary stripe with spots or streaks of black.
 - c. Coloration deeper and richer, the breast almost or quite as deeply colored as the throat. *Eupsychortyx leucopogon decoratus.*
 - c'. Coloration duller and paler, the breast conspicuously paler than the throat. *Eupsychortyx leucopogon littoralis.*
 - a'. Superciliary and malar stripes black.
 - b. Upper parts darker, more rufescent. *Eupsychortyx cristatus cristatus.*
 - b'. Upper parts paler, more grayish. *Eupsychortyx cristatus horvathi.*

***Eupsychortyx sonnini sonnini* (Temminck).**

Plate V, figures 1-2.

"*Coturnix eleganter variegata, & cristata*" BARRERE, *Essai sur l'histoire naturelle de la France equinoxiale*,² 1741, 129 (French Guiana; descr., etc.).

²This title, however, did not appear until the second edition came out in 1749.

- "*Coturnix fronte sordide albicante*" ROZIER, Journ. de Physique, II, i, 1772, 217, pl. 2 ([French] Guiana; descr.).
- "Caille de Cayenne" VIREY, in BUFFON, Hist. Nat. Ois., Sonnini ed., VII, 1802, 133 (French Guiana; descr.; habits).
- Perdix sonnini* TEMMINCK, Hist. Nat. et Gén. Pigeons et Gallinaces, III, 1815, 451 (French Guiana; orig. descr.; type in Paris Mus.; habits, etc.), 737 (diag.; references).—VIEILLOT, Nouv. Dict. d'Hist. Nat., XXV, 1817, 246 (descr.; habits).—VIEILLOT, Tabl. Enc. et Méth., I, 1820, 369 (descr.; habits).—TEMMINCK, Pl. Col., V, 1823, pl. 75 and text (descr.; habits).
- Ortyx sonnini* STEPHENS, in Shaw's Gen. Zool., XI, 1819, 383 (descr.; habits; references).—JARDINE and SELBY, Ill. Orn., I, 1828, text to pl. 38 (diag.; range; references).—LESSON, Ill. Zool., I, 1831, text to pl. 52 (diag.; range).—GRAY, List Spec. Birds Brit. Mus., III, 1844, 44 (British Guiana; references).—GRAY, Gen. Birds, III, 1846, 514 (in list of species; references).—REINHARDT, in NEWTON, Ibis, 1861, 114 (crit.).—GRAY, List Spec. Birds Brit. Mus., V, 1867, 77 (British Guiana; references).—VON PELZELN, Orn. Brasiliens, iii, 1870, 290 (Forte do S. Joaquim, Rio Branco, Brazil), iv. (faunal range).—GRAY, Hand-List Birds, II, 1870, 273 (range).
- "Sonnini's Quail" LATHAM, Gen. Hist. Birds, VIII, 1823, 328 (descr.; references).
- (?) *Ortyx affinis* VIGORS, Proc. Com. Sci. and Cor. Zool. Soc. London, 1830, 3 ("Mexico"; orig. descr.; type in coll. ?).—GRAY, Gen. Birds, III, 1846, 514 (in list of species; ref. orig. descr.).—REINHARDT, in NEWTON, Ibis, 1861, 115 (crit.).
- Colinus sonnini* LESSON, Traité de Orn., 1831, 508 (in list of species; range).
- Ortyx parvicristatus* GOULD, Proc. Zool. Soc. London, 1843, 106 ("Bogotá," Colombia; orig. descr.; type in coll. Brit. Mus.).—GRAY, List Spec. Birds Brit. Mus., III, 1844, 44 ("S. Am."; ref. orig. descr.).—GRAY, Gen. Birds, III, 1846, 514 (in list of species; references).—GRAY, Hand-List Birds, II, 1870, 273 ("Bogotá," Colombia, in range).
- Ortyx cristatus* (not *Tetrao cristatus* Linnæus) CABANIS, in SCHOMBURGK, Reisen in British-Guiana, III, 1848, 747 (British Guiana; habits).—BROWN, Canoe and Camp Life in British Guiana, 1876, 268 (Cotinga River and Rupununi Savannas, British Guiana).
- (?) *Eupsychortyx affinis* GOULD, Mon. Odontophorinæ, 1850, 16 (descr.; crit.; Vigors' record).
- Eupsychortyx sonnini* GOULD, Mon. Odontophorinæ, 1850, pl. 11 and text (descr.; syn.; range—"Guiana, Caraccas, and the southern provinces of Mexico").—NEWTON, Ibis, 1860, 308 (St. Thomas, West Indies).—CASSIN, Proc. Acad. Nat. Sci. Philadelphia, 1860, 378 (St. Thomas, West Indies).—SCLATER and SALVIN, Proc. Zool. Soc. London, 1869, 252 (Plain of Valencia, Venezuela).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 138 (in list of species; range).—GIEBEL, Thes.

Orn., II, 1875, 142 (Gould's reference).—HEINE and REICHENOW Nom. Mus. Heineani Orn., 1887, 294 ("South America").—CORY, Auk, IV, 1887, 225 (St. Thomas, West Indies; references; crit.).—CORY, Birds W. Indies, 1889, 224 (St. Thomas, West Indies; descr.; references).—CORY, Cat. W. Indian Birds, 1892, 96 (St. Thomas, West Indies).—VON BERLEPSCH, Journ. f. Orn., XL, 1892, 99, in text (French Guiana; Quonga, British Guiana; crit.).—OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 409 (Forte do Rio Branco, Brazil; Quonga, British Guiana; Caracas, Venezuela; Mustique I., Grenadines; syn.; descr.).—HARTERT, Ibis, 1893, 306, in text, 338, note (range; crit.).—HARTERT, Bull. Brit. Orn. Club, III, 1894, 37, in text (Plain of Valencia, Venezuela).—HARTERT, Ibis, 1894, 430, in text (Plain of Valencia, Venezuela).—HARTERT, Nov. Zool., I, 1894, 675, in text (crit.).—PHELPS, Auk, XIV, 1897, 367 (Cumanacoa and San Antonio, Venezuela).—OGILVIE-GRANT, Hand-Book Game-birds, II, 1897, 130 (syn.; descr.; range).—SHARPE, Hand-List Birds, I, 1899, 45 (range).—OGILVIE-GRANT, Ibis, 1902, 239 (Quonga, British Guiana; Mustique I., Grenadines; crit.).—DUBOIS, Syn. Avium, II, 1902, 820 (references; range).—VON BERLEPSCH and HARTERT, Nov. Zool., IX, 1902, 121 (Altigracia, Venezuela; range; crit.), 275 (St. Thomas, West Indies).—HAGMANN, Bol. Mus. Gœldi, IV, 1904, 302 (von Pelzeln's reference).—CLARK, Proc. Boston Soc. Nat. Hist., XXXII, 1905, 246 (St. Vincent and Mustique I., West Indies).—VON IHERING, Aves do Brazil, 1907, 17 (range—"Rio Branco e Rio Negro," Brazil).—PENARD, Vogels van Guyana, I, 1908, 310 (descr.; range; habits).—VON BERLEPSCH, Nov. Zool., XV, 1908, 296 (Cayenne, French Guiana, *ex* Sonnini; British Guiana, *fide* Whiteley).—CORY, Field Mus. Orn. Series, I, 1909, 239, in text (British Guiana and Caracas, Venezuela, crit.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 13 (ref. orig. descr.; range).—CHERRIE, Mus. Brooklyn Inst. Sci. Bull., II, 1916, 357 (lower Orinoco River, Venezuela).—CHUBB, Birds Brit. Guiana, I, 1916, 31 (Takutu Mountains, Abary River, and Great Savannas, British Guiana; descr.; range; habits).

