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STUDIES OF PERUVIAN BIRDS. NO. 60

THE GENERA *HELIODOXA*, *PHLOGOPHILUS*,
UROSTICTE, *POLYPLANCTA*, *ADELOMYIA*,
COELIGENA, *ENSIFERA*, *OREOTROCHILUS*,
AND *TOPAZA*

BY JOHN T. ZIMMER

Grateful acknowledgments are made for the loan of important comparative material by Mr. Emmet R. Blake of the Chicago Natural History Museum, Mr. James Bond and Mr. Rodolphe deSchauensee of the Academy of Natural Sciences of Philadelphia, and Dr. William H. Phelps of Caracas, Venezuela.

Names of colors are capitalized when direct comparison has been made with Ridgway's "Color standards and color nomenclature."

***Heliodoxa schreibersii schreibersii* (Bourcier)**

Troch[ilus] Schreibersii BOURCIER, 1847 (May 17), Proc. Zool. Soc. London, pt. 15, p. 43—"Alto Río Negro (Brésil)" = Marabitanas (cf. Pelzeln, 1868, Zur Ornithologie Brasiliens, p. 31).

Ionolaima frontalis LAWRENCE, 1858, Ann. Lyc. Nat. Hist. New York, vol. 6, p. 263—Ecuador; [♂]; Amer. Mus. Nat. Hist.

This subspecies appears to be fairly common in parts of eastern Ecuador but less common in Perú. There is an early record from Pebas, north of the Amazon, and two of the four Peruvian specimens at hand are also from that side of the river; a third from the "Headwaters of Marañón, E. Ecuador," presumably Perú, may have come from the same general region. A fourth example, kindly lent by Mr. deSchauensee of the Academy of Natural Sciences of Philadelphia, is from Chachapoyas, south

of the Marañón. Taczanowski (1874, Proc. Zool. Soc. London, p. 543) recorded a non-sexed individual from Maraynioc, collected by Jelski, but the locality is much nearer to the range of *H. s. whitelyana* than to that of true *schreibersii*, and confirmation of the identification is much to be desired.

The immature plumages of males and females are not clear from the material at hand, and I can find no satisfactory discussion of them in literature. Females with full data in the series before me agree in having the tail more shallowly forked than the males and the median rectrices green instead of steel blue (sometimes with a greenish terminal border); the bill is usually longer than that of the males (22–24 mm. instead of 20–22); a broad malar stripe varies from rufous brown to clearer whitish (most deeply colored in younger birds); the green color of the lower under parts is lighter and usually duller, and the belly is greenish or, if obscure, is sooty and less blackish than in the males.

Eight other specimens are less satisfactory as to data. Several are not sexed and the others are marked as males, one with a query, but I believe that all but one of the eight are females. The exception is still in partial immature plumage, with a rufous malar stripe and with a small violet gular patch, below which only three glittering green feathers have come into place, allowing the blackish median feathering of the lower under parts to reach the violet space (somewhat as described for *H. s. whitelyana*); the tail is deeply forked, and the median rectrices are steel blue. The bill is 21 mm. in length.

One other specimen has the median rectrices blue instead of green, but the fork of the tail is shallow as in females, and the median under parts, below the green pectoral area, are sooty brownish. The bill is 23 mm. in length. The colors of the anterior under parts are as fully developed as in adult females, with the malar stripe whitish and not brown. I believe this specimen to be a female. The other six birds, with bills from 22 to 24 mm., agree with the characters given above for females.

The question, therefore, is still unanswered as to whether or not young males may possess short-forked tails with green median rectrices. I have no evidence that such is the case, and doubt it, judging by numerous other species of hummingbirds.

I have been unable to examine any specimens from the Rio Negro, Brazil, and cannot comment on possible distinctions from Ecuadorian and north-Peruvian examples. Bourcier noted his

type as being an adult male, but his description is that of a young male or a female, and Pelzeln (1868, *Zur Ornithologie Brasiliens*, p. 31) said that it was a female that was sent to Loddiges from Natterer's collections.

Peruvian records of *H. s. schreibersii* include only Pebas and Maraynioc. The Maraynioc record needs substantiation as to its exact identity, since the locality is some distance away from the northern part of the country where the subspecies has been found, and somewhat closer to the range of *whitelyana* as at present understood.

I believe a number of the closely related monotypic genera recognized by various authors are best united with *Heliodoxa*. *Phaiolaima*, *Ionolaima*, *Agapeta*, *Lampraster*, and *Eugenes* agree with *Heliodoxa* in many details of general pattern and differ in details of coloration that are surely of no more than specific value. The long forward extension of the frontal feathering, covering the nasal operculum, and an equal extension of the chin plumage give a characteristic elongate appearance to the front of the head that, while not restricted to these groups, is not matched by many others. The tail is forked in all of them, reaching its maximum depth of furcation in "*Eugenes*" where the rectrices are narrower than in the others. There is an isolated throat patch of blue, purple, or violet in almost all of the species, excepting only *Heliodoxa leadbeateri*, whose position in the genus is unquestioned since it is the type species, and whose congeneric relationship to *H. jacula* and *H. xanthogonys* can hardly be doubted. This throat patch is separated from the point of the chin by a duller area, usually blackish, and is worn by the females of various of the species as well as the males. The front in adult males and many females has a glittering patch at the apex, green or uniform with a more enlarged frontal plate of some other color. The bill is relatively long and only moderately decurved, usually more strongly in the female sex where it also averages longer than in the males. *Clytolaema* and *Polyplancta* possibly belong in the same assemblage.

The name *Heliodoxa* is the correct one to use for this enlarged genus. Except for Bonaparte's *Leadbeatera*, it certainly antedates the others here subordinated to it. The exact date of publication of *Heliodoxa* (Gould, "1849," *Proc. Zool. Soc. London*, pt. 17, p. 95) is said to be somewhere from January to June, 1850 (cf. *Proc. Zool. Soc. London*, 1893, pp. 436-440). However, Jardine (1851,

Contributions to ornithology, p. 6) states that part 3 of the Proceedings of the Zoological Society of London for 1849 was not published until August, 1850. At the same time he lists the ornithological papers in part 3, the first of which is one beginning on page 112; parts 1 and 2 he says appeared properly in 1849. It seems certain from this that *Heliodoxa*, on page 95, was published in 1849, thus clearly antedating *Leadbeatera* (Bonaparte, March, 1850, Conspectus generum avium, vol. 1, p. 70).

I propose, therefore the following arrangement:

Heliodoxa rubinoides and subspecies

Heliodoxa leadbeateri and subspecies

Heliodoxa jacula and subspecies

Heliodoxa xanthogomys

Heliodoxa schreibersii and subspecies

Heliodoxa gularis

Heliodoxa branickii

Heliodoxa imperatrix

***Heliodoxa schreibersii whitelyana* (Gould)**

Iolaema Whitelyana GOULD, 1872, Ann. Mag. Nat. Hist., ser. 4, vol. 10, p. 452—Cosñipata, province of Cusco, in the Peruvian Andes; ♂, ♀ cotypes in the British Mus.

Only four specimens of this subspecies are on record: the two cotypes from Cosñipata, a female from Río Cadena, and a male from San Gabán. I have mentioned the possibility that the Maraynioc specimen of the species, recorded as *s. schreibersii*, may belong to the present form.

The subspecific characters appear to be the absence of the glittering green frontal spot and the area of that color on the breast, allowing the blackish median color of the belly to reach the violet throat patch. The upper parts and sides of the neck have been reported as having a golden sheen absent in *schreibersii*. I have seen no specimens. The ventral color as described is nearly matched by the young male of *schreibersii* I have discussed under that form in which only three glittering green feathers have appeared in the blackish area below the violet patch. It is just possible that *whitelyana* was based on similarly subadult examples of *schreibersii*, although this requires confirmation.