Eupsychortyx parvicristatus GOULD, Mon. Odontophorinæ, 1850, pl. 12 and text (descr.; range; crit.).—SCLATER, Proc. Zool. Soc. London, 1855, 163 ("Bogotá," Colombia).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 138 (in list of species; range).—VON PELZELN, Ibis, 1875, 331 ("Spanish Guiana").—GIEBEL, Thes. Orn., II, 1875, 142 (Gould's reference).—HEINE and REICHENOW, Nom. Mus. Heineani Orn., 1887, 294, part ("Bogotá," Colombia).—OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 410 ("Bogotá," Colombia; syn.; descr.; crit.).—OGILVIE-GRANT, Hand-Book Game Birds, II, 1897, 131 (syn.; descr.; range).—SHARPE, Hand-List Birds, I, 1899, 45 (range).—DUBOIS, Syn. Avium, II, 1902, 820 (references; range).—VON BERLEPSCH and HARTERT, Nov. Zool., IX, 1902, 121, in text (crit.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 13 (ref. orig. descr.; range).



DISTRIBUTION OF EUPSYCHORTYX IN COLOMBIA

● *E. leucopogon leucotis*, ⊙ *E. l. decoratus*, ○ *E. l. littoralis*.

- Eupsichortyx sonnini* BONAPARTE, Compt. Rend., XLII, 1856, 883 (in list of species).
- Eupsichortyx parvicristata* BONAPARTE, Compt. Rend., XLII, 1856, 883 (in list of species).
- Ortyx parvirostris* (lapsus) GRAY, List Spec. Birds Brit. Mus., V, 1867, 77 ("Bogotá," Colombia; references).
- Eupsichortyx cristatus* (not *Tetrao cristatus* Linnæus) SALVIN, Ibis, 1886, 175 (Cabanis' British Guiana reference).—(?) HEINE and REICHENOW, Nom. Mus. Heineani Orn., 1887, 294, part ("Guiana").
- Odontophorus sonnini* GELDI, Aves do Brazil, ii, 1894, 439 (Rio Branco, Brazil).
- Eupsichortyx [sonnini]* FERRY, Condor, X, 1908, 226 (Caracas, Venezuela; habits).
- Colinus cristatus parvicristatus* CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 199 (Fómeque and Quetame, Colombia; range; crit.).

Description.—Male: forehead, lores, and crown varying from soiled white to buffy or grayish brown, the crest similar but usually darker; broad superciliaries, beginning above the eye, amber brown, margined above by a narrow and irregular line of black; auriculars hair brown or drab; nape ochraceous tawny, varied with black bars on the feathers; throat amber brown; neck all around with a collar of black and white and chestnut spots, this collar broadest on the sides of the neck, where it is produced forward to the auriculars; upper parts varying from auburn to bister or sepia, tinged more or less with grayish, vermiculated with black and irregularly mottled with black and brown; tertiaries and scapulars similar but more boldly marked, the feathers with buffy margins, giving a streaked appearance; tail mouse gray or hair brown, or even dusky, indistinctly barred and mottled with whitish or buffy; wings hair brown, the secondaries mottled with buffy or grayish on the outer webs, the upper coverts colored like the back; under wing-coverts hair brown, margined and tipped with white; breast russet, tinged with grayish, nearly or quite immaculate, but showing faint and irregular dusky vermiculations, especially laterally; rest of under parts chestnut or amber brown, passing into buffy posteriorly, everywhere spotted with white, each spot surrounded (except on the outer margin) with black; under tail-coverts white or buffy white, sometimes tinged with ochraceous, with notched black shaft-streaks; "iris brown; bill black; feet pale horn color" (Carraker).

Female similar in general to the male, but head and under parts different; forehead, crown, and crest much darker, brown or nearly black, the nape similar, varied with ochraceous; superciliaries and throat raw sienna to ochraceous tawny, the throat spotted or streaked, more or less heavily, with black; neck-collar of black and white spots almost obsolete in front; spots on the under surface beginning close up to the throat on

the breast, which is fawn color or wood brown at first; centers of the feathers of the sides and flanks tinged with Brussels brown or antique brown.

Measurements.—Male (ten specimens) wing, 96–106 (average, 102); tail, 57–67 (62); bill, 12–13 (12.7); tarsus, 25–30 (27.5). Female (six specimens); wing, 95–99 (97); tail, 58–62 (60); bill, 12–13 (12.5); tarsus, 25–28 (26).

Range.—From Guiana and extreme northern Brazil to Venezuela (except the Cariaco Peninsula) and Colombia, east of the Andes.

Remarks.—The earliest mention of this species which I can trace is that by Pierre Barrere, who refers to it in his work on the natural history of French Guiana, published in 1741. The Abbé Rozier gave a brief and rather unsatisfactory description of it in 1772, but in 1802 a signed article by Virey appeared in Sonnini's edition of Buffon's "Histoire Naturelle de Oiseaux," giving a much fuller account of the bird as observed in French Guiana. It was formally described by Temminck under a binomial name in 1815, from specimens said by him to have been given to the Paris Museum, where presumably they still are. Vieillot, Latham, and the other authors of that time apparently knew the species only from these earlier sources, which they usually quote. Early in 1830 Vigors described a quail from an unknown locality under the name *Ortyx affinis*, and Gould another from Colombia in 1843 as *Ortyx parvicristatus*. This brings us down to 1850, the year when Gould's "Monograph of the Odontophorinæ" appeared. In this work Gould figured and described both *sonnini* and *parvicristatus*, referring them to his new genus *Eupsychortyx*, but did not consider it necessary to figure *affinis*, regarding it as too close to *sonnini*. Subsequent authors have accepted both *sonnini* and *parvicristatus* mainly on Gould's authority, as one after another records began to come in from British Guiana, Venezuela, and even as far south as Brazil. All these were duly referred to *sonnini* (although sometimes with misgivings), except that Cabanis, possibly by inadvertence, confused the British Guiana bird with *cristatus*.

It would appear that up to the time of Dr. Chapman's recent explorations in Colombia no specimens from that country with authentic data were available, the alleged species *parvicristatus* being known only from so-called "Bogotá" skins. Indeed, his

collectors failed to secure any specimens whatever, although they saw a flock at Quetame probably belonging to this species, and the two skins with a definite locality attached which he records were secured through another party. More recently Mr. M. A. Carriker, Jr., has sent in three fine specimens from Palmar, in the State of Boyaca. Equipped with this material, I must confess my inability to distinguish the Colombian bird from that of Venezuela and Guiana, all the characters mentioned by Gould, and relied on by Messrs. Ogilvie-Grant and Chapman to separate it therefrom reappearing again and again in the latter series. The comparative shortness and bluntness of the feathers of the crest is a very elusive character indeed, depending as it does considerably upon the state of wear, but I am able to match the Colombian specimens very closely by certain individuals from elsewhere, and under such circumstances cannot see my way clear toward recognizing *parvicristatus* even as a subspecies, as has been suggested by Messrs. von Berlepsch and Hartert. But while geographic variation seems thus to be *nil*, the amount of individual variation that obtains is astonishing, and makes it difficult to frame a description which will fit all specimens in every particular. The phase described above is what may from its frequency be considered the normal one. The general tone of the upper parts, however, varies greatly, perhaps to some extent according to season, some specimens being deeply rufescent, other more brownish by comparison, and others still paler, more grayish. The forehead and crest also vary considerably in exact shade of color, but it is in the color of the throat that the variation is greatest. Normally the throat is plain amber brown, but in some specimens it is pure white, and in others white, shaded with ochraceous laterally, and spotted with black medially. In extreme cases it is amber brown, interrupted by a median band of black-tipped white feathers. It was obviously a bird of this sort which formed the basis of the description of *Ortyx affinis* Vigors. What the significance of these variations may be I cannot say; they occur in examples coming from the same localities as normal individuals, with which they are connected by intermediates. In any case it is very doubtful if age has anything to do with the matter.