SPECIMENS EXAMINED

H. s. schreibersii.—

ECUADOR:

Río Suno, above Avila, 2 ♂, 3 ♀;

Sarayacu, 1 (?);
 below San José, 1 ♂, 3 ♀;
 Río Napo, 3 ♂ (including type of *frontalis*), 1 "♂" [♀], 1 "♀" [♂], 1 [♀];
 Montalbo, Oriente, 1 ♀;
 Churo Yaco, 1 ♀;
 "Ecuador," 1 "♂" [♀], 1 [♀];
 "E. Ecuador," 1 "♀" [♂].

PERÚ:

Mouth of Río Santiago, 1 ♀;
 mouth of Río Curaray, 1 [♂];
 headwaters of Marañón, 1 ♀;
 Chachapoyas, 1 ♂¹.

***Heliodoxa leadbeateri otero* (Tschudi)**

Tr[ochilus] Otero TSCHUDI, 1944 (May), Arch. Naturgesch., 10th year, vol. 1, p. 298—Perú [eastern sierra region, Tschudi, 1846]; I suggest Chilpes, Department of Junín.

Extensive series of the present species from various parts of its complete range have led me to alter my earlier belief (1930, Field Mus. Nat. Hist., zool. ser., vol. 17, p. 279) that no subspecies could be recognized. Dr. William H. Phelps of Caracas, Venezuela, has kindly lent me his abundant material from Venezuela which has permitted the clarification of the characters of the typical form, *leadbeateri*, on which subsequent distinctions can be founded.

Heliodoxa leadbeateri leadbeateri is a relatively long-billed form. The males have the frontal plaque blue rather than violaceous (although with some violaceous reflections in certain lights), dark and slightly glittering green lower under parts, often but little coppery hue on the nape, but with the median rectrices dark and frequently decidedly coppery. The females are often whitish on the belly, and never have the strong development of cinnamonous buff color of certain other forms. Both sexes have the four outer pairs of rectrices distinctly steel blue as in the allied *H. jacula*, a character that is not shared by any of the conspecifics of *leadbeateri*.

I postpone, for the moment, a discussion of the puzzling nomenclature of the birds of western Venezuela. The next form of certain distinction is *parvula* of eastern Colombia. Based on Bogotá trade skins, its range has been uncertain and still presents some problems, but the material at hand suggests that it is a somewhat variable form occupying at least the eastern side of the Eastern Andes of Colombia in the central and northern portions and ex-

¹ Specimen in Academy of Natural Sciences of Philadelphia.

tending northeastward through the Mérida region of Venezuela to the Province of Lara. It is a short-billed form that, in its average characters, characteristic of the Bogotá trade-skin series, has appreciable distinction from *leadbeateri*. The males have the frontal plaque decidedly violaceous, the lower under parts are often a little lighter and duller green, the nape is usually quite coppery, but the median rectrices are less coppery and usually lighter and greener. The females have strong Cinnamon-Buff or Clay Color on the belly, the back is lighter green than in *leadbeateri*, and there is sometimes a little coppery tinge on the nape that is less often and more weakly shown by females of *leadbeateri*. The outer four pairs of rectrices in both sexes are duller and more blackish than in *leadbeateri*, with a suggestion of steel blue that may be misleading until comparison is made with the more pronounced color of the typical form.

The specimens from western Venezuela are somewhat intermediate between the Bogotá birds and *leadbeateri* in respect to the length of bill and the color of the frontal plaque in the males, but while certain examples can be matched closely with Bogotá specimens, none is quite like the eastern form. There are no certain characters except of intermediacy, and reference of these examples to *parvula* is thus indicated. The situation is somewhat obscure in the provinces of Lara and Falcón, owing, in part, to a scarcity of material from these areas. Two males from Cerro El Cerrón and a female from Cubiro, Lara, agree well with Mérida birds, but another male from Mt. Bucarito, Lara, shows a trend toward *leadbeateri*, while two males and one female from Curimagua, and another female from San Luis, Falcón, agree best with *leadbeateri*. Until sufficient material is available to determine the preponderance of characters, I must call the Falcón birds *leadbeateri* in spite of the unusual distribution indicated thereby.

Specimens from the eastern side of the Eastern Andes of Colombia agree better with the Bogotá series than with any other and I believe must be referred also to *parvula*. The bill is relatively short, the frontal plaque of the adult males is violaceous, the nape is coppery, and the tail is dull, while a single female from Mt. Macarena has a certain amount of cinnamonaceous color on the belly although not more than is found in some *leadbeateri*. I have no specimens from the western side of the Eastern Andes in the neighborhood of Bogotá, and six males and two females from the head of the Río Magdalena are not the same. They are not clearly

referable to any of the forms here considered as distinct, and I am obliged to consider them as intermediates, as is noted below. The female from La Frijolera, identified by Chapman as *leadbeateri*, proves to belong to *H. jacula*, presumably the nominate subspecies which is represented in Bogotá collections.

The distinctive characters of the females of the two species have not been discussed in much detail by authors, who have dismissed the subject with a note as to considerable resemblance to the females of *leadbeateri*. I have found various characters that appear to be of value. The green of the back is dark and somewhat velvety rather than glossy; there is no coppery hue on the nape; the median rectrices are nearly the color of the back, without bronzy or coppery hue; in *j. jacula* and *j. henryi*, but not *j. jamesoni*, the tail is longer and more deeply forked than in *leadbeateri* (usually about 30%); the outer four pairs of rectrices are steel blue (even stronger than in *l. leadbeateri*); the whitish tips on the outer few rectrices are usually more prominent, clearer whitish, and crossing both webs; lower under parts apparently never cinnamomeous.

The character of length of bill, on which *parvula* was originally separated from *leadbeateri*, is not completely definitive but shows some overlap. The figures at hand are as follows for the exposed culmen (figures in parentheses indicate the number of specimens measured):

	MALES	FEMALES
<i>leadbeateri</i>	20, 21 (7), 21.5 (2), 22 (11), 22.5, 24.5, 25 (2)	23 (4), 23.5 (3), 24 (3), 24.5, 25 (2)
<i>parvula</i>	18 (3), 18.5 (3), 19 (13), 19.5 (6), 20 (5), 20.5 (4)	19 (6), 20 (5), 20.5 (3), 21 (5), 22, 23

The specimens from the Eastern Andes of Colombia, with bills measuring (males) 18.5, 19, and 20, and (female) 19, fit well into the series of *parvula*. I have, accordingly, included their measurements in the figures given above.

The nomenclature of *parvula* and *leadbeateri* has been greatly confused, and some details of it are still not entirely satisfactory. In the first place, Bourcier (1843, Rev. Zool., p. 102) described *leadbeateri* from "Caracas (Venezuela)," while Boucard (1895, Genera of hummingbirds, p. 284) claims the type, said to be in his collection, as from Colombia. In the intervening period, Heine, Bourcier, Gould, Elliot, and Mulsant and Verreaux all stated that the bird was described from Colombia or New Granada in spite of Bourcier's precise statement of the country of origin. On this

basis, therefore, Gould (1861, Introduction to the Trochilidae, p. 74) named certain Venezuelan birds *splendens*, although there is a question as to which of the Venezuelan subspecies he had in mind. Bonaparte (1850, *Conspectus generum avium*, vol. 1, p. 70) renamed *leadbeateri* without comment, calling it *grata*. The reason for the error undoubtedly lies in the duplicate account of the new hummingbirds described by Bourcier in the reference cited, which was published by Bourcier and Mulsant in the *Annales de Sciences Physiques et Naturelles . . . par la Société royale d'Agriculture, etc., de Lyon* (vol. 6, pp. 36–39), presumably after June 23, 1843. (There is a notice on p. 54, in a signature that includes the last page of Bourcier and Mulsant's article, of a meeting held on that date.) In this duplicate paper, the locality of *leadbeateri* is given as "Caracas, dans la Colombie"!

Gould's account of his "*Leadbeatera splendens*" was presumably predicated on the application of Bourcier's name to Colombian birds. His brief description is not sufficiently diagnostic to define either of the two Venezuelan subspecies of *leadbeateri*, and an even shorter comparison with *otero* (ascribed by Gould to Perú and Bolivia) is ambiguous and has been variously interpreted. Gould says that *splendens* is very nearly allied to *otero*, "but it differs in having a straighter and shorter bill, and in the green tint of the under surface." The antecedent of "it" might seem to be "*splendens*," but Berlepsch (1887, *Jour. f. Ornith.*, year 35, p. 320), in describing "*parvula*" from Bogotá, stated that Gould had renamed the large, long-billed *leadbeateri* of Caracas. None of Gould's specimens in the British Museum was indicated by Salvin (1892, *Catalogue of birds in the British Museum*, vol. 16, pp. 318–319) as the type of *splendens*, and it is not certain that Gould selected a holotype or that he may not have disposed of such if it existed. Since the identity of *splendens* affects the validity of *parvula*, which it antedates, it is advisable to make formal disposition of it by restricting its type locality to Caracas, Venezuela, from which place the species was certainly known in Gould's time. This places *splendens* in the synonymy of *leadbeateri*, where its otherwise uncertain identity will cause the least trouble.

There is some justification for Berlepsch's conclusion in the measurement of the $1\frac{1}{16}$ inches given by Gould as the length of the bill in *splendens*. I have seen no examples of the species with a bill of that length. Even measured from the gape it is about the maximum for *leadbeateri leadbeateri* and is longer than the bill of

parvula. It is also about the maximum for *otero*. If the actual figure given by Gould, which is mystifying, be disregarded, some examples of *leadbeateri* have shorter bills than certain individuals of *otero* (although the reverse is equally true), and hence Gould's comparative statement may have been accurate for the material he had in hand though invalid for larger series.

The arrangement of the Peruvian populations presents some further difficulties. There appear to be two forms involved, but the division can be made at different geographical points, depending on the emphasis to be placed on different characters. Birds from eastern Ecuador agree with north-Peruvian specimens and Bolivian birds with the south-Peruvian examples, and I have, therefore, taken advantage of this grouping in order to make use of the larger series thus made available.

The north-Peruvian and Ecuadorian males have the frontal plaque relatively blue as in *l. leadbeateri*, but the median rectrices are usually distinctly greener, although two males from Ecuador have them dark and coppery. The belly is relatively light green as in *parvula*, while the anterior under parts average more bluish green than in the more northern forms. The females have the belly only slightly, if at all, tinged with cinnamon buff, and most of them have a prominent blue plaque on the front, sometimes as large as it is in some males although it is bordered laterally by the green of the back of the head, without the blackish shading of the males. Only one immature female (from Ecuador) lacks this plaque in some degree of development; in most of the females it is pronounced.

In southern Perú and Bolivia, the males are distinguishable from those of northern Perú and Ecuador principally by having a less prominent coppery color on the nape. The females have the belly marked cinnamomeous or brownish and lack the frontal plaque except for an isolated feather on a bird from the Urubamba Valley, a condition that appears in rare examples of *leadbeateri* and *parvula*.

A female from Chilpes, Junín, Perú, has the belly with the maximum amount of brown coloration and lacks any frontal blue. A female from Cushi Libertad, a little to the northward, away from the Chanchamayo Valley, has a small plaque and weaker color on the belly, while a second female from the same locality (immature, judging by the acute tips of the rectrices) has no plaque and only a suggestion of abdominal color. A male from

Utcuyacu, Junín, has the hind neck and occiput less strongly coppery than north-Peruvian specimens. The line of demarcation thus appears to fall somewhere in this general region, allowing the Junín birds to be placed with the south-Peruvian, and the Cushi Libertad examples with the north-Peruvian. Taczanowski (1884, *Ornithologie du Pérou*, vol. 1, p. 288) describes the female plumage as having a blue frontal plaque. He appears to have drawn the description from one or more of the females from Soriano and Paltaypampa, both in the Junín region, which he had at hand then or earlier. He uses the presence of this plaque in the females as one of the characters by which he distinguished "*Otero*" from "*Leadbeateri* de la Colombie" [= *parvula*].

The line of demarcation thus appears to be not so clear as the material now before me suggests. The matter is of particular importance, since the name *otero* was based on a bird that unquestionably came from the Junín region, the area covered by Tschudi in his explorations. Unfortunately the type of *otero* was a young bird (Elliot, 1876, *Ibis*, ser. 3, vol. 6, p. 7) and unlikely to be of much value in the determination of its subspecific affinity. Assignment of the name must, therefore, be made on the basis of other topotypical material. There is a possibility that some females from the Junín region may have a blue frontal plaque, although the bird I have from Chilpes does not. There is some advantage to be gained by applying the name *otero* to the southern population, since there is another name, *sagitta*, available for the northern one and it will be unnecessary to add to the synonymy an additional term.

There is a little distinction in the lengths of the bill in *otero* and *sagitta*, and the Junín specimens agree better in this respect with the north-Peruvian and Ecuadorian birds than with the south-Peruvian and Bolivian. The following figures illustrate the point:

	MALES	FEMALES
<i>sagitta</i>		
Colombia	20, 20.5 (2), 21, 21.5, 22	21.5
Ecuador	19.5, 20, 20.5, 21.5, 22	21.5, 22.5 (2), 23 (2), 24
Northern Perú	21	21, 21.5, 22, 23, 24
<i>otero</i>		
Junín	21.5	23.5
Southern Perú	19, 19	19, 19.5, 20
Bolivia	18, 19 (2), 20	19, 22.5

Nevertheless, two Bolivian specimens come within the limits of variation of *sagitta* and show the existence of appreciable overlap, of which the Junín birds show the most. A larger series from Junín and other parts of southern Perú and Bolivia will be necessary to determine the full range of variation both in bill length and coloration. For the present, therefore, I associate the Junín birds with the south-Peruvian population under the name *otero*.

With this allocation, therefore, records from Soriano, Paltaypampa, Huaynapata, and Río Cadena add their localities to those listed below under *otero*.

***Heliodoxa leadbeateri sagitta* (Reichenbach)**

Coeligena sagitta REICHENBACH, 1853, Jour. f. Ornith., vol. 1, Beilage zu Extraheft, p. 23—"Nord-Peru"; I suggest Lomo Santo, Río Marañón, as restricted type locality.

The identity of *sagitta* and its type locality are proposed here-with on the basis of the portion of northern Perú known to have been visited by Warszewicz, the collector of the type. There is nothing in the original description or in the figures later given by Reichenbach (?1855, Die vollständige Naturgeschichte . . ., Abt. 2, vol. 3, pt. 7, pl. 689, fig. 4525, pl. 690, figs. 4527-4528) that is definitive enough to permit any close assignment, except that the illustration presumably representing the adult male has the nuchal region strongly rufescent, which is a feature of north-Peruvian birds in contrast to *otero* of central and southern Perú.

As noted in the general discussion under *otero*, the females of the present form have a strong blue frontal plaque in most cases and a minimum of brownish color on the lower under parts. One female from Lomo Santo has no trace of this latter color, and several other specimens from Perú and Ecuador have very little.

To *sagitta* I am inclined to refer a number of examples from the upper Magdalena Valley in southern Colombia. The two females from this region have the belly only faintly tinged with buff, although they have no frontal plaque. The males have the bill averaging a little longer than males of *parvula* and have the median rectrices greener and less bronzy and the frontal plaque bluer and less violaceous than in that form. They are closer in various respects to *sagitta* than to *parvula* and may be referred there at present.

Peruvian records of *sagitta* include those from Huambo, Chirimoto, Chinchao, and probably Nuevo Loreto, and Utcubamba.