Another variable feature is the extent and character of the spotting below. In some specimens the spots are well developed on the chest, while in others from the same locality the chest is almost as immaculate as the breast. In some examples the dark markings below assume the form of bars. In what appear to be younger birds the breast is much paler, more like that of the female, while the chest and abdomen are tinged with buffy. Mr. Ogilvie-Grant describes a "quite young bird" as having "the upper parts very similar to those of the female adult, but all the feathers of the mantle, wing-coverts, scapulars, and chest have pale buff shaft-stripes; chin and throat white, rest of the underparts white irregularly barred with black." The youngest bird examined by me shows traces of this plumage; it has broad black and brown shaft-streaks on the sides. The female of this species may be distinguished from that of the others of this group by the color of the under parts, there being a band of fawn color or wood brown, more or less decided, on the breast just below the neck-band, varied with a few small white spots or dark markings; the variation in exact shade and pattern is considerable, however. A female from Naguanagua (near La Cumbre de Valencia), Venezuela (No. 35,163, Collection Carnegie Museum), is so very peculiar that it can only be referred to *sonnini* provisionally, on geographical grounds mainly. It lacks the breast-band entirely, this part being barred irregularly with plain brownish black and white; the throat is squamate rather than streaked.

The capture of several specimens of this quail in the Serra da Lua, near Boa Vista, on the Rio Branco, northern Brazil, by Messrs. M. P. Anderson and R. H. Becker, working in the interest of the Field Museum of Natural History, appears to constitute the most southerly record for the species. These specimens so far as I can see are not essentially different from those coming from other sections. The Carnegie Museum possesses a nice series of ten specimens from the region south of Lake Valencia in Venezuela, where the species is said to be common. It has been introduced into St. Thomas, St. Vincent, Mustique, and probably other islands of the Lesser Antilles. Its range to the west appears to be strictly limited by the Andes of Meridá in Venezuela and by the Eastern Andes in Colombia. Schomburgk

states that in British Guiana the species occurs in flocks of from twelve to eighteen individuals in the oases of the savannas, outside of which it rarely ventures far, running or flying into the woods upon being disturbed. The late John F. Ferry, who met with the bird near Caracas, Venezuela, says that he flushed a covey among the forlorn, bushy hills of that section, where they darted off and sought safety in a patch of the densest shrubbery. Returning a few days later he again flushed them in the same spot and succeeded in securing a specimen. "All their habits that I observed were typically quail-like."

Specimens examined.—Colombia: "Bogotá," 2; Fómeque, 2; Palmar, Boyaca, 3. Venezuela: Caracas, 4; Naguanagua, 1; El Trompillo, Carabobo, 10; San Antonio, Bermudez, 1; Agua Salada de Ciudad Bolivar, 3; Altigracia, 2; San Mateo de Caicara, 1; Maripa, Rio Caura, 6; San German de Upata, 1. British Guiana: Courantyne River, 2. Dutch Guiana: "Surinam," 1; Paramaribo, 1; "Guiana," 1. Brazil: Serra da Lua, near Boa Vista, 5. West Indies: St. Thomas, 3. Unspecified, 4. Total, 53.

***Eupsychortyx sonnini mocquerysi* Hartert.**

Plate V, figure 3.

Eupsychortyx sonnini (not *Perdix sonnini* Temminck) CASSIN, Proc. Acad. Nat. Sci. Philadelphia, 1860, 378, part (Cumaná, Venezuela).—OGILVIE-GRANT, Ibis, 1902, 239, part (Margarita I., Venezuela, *ex* Richmond).

Eupsychortyx mocquerysi HARTERT, Bull. British Orn. Club, III, 1894, 37 (Cumaná, Venezuela; orig. descr.; type in coll. Tring Mus.)—HARTERT, Ibis, 1894, 430 (reprint orig. descr.).—HARTERT, Nov. Zool., I, 1894, 675, pl. 15, fig. 2 (Cumaná, Venezuela; crit.).—OGILVIE-GRANT, Hand-Book Game-Birds, II, 1897, 131 (syn.; descr.; range).—SHARPE, Hand-List Birds, I, 1899, 45 (ref. descr.; range).—DUBOIS, Syn. Avium, II, 1902, 820 (references; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 13 (ref. orig. descr.; range).

Eupsychortyx pallidus RICHMOND, Proc. U. S. Nat. Mus., XVIII, 1896, 657 (Margarita I., Venezuela; orig. descr.; type in coll. U. S. Nat. Mus.; habits, *ex* Robinson).—SHARPE, Hand-List Birds, I, 1899, 45 (ref. orig. descr.; range).—CLARK, Auk, XIX, 1902, 260 (Margarita I., Venezuela; habits).—LOWE, Ibis, 1907, 551 (Margarita I., Venezuela; crit.).—LOWE, Ibis, 1909, 322 (Cariaco Peninsula, Venezuela).—KNOWL-

TON, *Birds of the World*, 1909, 296 (Margarita I., Venezuela; habits, *ex* Robinson).—CORY, *Field Mus. Orn. Series*, I, 1909, 238 (Mocanao and Boca del Rio, Margarita I., Venezuela; meas.; crit.).—BRABOURNE and CHUBB, *Birds S. Am.*, I, 1912, 13 (ref. orig. descr.; range).

Eupsychortyx sonnini var. *pallida* DUBOIS, *Syn. Avium*, II, 1902, 829 (ref. orig. descr.; range).

Subspecific characters.—Male: similar to that of *Eupsychortyx sonnini*, but upper parts paler, spotting of under parts purer white, and crest paler and longer. Female generally paler, more grayish, less brownish above than in *sonnini*, and rather whiter, less buffy below.

Measurements.—Male (seven specimens): wing, 99–105 (average, 101); tail, 57–69 (60); bill, 12.5–13.5 (13); tarsus, 26–29 (28). Female (five specimens): wing, 101–104 (102.5); tail, 61–64 (62); bill, 12–13.5 (13); tarsus, 26–28 (27).

Range.—Cariaco Peninsula, extreme northeastern Venezuela, and outlying island of Margarita.

Remarks.—When Dr. Richmond described the Margaritan bird as a distinct species in 1896 he had but three specimens for comparison with two unsatisfactory examples of *sonnini*; nevertheless, it was “considered desirable to separate the two forms on the evidence presented, and on the fact that at least two other species (*Doleromya* and *Spotyto*) characteristic of the cactus thickets are pale representatives of mainland birds.” Mr. Cory in 1909, with more and better material before him of the insular bird, but still with a very inadequate representation of true *sonnini*, was at some pains to point out the variations observable in his series, which, however, he says are distinctly the reverse of being paler than mainland specimens, and he is inclined to attribute the color of the type of *pallidus* to season. Dr. Percy R. Lowe, who visited Margarita in 1904, refers to the pale coloration of examples from that island, and on comparing the series collected there by Messrs. Robinson, Clark, and Ferry with another from the mainland of Venezuela it is obvious that the former are paler, although individual specimens might be hard to distinguish. The type of *pallidus* is merely an unusually pale individual. Small as it is, the series runs through precisely the same set of variations with regard to the color of the throat as does the typical form, some having the throat Sudan brown, others white, and still others mixed black and white or ochraceous. In the white-throated specimens (*cf.* Plate V, figure 3) the forehead and

sides of the head are mainly white or buffy white; they thus correspond to the description and figure of *Eupsychortyx mocquersyi* Hartert, described from Cumaná, on the mainland opposite Margarita Island. It is fair to presume that this is the same bird, and the name having two years' priority will have to supersede *pallidus* of Richmond. Dr. Lowe, indeed, refers specimens from the Cariaco Peninsula to the latter without comment, and it is worthy of note that the faunal conditions here are precisely the same as on Margarita. Under these circumstances I fail to see how we can avoid accepting Dr. Hartert's name, based on the white-throated phase, for the insular as well as the Cumaná birds.

In view of the extensive range of *sonnini* and the large amount of individual variation to which it is subject, it is somewhat surprising to find a geographical variant with such a restricted distribution. Evidently the excessive aridity of its habitat has operated to produce pallor, as in the case of several other species similarly affected. Lieutenant Robinson writes as follows concerning its habits as observed by him: "These handsome birds were abundant in the thorny thickets near the coast, but none were seen in the interior of the island. They ran through the cactus undergrowth with incredible swiftness and it was a difficult matter to cause them to take wing. The call of the male is identical with that of our common bob-white, and the call of the scattered members if a covey is also the same. The native name is 'perdiz.'" Mr. Clark found the bird "common along the bases of the hills, and in the scrub on their lower slopes." The late Mr. Ferry found it "in abundance at Mocanao, the peninsula at the west end of the island, and in riding along the cactus-covered plains from Boca del Rio (south-central part of the island) we saw several flocks."

Specimens examined.—Venezuela: Margarita Island, 11; El Vallé, Margarita Island, 1. Total, 12.

***Eupsychortyx leucopogon leucopogon* (Lesson).**

Plate V, figure 4.

Ortyx leucopogon LESSON, Rev. Zool., 1842, 175 ("San Carlos," Central America; orig. descr.; type in coll. Paris Mus.[?]).—DES MURS, Icon. Orn., 1846, text to pl. 36 (descr.; range).—GRAY, Gen. Birds, III, 1846,

514 (in list of species; ref. orig. descr.).—GRAY, Hand-List Birds, II, 1870, 273 (in list of species; references; range).

Eupsychortyx leucopogon GOULD, Mon. Odontophorinæ. 1850, text to pl. 13 ("San Carlos," in range; descr.; references).—GIEBEL, Thes. Orn., II, 1875, 142 (Gould's reference).—OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 408, part, (Veragua; crit.).—OGILVIE-GRANT, Hand-Book Game-Birds, II, 1897, 130, part (syn.; descr.; range).—SHARPE, Hand-List Birds, I, 1899, 45, part (Panama, in range).—DUBOIS, Syn. Avium, II, 1902, 819 (references; range).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, III, 1903, 295, part (Calobre and "San Carlos," Panama; descr. male; references).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 13, part (ref. orig. descr.; range).

Eupsychortyx leucotis (not *Ortyx leucotis* Gould) SALVIN, Ibis, 1876, 379 (Calobre [?], Veragua; crit.).

Description.—Adult male: forehead, crest, auriculars, and anterior half of throat and malar region soiled white; broad superciliary stripe, beginning above the eye, antique brown, bordered above by a narrow and irregular line of black which reaches the hindneck; nape medially dull cinnamon buff, obscurely mottled with dusky; sides of the neck marked with black and white, the feathers being white, with triangular black terminal spots, these spots tending to form a collar on the hindneck; upper parts sepia brown, tinged with russet anteriorly, vermiculated with black and irregularly mottled with black and argus brown centers to the feathers; scapulars, tertials, and wing-coverts with some white spots and irregular white edgings; upper tail-coverts and tail hair brown, finely mottled with soiled white, the markings tending to irregular bars; wings hair brown, the secondaries obscurely mottled externally with dull buffy; under wing-coverts hair brown, tipped with soiled white; posterior half of throat and malar region antique brown or chestnut, succeeded by a partly concealed collar of white spots; breast and sides hazel, everywhere marked with rounded twin terminal spots of white and subterminal bars of black, these spots becoming larger on the flanks, where they run several to each feather; chest and upper abdomen ochraceous buff medially, barred irregularly with black, each feather of these parts being barred with black and white and broadly tipped with ochraceous buff; lower abdomen plain buffy; under tail-coverts black, with white spots on each web.

Female similar to the male above, but the dark markings in general coarser; forehead and crest deep brown; superciliaries indistinct, ochraceous buff streaked with black; throat and malar region ochraceous or buffy, streaked with black; under surface from the throat down spotted with white and barred with black as in the male, but with very little rufescent color in evidence; chest and abdomen strongly tinged with buffy medially; dark markings of the under parts all coarser posteriorly and laterally.

Measurements.—Adult male (two specimens): wing, 95–101; tail, 55–57; bill, 13; tarsus, 28.5–30. Female (two specimens): wing, 97–102; tail, 50–58; bill, 12.5–13; tarsus, 28–31.

Range.—Western Panama.

Remarks.—Little appears to be known of this form, which is moreover involved in serious complications. It was described in 1842 by Lesson from “San Carlos, Americæ centralis Oceani Pacifici.” In the same paper he describes two other species, *Crypticus apiaster* and *Pitylus lazulus*, from the same place, as well as several additional new forms from Realejo, Nicaragua, and Acapulco, Mexico, all collected by his brother, Adolphe Lesson. Now, the type-locality of *Pitylus lazulus* stands in the American Ornithologists’ Union “Check-List of North American Birds,” ed. 3, 1910, 285, as San Carlos, Salvador, while in the case of *Crypticus apiaster* Mr. Ridgway (Bulletin U. S. National Museum, No. 50, VI, 1914, 481, note) reaches provisionally the same conclusion. It follows, therefore, either that Lesson’s type did not actually come from San Carlos, or that this particular form ranges much farther north than has heretofore been supposed, overlapping the range of “*Eupsychortyx*” *leylandi*. Judging by analogy, the latter supposition seems most unlikely. Lesson’s description, brief as it is, seems perfectly applicable to the bird from Panama which we have described above, since he expressly says “fronte gulaque albidis, * * * collari antici, rufo.” Turning now to Des Murs’ work for further light on the matter, we find a discrepancy between the two descriptions, all the more remarkable because Des Murs states that “our figure is taken from an individual sent by the Honorable M. Lesson to the Museum of Natural History of Paris, in the galleries of which it figures today” (translation). Here the bird is figured and described as having the forehead and the throat white, but no mention is made of any rufous collar on the lower throat. On the other hand, “a white eyebrow starts from the outer angle of the eye, separated from the white of the throat by the brownish red which colors the cheeks” (translation). This part of the description is of course entirely inapplicable to our bird, but on referring to Gould we find that he too figures a precisely similar specimen. So conspicuous is this discrepancy that Mr. Ogilvie-

Grant is led to remark that "the striking differences shown in Gould's plate are probable improvements on nature, and the chestnut band which commences behind the eye and crosses the ear-coverts in his figure no doubt really represents the superciliary stripe." He remarks also: "I have not the slightest doubt that the bird from 'San Carlos in Central America' which formed the type of Lesson's *O. leucopogon* was merely a rather white-throated example of this species." Gould says: "I am indebted to the Baron de la Fresnaye for the use of the specimen from which the above characters are taken; it is the only one that has come under my notice." Now, there is a specimen in the Lafresnaye Collection (No. 7265), at present deposited in the Museum of Comparative Zoology at Cambridge, Massachusetts, which is an exact counterpart of Gould's plate, and is almost certainly the original from which it was drawn. It is certainly a very peculiar bird, with its pure white throat, white front and superciliaries, and dull brownish red postocular stripe. The breast is much duller (snuff brown) than in the Panama specimens, and the white spots are fewer. The crest is darker (mummy brown), and the nape rusty rather than buffy, but otherwise the upper parts are the same.

Whether this white-throated bird represents a color-phase of *E. leucopogon*, comparable to those of *E. sonnini*, or is a distinct species with a definite range, I am not prepared to say, preferring to await the receipt of further specimens and the re-examination of Lesson's type. Meanwhile I accept the name *leucopogon* for the bird from western Panama on the basis of the original description, waiving for the time being the question of the type-locality. The two males examined differ from the other forms of this group in having the throat distinctly and rather abruptly bicolor, the upper half white, the lower half antique brown; the forehead, crest, malar, and loreal regions are also white. The upper parts are dark as compared with the allied races; this is not only because of the darker color of the ground-color itself, but also because of the prevalence of dark markings. Females, too, are very dark above, and heavily marked below.