SPECIMENS EXAMINED

H. l. leadbeateri.—

VENEZUELA:

(Las Quiguas, Cumbre de Valencia, El Limón, San Esteban, Mt. Bucarito, Caracas, "Venezuela"), 10 ♂, 1 [♂], 1 "♂" [? ♀], 3 ♀;
 (San José de Los Caracas, Las Quiguas, Cerro Golfo Triste, Hacienda Santa Clara [Carabobo], Colonia Tovar, Bucaral, Curimagua, San Luis, Cerro Negro [Miranda]), 20 ♂¹, 1 [♂]¹, 12 ♀¹, 3 [♀]¹.

H. l. parvula.—

VENEZUELA:

Mérida (Montañas Sierra, Nevados, Tambor, and "near Mérida"), 6 ♂, 5¹ ♀, 2 [♂], 2 [♀], 1 "♂" [♀], 2 "♀" [♂];
 "Caraccas" (*errore*), 1 [♂];
 Mérida (Escorial, Valle, Santa Cruz de Mora), 2 ♂¹, 2 ♀¹;
 Táchira (Seboruca), 2 ♂¹;
 Lara (Cerro El Cerrón, Carora, and Cubira), 2 ♂¹, 1 ♀¹;
 Barinas (Altamira), 1 ♂¹, 1 ♀¹.

COLOMBIA:

"Bogotá," 14 [♂], 13 [♀], 1 (?);
 Buena Vista, 2 ♂;
 Quetamé, 1 ♂;
 Mt. Macarena, 2 ♀.

H. l. sagitta.—

COLOMBIA:

La Candela, 3 ♂;
 near San Agustín, 4 ♂.

ECUADOR:

Oyacachi, below Chaco, 4 ♂, 3 ♀;
 lower Río Sardinas, 1 ♀;
 "Ecuador," 1 ♂, 2 ♀.

PERÚ:

Huarandosa, 1 ♂;
 Lomo Santo, 2 ♀;
 Chaupe, 2 ♀;
 Cushi Libertad, 2 ♀.

H. l. otero.—

PERÚ:

Utcuyacu, 1 ♂;
 Chilpes, 1 ♀;
 Garita del Sol, 1 ♂;
 Idma, 1 ♂, 2 ♀;
 Río Huacamayo, 1 ♂;
 Río Inambari, 1 ♀.

BOLIVIA:

Liria, Cillutincara Range, 1 ♂, 1 ♀;
 Locotal, 1 ♀;
 Roquefalta, 1 ♂;

¹ Specimens in Phelps Collection, Caracas, Venezuela.

Yungas, Cochabamba, 1 ♂.

H. j. henryi.—

COSTA RICA:

(Irazú, Cachi, Cariblanco de Sarapiquí, Carrillo, Aquinares, Guayabo, San Pedro, Bonilla, and "Costa Rica"), 7 ♂, 8 ♀, 1 (?).

PANAMÁ:

(Chiriquí, Chitrá, Calobre, Veragua, and Santa Fé), 8 ♂, 1 [♂], 5 ♀, 2 [♀].

"Ecuador" [errore], 1 ♂.

H. j. jacula.—

PANAMÁ:

Mt. Tacarcuna, 2 ♂, 2 ♀.

COLOMBIA:

East slope of Mt. Tacarcuna, 1 ♂;

La Frijolera, 1 ♀;

"Bogotá," 5 ♂, 3 ♀.

H. j. jamesoni.—

ECUADOR:

(Bucay, above Bucay, Pata de Pájaro, Puerto de Ila, Chimbo, Cachabí, Nanegal, Santa Rosa, "Quito," and "Ecuador"), 9 ♂, 5 [♂], 12 ♀, 2 [♀], 1 (?).

Heliodoxa gularis (Gould)

Aphantochroa ? gularis GOULD, 1860, Proc. Zool. Soc. London, pt. 28, p. 310—Río Napo; I suggest San José, Ecuador, as restricted type locality; [♂]; British Mus.

The only Peruvian record of this species is from Chayavitas. I have seen no Peruvian material.

As noted under *H. s. schreibersii*, I consider "*Agapeta*" (to which *gularis* has been assigned in recent years) to be generically inseparable from *Heliodoxa*.

Simon (1910, Rev. Française d'Ornith., vol. 2, p. 265) at one time questioned the "Napo" origin of the type and thought it possible that *gularis* was no more than the immature stage of "*Lampraster*" *branickii*. Both suggestions were incorrect, but the relationship of *gularis* and *branickii* may possibly be conspecific, as is discussed further under *H. branickii*.

SPECIMENS EXAMINED

H. gularis.—

ECUADOR:

Río Suno, above Avila, 1 ♀;

lower Río Suno, 1 ♀;

below San José, 1 ♂, 3 ♀.

***Heliodoxa branickii* (Taczanowski)**

Lampraster branickii TACZANOWSKI, 1874, Proc. Zool. Soc. London, p. 140, pl. 21, fig. 1—Monterico, Perú; ♂; formerly Warsaw Mus., now lost.

There is considerable probability that this hummingbird will be found to be no more than a conspecies of *H. gularis*. The only differences that appear to exist in the males of the two forms (the female of *branickii* is unknown) are as follows. *Branickii* has a slightly shorter bill, with the mandible largely whitish, while *gularis* has the mandible blackish, although some females of *gularis* have a pale area on the mandible near the tip. The whitish sub-terminal marking on the feathers of the center of the breast is marked in *gularis* but weaker in *branickii*. The metallic gular patch is more deeply reddish in *branickii* than in *gularis*. Most pronounced is the presence of a broad rufescent area on the basal portion of the inner webs of the secondaries and inner primaries in *branickii*, which is quite lacking in *gularis*, with a cinnamonous buff hairline along the bend of the wing in *branickii* and a weaker and paler line in *gularis*. None of these distinctions is necessarily specific in value, and some of them (such as the color of the mandible) are known to be no more than subspecific or even individual characteristics in other hummingbirds.

In the absence of adequate series of both forms, however, I am unwilling to do more at this time than suggest the probable relationship. As I noted in an earlier paper (1930, Field Mus. Nat. Hist., zool. ser., vol. 17, p. 278), only six specimens of *branickii* have been recorded, and of these, three have now disappeared. Two of the remainder, obtained from an Indian necklace on the Río Beni, Bolivia, may not have been shot locally; the other examples were all obtained in Central Perú, at Monterico, La Gloria, and Río Colorado.

SPECIMENS EXAMINED

H. branickii.—

PERÚ:

Río Colorado, 1 ♂¹

“BOLIVIA”:

“Río Beni” (from an Indian necklace), 1 [♂].

***Heliodoxa rubinoides cervinigularis* (Salvin)**

Phaeolaema cervinigularis SALVIN, 1892, Catalogue of birds in the British

¹ Specimen in Chicago Natural History Museum.

Museum, vol. 16, pp. 324, 325, pl. 8, fig. 2—"Ecuador?"; I suggest Baeza, eastern Ecuador, as restricted type locality; cotypes in British Mus.

Phaiolaima rubinoides annae SZTOLCMAN, 1926 (Dec. 31), Ann. Zool. Mus. Polonici Hist. Nat., vol. 5, no. 4, p. 210—Garita del Sol, Perú; ♀; Warsaw Mus.

Chaupe, 6 ♀; Chilpes, 1 ♂.

Compared with one male from the Río Oyacachi and three females from Baeza, Ecuador, as well as with 21 specimens of *rubinoides* from Colombia and 24 of *aequatorialis* from western Ecuador.

I can see no distinctions in Peruvian birds as compared with east-Ecuadorian examples. Sztolcman's "*annae*" was founded on the presence of a lilaceous patch on the throat of the unique female type which the author thought to be of taxonomic importance. It is, however, no more than an individual variation that occurs in some individuals of all the subspecies.

Peruvian records are from Ray-urmana and Garita del Sol.