Arcé secured at least three specimens of this form in Veragua, presumably from the vicinity of Calobre. The Agua Dulce

examples listed herewith are from the von Berlepsch collection; they are labeled as having been taken by R. Herrera in December, 1877. Nothing whatever is on record concerning its habits.

Specimens examined.—Panama: Agua Dulce, 3; unspecified, 1. Unspecified, 1. Total, 5.

Eupsychortyx leucopogon leucotis (Gould).

Plate V, figure 5.

Ortyx leucotis GOULD, Proc. Zool. Soc. London, 1843, 133 ("Bogotá," Colombia; orig. descr.; type in coll. Brit. Mus. [?]).—GRAY, Gen. Birds, III, 1846, 514 (in list of species; ref. orig. descr.).—GRAY, List Spec. Birds Brit. Mus., V, 1867, 77 ("Bogotá," Colombia; references).—GRAY, Hand-List Birds, II, 1870, 273 (ref. descr.; range).

Eupsychortyx leucotis GOULD, Mon. Odontophorinæ, 1850, pl. 10 and text (descr.; crit.).—SCLATER, Proc. Zool. Soc. London, 1855, 163 ("Bogotá," Colombia).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 138, (in list of species; range).—GIEBEL, Thes. Orn., II, 1875, 142 (Gould's reference).—SCLATER and SALVIN, Proc. Zool. Soc. London, 1879, 544 (Medellin, Antioquia, Colombia; descr. eggs).—ROBINSON, A Flying Trip to the Tropics, 1895, 101, 153, part, pl. (Guaduas and Honda, Colombia; habits).

Eupsichortyx leucotis BONAPARTE, Compt. Rend., XLII, 1856, 883 (in list of species).

Eupsychortyx leucopogon (not *Ortyx leucopogon* Lesson) OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 408, part ("Bogotá" and Medellin, Colombia; syn.; descr.; crit.).—SHARPE, Hand-List Birds, I, 1899, 45, part (Colombia, in range).—OATES, Cat. Birds' Eggs Brit. Mus., I, 1901, 66 (Medellin, Colombia; descr. eggs).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, III, 1903, 295, part (Antioquia, Colombia; descr. female; references).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 13, part (range).

Colinus cristatus leucotis CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 199 (Colombian localities [Caldas, Cali, La Sierra, El Eden, Chicoral, Honda, Purificacion, Fusugasuga, Anolaima, El Carmen, El Alto de la Paz]; range).

Subspecific characters.—Similar to *Eupsychortyx leucopogon leucopogon*, but upper parts paler, more grayish vinaceous, less brownish; white area of head in male restricted to chin, lores, and sub-loral region; breast more thickly spotted with white, and ground color paler, more russet; female with the throat, superciliaries, etc., not so heavily streaked, and the under surface in general whiter, the dark markings more restricted.

Measurements.—Male (twelve specimens): wing, 94–104 (average, 99); tail, 56–67 (60); bill, 11–13.5 (12.6); tarsus, 24–31 (28). Female (ten specimens): wing, 93–107 (99); tail, 57–65 (61); bill, 12–13 (12.7); tarsus, 24–30 (27.5).

Range.—Andean region of Colombia, from Antioquia and Santander south at least to the headwaters of the Rio Patío.

Remarks.—This form was described by Gould in 1843 as a distinct species, and figured a few years later. Naturally he considered it very distinct from *E. leucopogon* as he understood that species, and compared it only with *E. cristatus*. There can be no question, however, that *leucopogon* (as described in the present paper) and *leucotis* are conspecific, the differences between them being only of racial value. Indeed, specimens from western Colombia (Caldas and El Eden) in their paler throats, with the white of the chin more extended, whiter crests, and browner upper parts suggest an approach to *leucopogon*, and further material from this region would be most desirable. Although Salvin, misled by Gould's plate of *E. leucopogon*, referred his Veraguan specimens to *E. leucotis*, and Mr. Ogilvie-Grant, while remarking the difference between these and specimens from Antioquia, nevertheless lists both series under the earlier name, the two are sufficiently distinct from the standpoint of a trinomialist. The Colombian bird agrees with *leucopogon* in the color of the superciliary and malar stripes, which are amber brown, with practically no black in the former and very little in the latter, but the general coloration is paler, and the white of the head is more restricted. The flank-streaks in *leucotis* are apt to be black, with more or less russet centers, instead of rich hazel, with black mottling. Individual variation is considerable, however, affecting the color of the forehead and chin (which in some specimens is decidedly grayish) and the spotting of the under parts. I have examined at least two males (Nos. 112,275, Collection American Museum of Natural History, Chicoral, Colombia, and 59,602, Collection Carnegie Museum, Pena Blanca, Colombia) in which the breast has little or no russet color; being merely spotted black and white. The Peña Blanca bird has also a very pale throat, more like that of *littoralis*, and may indicate intergradation in the direction of *cristatus*, but as it is in the moult, and may be a young bird, I

cannot be sure. A female from this same locality has a pure white throat (except for a few irregularly scattered black feathers), and agrees with two females in the Lafresnaye Collection in this respect.

Gould's type of *leucotis* was a "Bogotá" skin, numerous examples of which he says came under his notice from time to time. Dr. Chapman has recently suggested Honda, on the Magdalena River northwest of Bogotá, as a more precise type-locality. He goes on to say: "This is a species of the Tropical Zone which in open country ranges upward into the Subtropical and even to the lower border of the Temperate Zone. It occurs on the western slope of the Western Andes in the arid Caldas Basin, is not uncommon in the Cauca Valley and is found as far south as La Sierra south of Popayan, this marking the southern known limits of the genus. In the upper Magdalena Valley it is abundant. To the west it reaches up the Central Andes to at least 8300 feet, and to the east we have specimens from the Eastern Andes almost up to the border of the Bogotá Savanna. Quail are said to occur in the Savanna but we have not succeeded in securing specimens and cannot say whether the Savanna quail is *leucotis* or *parvicristatus* or an intergrade between the two."

Mr. Carriker sent in a small series of this form from Aguachica, on the Magdalena River, and from El Tambor and Peña Blanca in Santander, while Lieutenant Robinson met with it at Guaduas and Honda, but secured only two specimens. "We found it impossible to flush them a second time; and it so happened that whenever we got shots, our guns were loaded with dust-shot, so we failed to stop the birds." (It may be remarked in passing that the plate in Lieutenant Robinson's book is a very poor representation, being much too red.) Salmon secured eggs at Medellín, in Antioquia; they are described as creamy buff, marked with pale rufous freckles and blotches.

Specimens examined.—Colombia: Guaduas, 2; Aguachica, 7; El Tambor, 2; Peña Blanca, 6; Caldas, 2; Yumbo, 2; Cali, 1; Chicoral, 4; El Eden, 1; Anolaima, 1; Fusugasuga, 1; Honda, 9; Mariquita, 2; El Alto de la Paz, 5; Purificacion, 1; "Bogotá," 4; "Colombian Andes," 1; "New Granada," 1. Unspecified, 2. Total, 54.

Eupsychortyx leucopogon decoratus Todd.*Plate V, figure 6.*

Eupsychortyx parvicristatus (not *Ortyx parvicristatus* Gould) HEINE and REICHENOW, Nom. Mus. Heineani Orn., 1887, 294, part (Barranquilla, Colombia).

Eupsychortyx leucotis (not *Ortyx leucotis* Gould) ROBINSON, A Flying Trip to the Tropics, 1895, 153, part (Barranquilla, Colombia).

Eupsychortyx decoratus TODD, Proc. Biol. Soc. Washington, XXX, 1917, 6 (Calamar, Colombia; orig. descr.; type in coll. Carnegie Mus.).

Colinus cristatus decoratus CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 198 (Calamar and Turbaco, Colombia; crit.).