[*Heliodoxa imperatrix* (Gould)]

Eugenia imperatrix GOULD, "1855" (Jan. 22, 1856), Proc. Zool. Soc. London, pt. 23, p. 192—Andean forests in the neighborhood of Quito Ecuador; British Mus.

This species does not reach Perú, but since, in the account of *Heliodoxa s. schreibersii*, I mentioned my belief that "*Eugenia*" should be included in *Heliodoxa*, a more formal statement is in order. I can find no adequate generic characters for "*Eugenia*," which differs from other members of *Heliodoxa* only by its more elongate tail and narrower rectrices.

SPECIMENS EXAMINED

H. imperatrix.—

ECUADOR:

- Mindo, 1 ♂;
- Nanegal, 1 [♀];
- camino de Gualera, 1 ♂, 1 [♀];
- Anca, 1 ♀;
- "Napo" (*errore*), 1 ♂;
- "Quito," 1 ♂, 4 ♀;
- "Ecuador," 2 ♂.]

Phlogophilus harterti Berlepsch and Stolzmann

Phlogophilus harterti BERLEPSCH AND STOLZMANN, 1901 (Oct.), Ibis, ser. 8, vol. 1, p. 717—Huaynapata, Perú; ♀; Warsaw Mus.

Pozuzo, 1 ♂; Candamo, 1 ♀; Marcapata, 1 (?).

The Pozuzo bird offers a northward extension of range of this species, heretofore recorded only from the type locality from which Candamo and Marcapata are not far removed. The Pozuzo bird has a somewhat bluer tail than the Candamo male which, however, is not fully adult. In any case, the material is too scanty to determine the variability in this or other features.

***Urosticte benjamini intermedia* Taczanowski**

Urosticte intermedia TACZANOWSKI, 1882, Proc. Zool. Soc. London, p. 36—Chirimoto and Ray-urmana, Perú; ♂ from Chirimoto in Warsaw Mus. claimed as type.

This form is known only from the original series collected by Stolzmann and reported by Taczanowski. No one else appears to have examined the specimens, and no others have been collected. Consequently, there are some inconsistencies in the various second-hand descriptions that have been given by subsequent authors. From Taczanowski's own account it would appear that *intermedia* combines various features of *benjamini* and *ruficrissa* and, I believe, offers sufficient justification to include the last-named in the *benjamini* group.

The dimensions of *intermedia* appear to be close to those of *ruficrissa*; the under tail-coverts are largely rufescent with green centers in the adult male and rufescent without the green in the female and young male; and the white postocular patch is quite small. These features are also those of *ruficrissa*, a few adult males of which show the green centers on the under tail-coverts. The presence of a violaceous area below the green throat indicates affinity to *benjamini*. Taczanowski says this area is duller, less brilliant violet, than in *benjamini* (but Hartert, 1900, Das Tierreich, lief. 9, p. 153, calls it blue). There are some examples of *benjamini* at hand in which the violet patch is quite dull, and one from "Bogotá," in which the feathers in the middle are greenish or tipped with glittering green, pointing significantly toward *ruficrissa*.

It may be added that two adult males from the Río Pastaza, the closest approach to Perú in the specimens at hand, both have noticeable green centers on the rufescent under tail-coverts as described for *intermedia*. Río Pastaza birds were described as *U. ruficrissa corpulenta* by Simon (1921, Histoire naturelle des Trochilidae, pp. 141, 348), but their characters are not confined to

birds from that area. None of the series of *ruficrissa*, however, shows any trace of violet below the green throat.

In view of these various indications of intermediacy in *intermedia* and various individuals of *benjamini* and *ruficrissa*, I see no reason to recognize more than a single specific group for all of them. I have not seen *rostrata* from the Río San Juan, western Colombia, which is obviously a long-billed relative of *benjamini*, with a similar violet area below the throat. The unique type, a young male, is said to have the bill 24 mm. in length. It reaches 23 mm. in the largest examples of *ruficrissa*.

In this connection it may be noted that Bogotá-skins of *b. benjamini* have the bill averaging shorter than in Ecuadorian examples. Seven adult males show two with the bill 19 mm.; one, 19.5; three, 20; one, 20.5. Thirteen Ecuadorian males show: two, 20; one, 20.5; five, 21; three, 21.5; one, 22; one 22.5. I can find no other distinctions.

Both *ruficrissa* and *benjamini* occur in "Quito" collections, but all material with authentic data indicates the restriction of *ruficrissa* to the eastern side of the Andes and *benjamini* to the western slopes. In this connection it may be of interest to mention a female "Quito-skin," labeled "Rio Napo" (a dealer's trade-skin from H. Whitely), marked as the specimen figured by Mulsant as the female of *ruficrissa*. It is, however, an undoubted *benjamini*, identifiable by the general measurements, the short fork of the tail, and the strong postocular mark. The only character suggesting *ruficrissa* is the coppery area on the terminal portion of the median rectrices which is variable in both subspecies.

SPECIMENS EXAMINED

U. b. ruficrissa.—

COLOMBIA:

"Bogotá," 11 [♂], 4 [♀].

ECUADOR:

Oyacachi, below Chaco, 5 ♂, 3 ♀;

below San José, 5 ♂, 2 ♀;

Río Napo, 3 ♂;

Río Pastaza, 2 [♂], 2 [♀];

"Quito," 1 ♂ (type).

U. b. benjamini.—

COLOMBIA:

Ricaurte, 1 ♀.

ECUADOR:

Intac, 3 ♂;

Intac-Nanegal, 1 ♂;

Gualea, 2 ♂, 1 ♀, 1 "♂" [= ♀];
Río Pescado, 1 ♂;
Paramba, 2 ♂;
Lita, 1 ♀;
"Ecuateur," 1 ♂ (type);
"Ecuador" or "Quito," 15 ♂, 5 ♀;
"Río Napo," [error = Quito-skin] 1 ♀.

Polyplancta aurescens (Gould)

Trochilus (lampornis) aurescens GOULD, 1846, Proc. Zool. Soc. London, pt. 14, p. 88—Rio Negro, Brazil; I suggest Tahuapunto, Rio Uaupés, Brazil.

I have been unable to determine the basis for Gould's citation of "Rio Negro, Brazil" as the place of origin of his new bird. He gives no explanation in the original account other than the locality as cited and a statement in the introduction to his paper that the new birds described in it were all from his own collection. In his "Monograph of the Trochilidae" (1861, pt. 21, vol. 4, text to pl. 250), he appeared to be uncertain as to the place of origin and stated that the species probably occurred in the Amazonian country east of the Andes, in Ecuador, Perú, and Brazil. In the "Introduction to the Trochilidae" (1861, p. 135) he still included the Negro in the range, and for many years investigators for the most part accepted this wide distribution without question though without confirmation. In Gould's collection as recorded in the "Catalogue of birds in the British Museum" (1892, vol. 16, p. 313) Salvin lists specimens from Rotuno, Ecuador, and Chamicuros and Pebas, Perú, as from the Gould collection, and I have an additional specimen from Pebas marked by Elliot as received from Gould. There is no specimen on record from the Rio Negro, Brazil, in Gould's material or elsewhere, and the only definite Brazilian records have been from the Rio Juruá and the upper Amazon. Recent authors, led by Hellmayr (1920, Arch. Naturgesch., 85th year, div. A, no. 10, p. 116) have taken Gould to be in error and have emended the type locality to Upper Amazon and Amazonian Perú.

There is evidence at hand, however, that the species occurs in the upper Rio Negro region, although the specimens are not from the Negro itself, and the range goes far beyond the Negro since it embraces Mt. Auyan-tepui, Venezuela. The point is raised, then, as to the possibility that Gould may have had a Rio Negro specimen after all, the origin and final disposition of which are not now determinable. In the light of the material now at hand, I believe

we should revert to Gould's original statement and allow the type locality of *aurescens* to remain near the Rio Negro, Brazil, presumably somewhere on the upper reaches. The locality Tahuapunto, Rio Uaupés, Brazil, is suggested as a restricted type locality in the upper Rio Negro region where the species undoubtedly occurs.

This bird has a wide range, but I can detect no essential distinctions in material from all parts of it. There is some variation in the exact tone of the violet or blue of the frontal plaque, in the extent of the green or golden green terminal portion of the outer rectrices, and in other such particulars, but it cannot be correlated with distribution. One male has the under tail-coverts marked with rufous bases and margins such as occur in the females.

Peruvian records are from the Río Javarri, Nauta, Chayavitas, Chamicuros, "Upper Ucayali," and Yahuar mayo.

SPECIMENS EXAMINED

P. aurescens.—

VENEZUELA:

Mt. Auyan-tepui, 1 ♀.

BRAZIL:

Tahuapunto, Rio Uaupés, 1 ♂, 1 [♀].

COLOMBIA:

Rio Uaupés, opposite Tahuapunto, 2 ♂, 1 ♀.

ECUADOR:

Below San José, 2 ♂, 2 ♀.

PERÚ:

Mouth of Río Curaray, 1 ♂, 1 ♀;

Pebas, 2 ♂;

"Upper Amazon," 1 "♂" [= ♀];

mouth of Rio Santiago, 1 ♂;

Santa Rosa, Río Ucayali, 1 ♂, 2 ♀;

Candamo, 1 ♀;

"Peru," 3 ♂.

Adelomyia melanogenys maculata Gould

Adelomyia maculata GOULD, 1861 (Sept.), Monograph of the Trochilidae, pt. 24, pl. [11] and text [= vol. 3, pl. 199 of volume]—Ecuador = western Ecuador; probable cotypes in British Mus.

Specimens at hand from the western side of the Western Andes in northern Perú agree in essential details with west-Ecuadorian specimens, including a "Quito-skin" received by Elliot from Gould (possibly a cotype). The most satisfactory characters of this form are the wide, pale tips on the outer rectrices (not so deeply

colored as in *inornata*) and the broad, buffy, basal portion of the same feathers, occupying nearly half of the inner webs and reaching the shafts. There are numerous specimens of *m. melanogenys* in which there is a noticeable pale patch on the basal portion of these feathers, but it is usually duller, less well defined than in *maculata*, and frequently only marginal. This is discussed below under *melanogenys*.

Judged by the specimens at hand, records from Porculla, Palambla, San Pablo (Cajamarca), and Choquisongo are assignable to *maculata*.

***Adelomyia melanogenys melanogenys* (Fraser)**

Trochilus melanogenys FRASER, 1840, Proc. Zool. Soc. London, pt. 8, p. 18—Bogotá, Colombia.

T[rochilus] Sabinae BOURCIER AND Mulsant, 1846, Ann. Sci. Phys. Nat., Soc. Roy. d'Agr. Lyon, vol. 9, p. 323—Bogotá, Colombia.

As noted under *maculata*, the present subspecies is not entirely without a pale patch at the bases of the outer few rectrices, but it is, in most cases, less strongly developed than in the west-Ecuadorian form. Some examples are without any definite patch of this sort; some have it quite obvious, either buffy or of a dull grayish color, but not sharply defined at its distal border and not reaching the shaft of the inner web on which it is situated; in rare cases it matches the condition in *maculata*. The pale tips of the outer three or four pairs of rectrices average a little smaller than those of *maculata* and usually show more buffy coloration. The average color of the upper parts is darker green, less bronzy, than in *maculata*, and the under parts are more strongly buffy.

Birds from eastern Ecuador I find approach this pattern more closely than they do *maculata*. The back is dark green, the basal patch on the outer rectrices is frequently inconspicuous and seldom like that of *maculata*, and the pale tips of the feathers are relatively small.

A greater problem appears in northern Perú. Here *maculata* would be able to cross the subtropical pass to the Huancabamba side of the Western Andes without leaving its zonal affiliation, and, indeed, a specimen from Tabaconas has been referred to that form (Bangs and Noble, 1918, Auk, vol. 35, p. 451). My specimens from Chaupe, however, are not *maculata* but *melanogenys*, and the two localities are not far apart. In addition, examples from the Central Andes, across the Marañón to the eastward, are

also *melanogenys*. It appears probable, therefore, that *melanogenys* occupies the eastern side of the Western Andes and *maculata* the western side in Perú as in Ecuador.

Birds from central Perú cannot be distinguished from the north-Peruvian specimens of *melanogenys*, and even the three available skins from the Urubamba Valley must belong to the same subspecies. One of the latter has the gular spots a little stronger than usual and with a suggestion of glitter in their green color, but the other two can be matched with Colombian specimens. The range of *melanogenys*, therefore, appears to extend down the eastern side of the Andean chain from the Mérida region of Venezuela to the Urubamba Valley in southern Perú.

The Urubamba birds in hand were assigned by Chapman (1921, Bull. U. S. Natl. Mus., no. 117, p. 68) to "*chlorospila*" (which I believe is inseparable from *inornata*, next to be discussed), and it is possible that a longer series from the Urubamba might show some such affinity, but I am unable to agree to this association on the evidence at hand. None of the three specimens shows any blue on the throat, nor, apparently, did a specimen from Idma recorded by Berlepsch and Stolzmann (1906, Ornith., vol. 13, p. 96) as *melanogenys*.

Records that appear to belong to *melanogenys*, therefore, are from Tabaconas, Tambillo, Cutervo, Tamiapampa, Garita del Sol, and some of the localities from which material is here recorded.

***Adelomyia melanogenys inornata* (Gould)**

Trochilus (—?) *inornata* GOULD, 1840, Proc. Zool. Soc. London, pt. 14, p. 89—Bolivia; ♂ in British Mus. from "?Sandillani" said to be "Probably a type."

Adelomyia chlorospila GOULD, 1872, Ann. Mag. Nat. Hist., ser. 4, vol. 10, p. 452—San Antonio, Paucartambo, Perú; ♂♂ cotypes in British Mus.

Sixteen Bolivian specimens, including one presented to Elliot by Gould and possibly a cotype of *inornata*, agree in the possession of blue-tipped feathers on the throat. Seventeen skins from south-eastern Perú, east of the Andes, are quite variable in this respect, particularly those from farthest west. Of nine examples from the Río Inambari, one immature female has no blue on the throat, but the other eight agree rather exactly with the Bolivian series. Eight other specimens from Oconeque, Huaisampillo, and Guadalupe (virtual topotypes of "*chlorospila*") are far from uniform. Two males are indistinguishable from *inornata*; one probable female has the blue color of the throat less well developed;

another male has the gular spotting somewhat broader than in *melanogenys*, not so broad as in typical *inornata* and not blue but with a trace of glitter in the green color that is not present in *melanogenys*. I suspect that this example shows the characters on which Gould based his "*chlorospila*." Two other specimens show a feeble amount of this glitter, and two more are indistinguishable from *melanogenys* in respect to the color of the throat.

It may be noted that the blue color of the throat in some of the Bolivian specimens has a definite greenish tone, at least on some of the feathers. It may be due to incomplete development of the feathers in question or may be simple individual variation.

Another character of *inornata* appears in these southeast-Peruvian birds. The tips of the outer three or four rectrices in the Río Inambari birds are as broad and as deeply colored as in the Bolivian series. The examples from the three more western localities are not quite uniform. In two specimens the tips are as broad as in the Inambari birds but not so deeply colored; in the other six examples the tips are deeply colored but as narrow as in the average of *melanogenys*.

The high variability of these eight specimens from near the type locality of "*chlorospila*" indicates a population too unstable to warrant its subspecific distinction. The question remains, of course, as to which of the adjacent subspecies should contain it as a synonymous group. I believe the association with *inornata* is indicated both on geographic and taxonomic grounds and have so listed the material at hand. Except for San Antonio, the type locality of "*chlorospila*," all localities of record in Perú that are assignable to *inornata* are included in the places from which material has been examined in the present study.