Subspecific characters.—Similar to *Eupsychortyx leucopogon leucotis*, but more richly and deeply colored throughout, the male with the throat rich chestnut, the breast almost or quite concolor, and the white spots smaller; sides and flanks very heavily marked with chestnut; superciliary and malar stripes much varied with black. Female more heavily marked below, the throat more decidedly tinged with buffy ochraceous, and more heavily streaked with black.

Measurements.—Male (seven specimens): wing, 99–105 (average, 103); tail, 60–69 (66); bill, 12.5–13 (13); tarsus, 29–31 (30). Female (five specimens): wing, 101–106 (102); tail, 60–63 (61); bill, 12–13 (12.7); tarsus, 28–29 (28.5).

Range.—Lower Magdalena Valley, Colombia, and westward along the coast at least to the Sinu River.

Remarks.—A small series of quail collected by Mr. Carriker at Calamar, on the lower Magdalena River, and Punto Zapote, in the delta of the Sinu River, were at first referred to *leucotis*, until comparison with specimens from the interior of Colombia showed that they did not belong to that form. So strongly marked did their characters appear by comparison, and such was the uncertainty in the writer's mind as to the inter-relations of this group, that he preferred to treat the new form provisionally as a full species. It is certainly a strongly marked subspecies, differing from *leucotis* in its much richer coloration throughout, and from *leucopogon* by its rather paler, more rufescent, less brownish upper parts, decidedly darker breast, and in particular by the restriction of the white area on the head, in which latter respect it resembles *leucotis*. Unlike either of these forms, however, it has the superciliaries conspicuously streaked with black, and

considerable black on the malar region also. Its relationships to *littoralis* will be discussed under the head of that form.

Females of this form resemble those of *leucopogon* very closely, having prominently marked under parts and heavily streaked throats; the upper parts, however, are not so decidedly brownish or so much mottled, especially anteriorly. Three young birds from Calamar (January 2 and 22) are like the adult female, but the spotting below is less distinct, and the flanks are marked with broad shaft-streaks of black centered with sayal brown; the crown and crest are brown like the rest of the upper parts.

Since this form has been described several other specimens have turned up in the collections of various institutions, all of which are duly listed herewith. As said by Dr. Chapman, it is evidently restricted to the Caribbean Fauna, and is doubtless strictly littoral in its distribution. Considerably to my surprise I find that a specimen from Fundacion, on the southern confines of the Santa Marta region, belongs here rather than to *littoralis*, but otherwise all the specimens with authentic data come from the region of the lower Magdalena and Sinu Rivers. There are a pair of birds, perfectly typical of this form, in the collection of the Museum of Comparative Zoology which are said to have come from the line of the Panama Railway, but the assigned locality is almost certainly a mistake. Indeed, the Biological Survey party failed to secure a single specimen of *Eupsychortyx* in their exhaustive work in this region, and the chances are that if any form of the group occurs it would be *leucopogon*.

Specimens examined.—Colombia: Fundacion, 1; Calamar, 8; Turbaco, 1; Savanilla, 1; Punto Zapote, 1; unspecified, 3. "Line of Panama Railway" (?), 2. "Orinoco" (?), 1. Total, 18.

***Eupsychortyx leucopogon littoralis* Todd.**

Plate V, figure 7.

Eupsychortyx leucopogon (not *Ortyx leucopogon* Lesson) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 127 (Bonda, Colombia).

Eupsychortyx cristatus littoralis TODD, Proc. Biol. Soc. Washington, XXX, 1917, 6 (Mamatoco, Colombia; orig. descr.; type in coll. Carnegie Mus.).

Colinus cristatus littoralis CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 198, in text (Bonda, Colombia; crit.).

Subspecific characters.—Similar in general to *Eupsychortyx leucopogon decoratus*, but the male paler throughout, the throat buffy, more or less deeply shaded with ochraceous tawny or amber brown, but not distinctly bicolor; the breast also decidedly paler, more russet; female also slightly paler, and not so heavily marked below, the throat nearly or quite immaculate.

Measurements.—Adult male (eight specimens): wing, 100–106 (average, 103); tail, 57–63 (60); bill, 11.5–13 (12.5); tarsus, 27–32 (29). Female (eight specimens): wing, 97–105 (101); tail, 55–65 (61); bill, 12–13 (12.5); tarsus, 27–30 (29).

Range.—Lower Tropical Zone of the Santa Marta region of Colombia.

Remarks.—Santa Marta specimens received from Mr. Herbert H. Smith were referred by Dr. Allen to *E. leucopogon* without comment, but, as we now know, the "*leucopogon*" of the "British Museum Catalogue" is composite, comprising two recognizably distinct races, *leucopogon* and *leucotis*, to neither of which the Santa Marta specimens can properly be referred. From the former they differ in much paler coloration throughout, the upper parts being washed with vinaceous anteriorly and with grayish and buffy posteriorly, the scapulars and tertials conspicuously margined with white or buffy and spotted and blotched irregularly, together with the lower back, with black and brown. In *leucopogon* the general tone of the upper parts is much deeper, so that the black and brown markings are not in such evident contrast; the white edgings are also far less conspicuous. The superciliaries are streaked with black in the present form, instead of being pure antique brown, as in both *leucopogon* and *leucotis*, and the throat is shaded with the same color, most heavily posteriorly, the color gradually fading out in front, while in *leucopogon* the transition is more abrupt. Compared further with *leucotis*, males have the breast more richly colored, the buffy patch on the chest and abdomen is deeper, antique brown in fact, and the under parts in general are more buffy. Females, like males, are not nearly so dark as females of *leucopogon*; they are more buffy below than the same sex of *leucotis*, as well as paler above.

With the series before me I have no difficulty whatever in separating *littoralis* from *decoratus* by its uniformly paler, duller

coloration in both sexes. There is, however, an unusual amount of individual variation in the present form, some specimens approaching *decoratus*, while others, with their pale throats and under parts and more heavily black-streaked superciliaries, verge more toward *cristatus*. So far as the evidence afforded by the examination and comparison of specimens goes, therefore, we would be justified in concluding that *littoralis* is not a subspecies or geographical race in the same sense as *decoratus*, for example, but rather stands for a set of individuals showing the respective characters of both *decoratus* and *cristatus*, combined in varying degree. In short, *littoralis* bears all the earmarks of being an intergrade between these two forms, occurring in the region where their respective ranges might naturally be supposed to meet and overlap. At Fundacion, south of Santa Marta, we find nearly typical *decoratus*, while at Rio Hacha, at the western edge of the Goajira Peninsula, we get a bird which is clearly *cristatus*, although slightly tending towards the other. It so happens, however, that west of Rio Hacha the heavy forest of the Tropical Zone comes right down to the coast, constituting a barrier to the spread of either form which may be quite as effective as the high mountain mass of the Sierra Nevada de Santa Marta itself. Indeed, it is far more likely that actual intermingling of the two forms, if it occurs at all, would be found in the low, more open country to the southward of the Sierra Nevada, which is presumably better adapted to the needs of such a bird as this. Unfortunately no evidence bearing on this point is yet available; it is clear, however, that if *cristatus* is a derivative of the *leucopogon* group, or *vice versa*, one or the other must have originally passed through this narrow gap to occupy its present range, assuming, of course, that topographical and other conditions were the same as at present.

But even if intergradation between *cristatus* and the *leucopogon* group could be fully proven it would not therefore necessarily follow (in the opinion of the writer) that the two should be regarded as conspecific. Each has characters not possessed by the other, to belittle which by degrading the forms in question to subspecific rank would seem to be highly inadvisable. Subspecies are of course "representative forms," but "representative forms"

are not necessarily subspecies, as some ornithologists of note would have us believe. It has long been the opinion of the writer that the mere fact (known or assumed) of the intergradation of two given forms should not of itself militate against their being considered distinct specifically, provided that the degree and character of the differences between them are such as to otherwise justify such standing. All the circumstances bearing on each individual case must be taken into consideration in attempting to reach a decision, and to be blindly governed by a single criterion is inevitably to go astray. The recent paper by Dr. Jonathan Dwight on the genus *Junco* (cf. *Bulletin American Museum of Natural History*, XXXVIII, pp. 269-309), considered as a protest against the current practice of reducing all intergrading forms to subspecific rank, is interesting and suggestive.