SPECIMENS EXAMINED

A. m. aeneosticta.—

VENEZUELA:

(Cumbre de Valencia, Galipán, Colonia Tovar, near Junquito, and Mt. Bucarito), 5 ♂, 5 ♀.

A. m. melanogenys.—

VENEZUELA:

(Mérida, Culata, Montañas Sierra, Escorial, Conejos, and Tambor), 4 ♂, 3 [♂], 2 ♀, 2 [♀], 2 "♂" [= ♀], 1 (?).

COLOMBIA:

"Bogotá"-skins, 23 [♂], 19 [♀];

(Quitame, Anolaima, Guaduas, Fusagasugá, and "S. of Tolima"), 2 ♂, 1 [♂], 2 ♀, 2 [♀].

ECUADOR:

(Baeza, above Baeza, lower Sumaco, upper Sumaco, Río Pastaza ["5-7000 feet"], Oyacachi [below Chaco], Guayaba [Río Zamora], and Sabanilla), 20 ♂, 16 ♀.

PERÚ:

Chaupe, 2 ♀, 1 (?);
 La Lejía, 2 ♀;
 Leimebamba, 5 ♂;
 Chachapoyas, 1 ♀;
 Chilpes, 2 ♂, 1 (?);
 Utcuyacu, 1 ♀;
 Idma, 1 ♂;
 San Miguel, 1 ♀, 1 (?).

A. m. cervina.—

COLOMBIA:

(Antioquia, San Antonio, Cauca Valley, El Roble, Almaguer, Miraflores, Santa Elena, Salento, Río Toché, and Cerro Munchique), 5 ♂, 3 [?♂], 7 ♀, 3 [?♀], 3 "♀" [?♂], 4 (?).

"ECUADOR": 1 (?).

A. m. maculata.—

ECUADOR:

(El Chiral, Zaruma, Guala, San Bartolo, Celica, Salvias, "Loja to Santa Rosa and Guayaquil," "Quito," and "Ecuador"), 12 ♂, 3 [?♂], 8 ♀, 4 (?).

PERÚ:

Seques, 2 ♂, 2 ♀;
 Chugur, 1 ♀.

A. m. inornata.—

PERÚ:

Oconeque, 1 ♂, 1 ♀, 1 [?♀];
 Huaisampillo, 3 ♂, 1 ♀;
 Guadalupe [Río Tono], 1 ♀;
 La Oroya, Inambari, 1 ♂;
 Santo Domingo, 1 ♂, 3 ♀;
 Río Inambari, 2 ♀;
 Inca Mine, 1 ♂, 1 "♂" [?♀].

BOLIVIA:

(Chairo, Ticunguaya, Nequejahuira, Yungas, Cocapata, Roquefalta, Locotal, Incachaca, and Yungas, Pr. Cochabamba), 4 ♂, 1 [?♂], 4 ♀, 3 (?).

***Coeligena coeligena obscura* (Berlepsch and Stolzmann)**

Lampropygia columbiana obscura BERLEPSCH AND STOLZMANN, 1902, Proc. Zool. Soc. London, pt. 2, p. 23—Vitoc, Garita del Sol, Perú; ♂; Warsaw Mus.

Birds from Perú and Ecuador cannot well be assigned either to *boliviana* or to *columbiana* and are better kept as a separate subspecies. Occasional specimens are light enough in coloration to agree with the darker examples of *columbiana*, and in southeastern

Perú there is a trend toward the still darker *boliviana* without quite reaching its extreme degree of obscurity. The subspecies is undoubtedly intermediate in all its characters, but it occupies a range greater than that of the other two forms in question combined and is relatively consistent.

A curious problem arises in southern Colombia. DeSchauensee (1949, *Caldasia*, vol. 5, p. 564) referred specimens from La Candela, at the head of the Río Magdalena, to *obscura*. The specimens in question, which he kindly lent for examination, are undoubtedly darker than any *columbiana* I have seen and may be referred to *obscura* without hesitation. On the other hand, two other examples at hand from Andalucia, a few miles north of La Candela, are equally clear *columbiana*. With only four examples on which to base conclusions, it is impossible to say whether the bulk of the population in each of the two localities properly represents one or the other subspecies; the geographical dividing line may well come somewhere in this general area where intergradation presumably takes place. For the present, therefore, I can see no objection to calling the Andalucia birds *columbiana* and the La Candela specimens *obscura*, at least until adequate series are available to demonstrate a different arrangement.

A somewhat similar situation exists on the eastern side of the Central Andes of Colombia. Chapman (1917, *Bull. Amer. Mus. Nat. Hist.*, vol. 36, p. 298) referred specimens from El Edén to *columbiana* and others from Río Toché to *ferruginea*. DeSchauensee (*loc. cit.*) placed both localities in the range of *columbiana*. One specimen from Río Toché kindly lent by Mr. deSchauensee, shows none of the rufescent coloration of *ferruginea*, but it is an abnormally light-colored bird, even for *columbiana*, and has the under tail-coverts margined with ochraceous instead of rufous of a deeper tone, indicating that it may lack similar coloration elsewhere. In addition, it is not fully adult.

On the other hand, three adult birds at hand from the same locality are certainly *ferruginea*, as claimed by Chapman, and I believe the El Edén specimens also are closer to that form than to *columbiana*.

A character of the females that I have not seen mentioned but that is useful here, as it is with various other species of hummingbirds, is the relative brevity of fork in the tail. The wing and tail are shorter than in the male sex, but in addition the median rectrices are usually only 7 or 8 mm., rarely 10, shorter than the ex-

ternal feathers, while in the males the difference is 9 to 16 mm. The difference in the tails of the two sexes is quite obvious on simple inspection, without the necessity of actual measurement.

Peruvian records of *obscura* are from Tambillo, Palto, Vitoc (Garita del Sol), Soriano, and Paltaypampa.

SPECIMENS EXAMINED

C. c. coeligena.—

VENEZUELA:

(Cumbre de Valencia, Mt. Bucarito, Caripé, Caracas, and "Venezuela"),
2 ♂, 1 "♂" [= ♀], 2 ♀, 6 [♂], 3 [♀].

C. c. columbiana.—

COLOMBIA:

(Andalucía, Fusagasugá, Anolaima, and "Bogotá"), 2 ♂, 2 ♀, 4 [♂], 2 [♀];
Las Ventanas, Santander, 1 ♂¹;
Palmira, west of Cúcuta, 1 ♀²;
"Río Napo" (loc. err.), 1 ♀.

C. c. ferruginea.—

COLOMBIA:

San Antonio, 4 ♂ (including type), 1 ♀, 1 [♀];
(Cerro Munchique, Río Toché, Salento, Miraflores, Las Cruces, El Eden,
and Río Aguacatal), 7 ♂, 2 ♀, 2 [♂], 5 [♀];
? Toché, Tolima, 1 ♀¹.

NO LOCALITY: 1 [♀].

C. c. obscura.—

COLOMBIA:

La Candela, 2 ♂¹.

ECUADOR:

(Above Baeza, lower Sumaco, Puente del Río Quijos, Río Oyacachi below
Chaco, and "Ecuador"), 19 ♂, 2 ♀, 1 [♂], 1 [♀].

PERÚ:

Chaupe, 1 ♂, 2 ♀;
Uchco, 1 ♂, 1 ♀;
Chilpes, 2 ♂, 1 ♀;
Utcuyacu, 1 ♂;
Cushi Libertad, 1 ♀;
Idma, 1 ♂, 1 ♀;
Río Inambari, 1 ♂;
below Limbani, 2 ♀.

C. c. boliviana.—

BOLIVIA:

Locotal, 1 ♂, 2 ♀;
Bellavista, 2 (?).

¹ Specimens in Academy of Natural Sciences of Philadelphia.

² Specimen in Cúcuta Museum, Colombia.