It remains to add that the present form was provisionally described as a subspecies of *E. cristatus*, being compared with mainland specimens of that form, which were incorrectly assumed to represent *horvathi*.

Specimens examined.—Colombia: Bonda, 4; Cacagualito, 1; Mamatoco, 9; Gaira, 2; Santa Marta, 2. Total, 18.

***Eupsychortyx cristatus cristatus* (Linnæus).**

Plate V, figure 8.

“Caille Hupée du Mexique” BRISSON, Orn., I, 1760, 260, pl. 25, fig. 2, excl. syn. (“Guiana and Mexico”; descr.).—D'AUBENTON, Pl. Enlum., 1770-86, No. 126.

Tetrao cristatus LINNÆUS, Syst. Nat., ed. 12, I, 1766, 277, excl. syn. part (ex Brisson; diag.).—GMELIN, Syst. Nat., II, ii, 1788, 765, excl. syn. part (diag.; references).

“Crested Quail” LATHAM, Gen. Syn. Birds, II, ii, 1783, 784, excl. syn. part (“Guiana and Mexico”; descr.).—LATHAM, Gen. Hist. Birds, VIII, 1823, 329, excl. syn. part (descr.; references).

Perdix cristata LATHAM, Index Orn., II, 1790, 652, excl. syn. part (diag.; range; references).—TEMMINCK, Hist. Nat. et Gén. Pigeons et Gallinacées, III, 1815, 446 (descr.; habits), 736, excl. syn. part (diag.; references).—VIEILLOT, Nouv. Dict. d'Hist. Nat., XXV, 1817, 247 (descr.; habits).—KUHLE, Buffoni et Daubentoni figurarum avium Coloratarum Nomina Systematica, 1820, 3 (D'Aubenton's plate).—LESSON, Traité d'Orn., 1831, 508 (in list of species; range).

- Coturnix cristata* BONNATERRE, Tabl. Enc. et Meth., I, 1791, 222, pl. 96, fig. 4 (descr.; range; references).
- Ortyx temminckii* STEPHENS, in Shaw's Gen. Zool., XI, 1819, 381 ("Mexico"; descr.; references).
- Ortyx neoxenus* VIGORS, Proc. Com. Sci. and Cor. Zool. Soc. London, I, 1830, 3 (orig. descr.; no locality specified).—(?) AUDUBON, Syn. Birds N. Am., 1839, 200 ("California" [error]; descr.; references).—BOLLE, Journ. f. Orn., IV, 1856, 167 ("Trinidad" [error]).
- Ortyx cristata* LESSON, Ill. Zool., I, 1831, text to pl. 52 ("Mexico"; diag.).—JARDINE and SELBY, Ill. Orn., 1828, I, text to pl. 38 (diag.; range; references).
- Ortyx cristatus* GRAY, List Spec. Birds Brit. Mus., III, 1844, 44 ("S. Am."; references).—GRAY, Gen. Birds, III, 1846, 514 (in list of species; references).—GRAY, List Spec. Birds Brit. Mus., V, 1867, 76 ("South America"; references).—VON PELZELN, Ibis, 1873, 36 (Latham's reference). (?) *Perdix neoxenus* AUDUBON, Birds Am., IV, 1838, pl. 423.—AUDUBON, Orn. Biog., V, 1849, 228 ("Northwest coast of America" [error]; descr.).
- Eupsychortyx cristatus* GOULD, Mon. Odontophorinæ, 1850, pl. 9 and text, excl. syn. part (descr.; syn.; crit.).—GARROD, Proc. Zool. Soc. London, 1873, 468 (carotid artery); 1873, 640 (muscles).—GIEBEL, Thes. Orn., II, 1875, 142 (Gould's reference).—COOPER, Bull. Nuttall Orn. Club, II, 1877, 95 (syn.).—VON BERLEPSCH, Journ. f. Orn., XL, 1892, 68 et seq., 98–100, 102 (Savonet, Curaçao; crit.).—OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 407 (syn.; descr.; range).—HARTERT, Ibis, 1893, 305 (Aruba; crit.), 325 (Curaçao), 338 (range).—ROBINSON, A Flying Trip to the Tropics, 1895, 164 (Curaçao).—OGILVIE-GRANT, Hand-Book Game-Birds, II, 1897, 128 (syn.; descr.; range; habits).—SHARPE, Hand-List Birds, I, 1899, 45 (Curaçao and Aruba, in range).—DUBOIS, Syn. Avium, II, 1902, 819 (references; range).—HARTERT, Nov. Zool., IX, 1902, 306 (Aruba and Curaçao).—FAXON, Auk, XX, 1903, 239 (syn.).—CORY, Field Mus. Orn. Series, I, 1909, 198 (Aruba), 204 (Curaçao).
- Eupsichortyx cristata* BONAPARTE, Compt. Rend., XLII, 1856, 883 (in list of species).
- Ortyx* sp. PETERS, Journ. f. Orn., XL, 1892, 114 (Curaçao).
- Eupsychortyx gouldi* VON BERLEPSCH, Journ. f. Orn., XL, 1892, 100, in text (Curaçao; provisional new name).—HARTERT, Ibis, 1893, 305 (crit.).
- Eupsychortyx cristatus continentis* CORY, Field Mus. Orn. Series, I, 1913, 283 (El Panorama, Rio Aurare, Venezuela; orig. descr.; type in coll. Field Mus. Nat. Hist.).

Description.—Male: forehead, middle of crown, and crest buffy white, sometimes with a tinge of ochraceous; broad superciliaries, beginning above the eye, and malar stripe (sometimes obsolete) black, contrasting with the silky white auriculars, and terminating posteriorly in an area

of black and white spots on the side of the neck, each feather being white, tipped with a triangular spot of black; upper back russet, more or less shaded with gray and finely but indistinctly vermiculated with black; lower back similar but more grayish or buffy, with irregular black and ochraceous blotches on each feather, these blotches becoming streaks on the upper tail-coverts; tail indistinctly barred and finely but obscurely vermiculated with neutral gray (or dusky) and soiled white; primaries plain hair brown, their outer webs slightly paler; secondaries similar but with the outer webs finely mottled with cinnamon or dull buffy in increasing amount, the inner secondaries and scapulars colored like the lower back, and with their inner (and often outer) webs broadly edged with dull white, giving a prominently streaked appearance to these parts; wing-coverts like the back, with more or less submarginal black spotting and white edging; under wing-coverts hair brown, margined more or less broadly with white; throat plain warm buff or buffy white, abruptly contrasted with the breast, which is covered with rounded white spots, two to each feather, separated from each other by a shaft-streak of russet and preceded by a black spot or bar; these white spots grow larger on the sides and increase in number on the feathers, finally coalescing into notched streaks on the feathers of the flanks; under tail-coverts buffy, with black shaft-streaks; chest and upper abdomen with a large patch of antique brown, formed by the ends of the feathers, which are basally white, barred with black; lower abdomen buffy; "iris brown; bill black; feet pale bluish horn."

Female similar in general to the male (except for the markings of the head), but duller, the markings above coarser, the under surface paler, with more white and less brown, the chest area ochraceous buff; middle of crown (including crest) dull buffy or brown, with more or less black intermixed; broad superciliaries and throat ochraceous, with faint darker margins to the feathers; auriculars hair brown; otherwise about as in the male. (The female is not known to assume the full male plumage, as has been intimated by certain authors).

Young (juvenal dress) similar to the adult female, but duller, more brownish above, the markings coarser, the head-pattern merely indicated, and the throat dull buffy, clouded with dusky across the middle.

Measurements.—Male (thirteen specimens): wing, 97-109 (average, 101); tail, 56-69 (64); bill, 11.5-14 (13); tarsus, 27-30 (29). Female (eleven specimens): wing, 93-107 (101); tail, 58-70 (63); bill, 12-13 (12.5); tarsus, 26-30 (28).

Range.—Western Venezuela (States of Falcon and Lara) and outlying islands of Aruba and Curaçao, Dutch West Indies, west to the Goajira Peninsula, Colombia.

Remarks.—This species was the first of the group to receive a binomial name, having been designated *Tetrao cristatus* by

Linnæus in 1766. His name was based primarily upon Brisson's "Caille Hupée du Mexique," the description and plate of which are not quite clear, but apparently indicate the species under consideration rather than *E. sonnini*. Brisson, it is true, quotes "Guiana and Mexico" as the source of his specimens, which he says had been sent to the museum of the Abbé Aubry. He cites also several previous authors, including Barrere and Hernandez. We have already shown that the Barrere citation belongs to *E. sonnini*, while it is practically certain that the "Quauhtzonecolin" of the latter author refers to the bird now known as *Philortyx fasciatus*, as I am informed by Mr. E. W. Nelson. But, as suggested by Dr. Hartert, it is quite as likely that the Abbe Aubry's Museum had got its specimens from Curaçao as from Guiana, and in any case we are probably justified in accepting Brisson's description as the sole basis of Linnæus' name, leaving all earlier authors entirely out of consideration.

Great uncertainty seems to have prevailed for many years with regard to the true habitat of this species. Some authors gave it "Mexico," doubtless on the authority of Hernandez, who is wrongfully quoted by Brisson and others to this effect, while others more vaguely gave it as "South America." Even as late as 1850, when Gould brought out his great work on the Odontophorinæ, he was unable to assign any more definite locality than "Mexico," although it is evident that numerous specimens were then extant. Indeed, it was not until 1892 that von Berlepsch secured an authentic specimen from the island of Curaçao, in the Dutch West Indies. While clearly distinguishing his specimen from the Guiana form, he suggested that the *E. cristatus* of Linnæus (*ex* Brisson) was probably the same as the latter, and he therefore proposed for the Curaçao bird the provisional name of *Eupsychortyx gouldi*. But I agree with Dr. Hartert, who found the bird on Curaçao and Aruba in the summer of 1892, that Linnæus' name is better applied to the form under consideration. Aside from von Berlepsch's proposed name, the species had already received two other synonyms, *Ortyx temminckii*, proposed by Stephens in 1819, and *Ortyx neoxenus*, applied by Vigors in 1830 to living examples in the collection of the Zoological Society of London, and which (according to Gould) turned out to be female individuals of the

present form. It is doubtful, however, if the bird figured by Audubon from the "northwest coast of America" really belongs here,

Up to 1911 the typical form was not certainly known to occur on the adjoining mainland, although in the meantime Dr. von Madarasz had described a race from the Andes of Merida. In that year, however, a small series was received by both the Field and the Carnegie Museums from sundry localities in northwestern Venezuela. Mr. Cory presently described his series from the Rio Aurare (opposite Maracaibo) as a new subspecies, but I must confess that with his type series and other specimens before me I am unable to separate them satisfactorily from Curaçao birds, all the characters assigned proving too inconstant. In 1914 the receipt of specimens from Rio Hacha, Colombia, by the Carnegie Museum extended the range of the species to include the Goajira Peninsula. The Rio Hacha birds, however, show apparent signs of an influx of *leucopogon* blood. The males have rather more amber brown feathers in the superciliaries than is usual with *cristatus*, while the females have the buffy color of the under parts paler, and the markings of the throat tending to streaks rather than squamations.

In all probability the continental range of this form includes all the low region (Tropical Zone) in the vicinity of Maracaibo Lake and Gulf, in the pocket formed by the Andes of Venezuela and the Eastern Andes of Colombia. As already shown, it extends westward along the coast to approximate the range of *E. leucopogon*, and there is a possibility that it may also meet the range of *E. sonnini* to the eastward. Concerning its habits, as observed by him in the Dutch West Indies, Dr. Hartert writes as follows:

"This pretty bird is not rare in Aruba and Curaçao, but is not found everywhere. The natives call it 'Socklé,' a name derived from its note, which is uttered very frequently. It is much esteemed as food, and sometimes sold in the market alive.

"This bird is not easy to obtain in any great numbers without a dog, as it does not care to fly and is difficult to be seen in grassy places. It is not found on Bonaire."

Specimens examined.—Venezuela: Tocuyo, 5; Guarico, 1; Rio Aurare, 4. Colombia: Rio Hacha, 6. Dutch West Indies: Savonet, Curaçao, 6; Curaçao, 7. Total, 29.

Eupsychortyx cristatus horvathi von Madarasz.

Eupsychortyx horvathi VON MADARASZ, Ann. Mus. Hungarici, III, 1904, 116, pl. 12 (Pedregosa, Venezuela; orig. descr.; type in coll. Budapest Mus.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 13 (ref. orig. descr.; range).

Subspecific characters.—Similar to *Eupsychortyx cristatus cristatus*, but back and wings with much less rufescent tinge, and shaft-stripes on sides and flanks darker and less uniform. Female differing conspicuously in having a streaked or spotted throat.

Measurements.—Male (one specimen): wing, 98; tail, 62; bill, 12·tarsus, 31. Female (two specimens): wing, 98-101; tail, 63-66; bill, 11-13; tarsus, 30-31.

Range.—Andes of Merida, Venezuela.

Remarks.—This form was described and figured by Dr. von Madarasz from two male examples forwarded to the Hungarian National Museum by the well-known collectors, S. Briceño Gabaldón e hijos. It was said to differ in its thicker and larger bill, and also in having the forehead, crown, and throat pure white, without any tinge of fawn color, while the lower throat and the sides are more sharply outlined and brightly colored. It is true that in the single male before me the crest and throat are rather purer white than in typical *cristatus*, but I doubt if this distinction would hold in a series. The other characters assigned are certainly of no value, notwithstanding which the general coloration of the upper parts is decidedly more grayish, less rufescent, and the female is so different in the markings of the throat that there can be little question as to the propriety of recognizing the form as subspecifically distinct. It appears to be restricted to the Subtropical Zone of the Andes of Merida.

Specimens examined.—Venezuela: Valle (2000 m.), 1; Pedregosa (2000 m.), 1; Milla (1630 m.), 1. Total, 3.

Carnegie Museum, Pittsburgh, Pa.

EXPLANATION OF PLATE V.

Figure 1.—*Eupsychortyx sonnini sonnini*, normal phase. No. 46646, Collection Carnegie Museum, male, El Trompillo, Carabobo, Venezuela.

Figure 2.—*Eupsychortyx sonnini sonnini*, black-throated phase. No. 78389, Collection American Museum of Natural History, Maripa, Rio Caura, Venezuela.

Figure 3.—*Eupsychortyx sonnini mocquersyi*, white-throated phase. No. 39162, Field Museum of Natural History, Margarita Island, Venezuela.

Figure 4.—*Eupsychortyx leucopogon leucopogon*. No. 147784, Collection U. S. National Museum, Panama.

Figure 5.—*Eupsychortyx leucopogon leucotis*. No. 17535, Collection M. A. Carriker, Jr. (in Philadelphia Academy of Natural Sciences), Aguachica, Magdalena River, Colombia.

Figure 6.—*Eupsychortyx leucopogon decoratus*, type. No. 51975, Collection Carnegie Museum, Calamar, Bolivar, Colombia.

Figure 7.—*Eupsychortyx leucopogon littoralis*, type. No. 38151, Collection Carnegie Museum, Mamatoco, Colombia.

Figure 8.—*Eupsychortyx cristatus cristatus*. No. 44090, Collection Field Museum of Natural History, Rio Aurare, Venezuela.