***Coeligena violifer dichroua* (Taczanowski)**

Helianthea dichroua TACZANOWSKI, 1874, Proc. Zool. Soc. London, p. 138—Maraynioc, Perú; ♂; Warsaw Mus.

While northern Perú has been included in the cited range of *dichroua* by various authors, there appear to have been no exact localities available. The material at hand includes, in addition to specimens labeled "N. Peru," four specimens from San Pedro, south of Chachapoyas, which serve to establish the north-Peruvian range.

I can find no valid distinctions in specimens from northern and central localities. There is a tendency for the more northern males to have the dark tips of the outer rectrices a little longer, especially on the outer webs where a truncate extension occurs, but it is not constant, and one of the central Peruvian specimens is fully as marked in this particular as the northern ones.

Records, other than those from localities represented in the collection at hand, are from Paltaypampa and Vitoc, between Pariayacu and Chilpes.

***Coeligena violifer osculans* (Gould)**

Helianthea osculans GOULD, 1871, Proc. Zool. Soc. London, p. 503—"Ecachupata and Huasampilla" [= Cachupata and Huaisampillo], Perú; I suggest Cachupata as restricted type locality; cotypes in British Mus.

This form, in addition to other characters intermediate between *dichroua* and the Bolivian *violifer*, shows both extremes of coloration in the gular spot. Some examples have the bluer hue of *dichroua* and others the more lilaceous hue of *violifer*, without distinction of locality. Two males lack the bright frontal spot, while another male with this spot has the crown extensively blackish as in *violifer*. The form is thus somewhat variable, but is distinct enough from the other conspecifics to be quite recognizable.

Additional records are from Carabaya and Huaisampillo.

SPECIMENS EXAMINED

C. v. dichroua.—

PERU:

- San Pedro, 4 ♂, 1 ♀;
- "N. Peru," 2 [♂], 1 [♀];
- mountains near Huánuco, 1 ♂¹;
- mountains near Panao, 1 ♂¹;

¹ Specimens in Chicago Natural History Museum.

Pariayacu, 1 ♂ (paratype);
Maraynioc, 4 ♂, 1 [? ♀], 1 ♀.

C. v. osculans.—

PERÚ:

Santa Rita, Urubamba, 1 ♂;
Limbani, 1 ♂, 1 ♀, 1 ♂¹, 1 ♀¹;
Cachupata, 2 ♂, 1 ♀;
Marcapata, 3 [♂], 1 [?♂ juv.].

C. v. violifer.—

BOLIVIA:

Unduavi, 2 ♂;
Cillutincara, 3 ♂;
"Bolivia," 1 ♂, 1 [♂].

Coeligena iris iris (Gould)

Diphlogaena Iris GOULD, "1853" [July 25, 1854], Proc. Zool. Soc. London, pt. 21, p. 61—eastern slope of the Andes = "Cordilera Solaio," Prov. Huancabamba [Perú]; ♂♂, ♀ cotypes in British Mus.

Diphlogaena iris buckleyi BERLEPSCH, 1897 (July), Ibis, ser. 5, vol. 5, p. 295—"Ecuador (eastern side of the Andes)"; I suggest Loja, Ecuador, as type locality; Berlepsch Coll., Frankfurt Mus.

The fixation of type localities for the names cited above presents some difficulties. Gould's *iris* was described from specimens secured by Warszewicz whose localities are sometimes unreliable, as witness the case of *Amazilia leucophoea* Reichenbach, discussed in an earlier paper (1950, Amer. Mus. Novitates, no. 1475, p. 23). In any case, Gould originally cited no definite locality other than "Eastern slope of the Andes," but in 1861 (Introduction to the Trochilidae, p. 133) he gives a curiously mixed record of locality: "Andes of Bolivia, between Sorata and Illinani [*sic*]. The locality given me by M. Warszewicz is the province of Huancabamba au Cordilera Salaio, 9000 feet." The Province of Huancabamba is in northern Perú, Department of Piura, and there, on the eastern side of the Western Andes, is a place called Saulaca that may be the locality above which Warszewicz secured his bird. Certainly the Bolivian interpretation is untenable, since the entire species is quite restricted in range and does not even reach central Perú as far as authentic records indicate. Furthermore, Saulaca, or the heights above it, are quite probably occupied by *C. iris iris* which I have from the top of the divide at El Tambo, a little to the northward. I believe, therefore, that Saulaca may be accepted as the restricted type locality of *iris*.

¹ Specimens in Chicago Natural History Museum.

Berlepsch described his "*buckleyi*" from a specimen or specimens forwarded by Buckley from Ecuador, one of which is now before me. Unfortunately no definite locality was marked, nor would it have been wholly acceptable if it had been since Buckley's material has been proved to be quite unreliable as to this detail. Examples of different subspecies of the same species are sometimes labeled as having come from the same locality, forms found only on the western side of the Andes sometimes show a locality from the eastern side, and the like. Buckley employed native collectors in part, and it is impossible to ascertain where they secured their specimens. Consequently I have suggested a restricted type locality for "*buckleyi*," without evidence other than that the type could have been taken at that place.

Berlepsch based his "*buckleyi*" on differences from what he considered true *iris*—specimens from the Chachapoyas region of northern Perú, which belong to a different subspecies, *fulgidiceps*. The distinctions of *iris* from *fulgidiceps* are those he postulates for "*buckleyi*" in comparison with "*iris*"! Two of his given characters, however, are only individual variations of no significance: the lack of green margins on the tertials and a mixture of a greenish tint in the amethystine gular spot. The valid characters are mentioned in detail in the discussion of *fulgidiceps*.

Other than the original locality of the type specimen, which I take to have been above Saulaca, there are no Peruvian records of certain assignment to typical *iris* except those from El Tambo and Palambla from which the material in question is listed below. The larger part of the range of this form is in southern Ecuador, presumably on both eastern and western slopes of the Western Andes.

This species is notable for the differentiation into an unusual number of distinct subspecies within a relatively limited area of specific range. The entire species is confined to central and southern Ecuador and northern Perú, within which region six recognizable subspecies exist. Four of these are confined to Perú, one is found in Perú and Ecuador, and one is limited to Ecuador.

***Coeligena iris aurora* (Gould)**

Helianthea Aurora GOULD, "1853" [July 25, 1854], Proc. Zool. Soc. London, pt. 21, p. 61—eastern slope of the Andes; I suggest Cutervo, Perú; cotypes in British Mus.

Coeligena Warszewizii REICHENBACH, 1854 (March or later), Jour. f. Ornith., vol. 1, Beilage zu Extraheft, p. 23—"Nord-Peru"; I suggest Cutervo, Perú; type or cotypes formerly in the Dresden Mus.

There is a problem in respect to the priority of the names given by Gould and Reichenbach to this well-marked form, due to the uncertainty of the date of publication of Reichenbach's paper. An unsatisfactory clue exists in the citation by Reichenbach (*tom. cit.*, p. 9) of "Hypochrysis Aurora (Tr... Gould 1853?)..." which indicates Reichenbach's awareness of Gould's account, though possibly only by hearsay following Gould's presentation of his paper to the Zoological Society on April 12, 1853, 15 months before its actual publication. Gould (1861, Introduction to the Trochilidae, p. 134) claimed priority on the basis of the date of this presentation, but such claim has no nomenclatural standing. In addition, however, Bonaparte (1854, Rev. et Mag. Zool., vol. 6, p. 251) cites Gould's *aurora* but not Reichenbach's name. Coues accepts the date of Reichenbach's paper as March, 1854, but at the same time credits Gould's account with an 1853 date, thus leaving the matter still debatable.

Since there is no conclusive evidence I can find to justify a reversal of the existing nomenclature, I accept *aurora* as the preferred name for this subspecies.

Aurora, as have several other forms of the species, has a remarkably restricted range, being apparently confined to the highlands bounded by the loop of the Chota, Llaucan, Marañón, and Chamaya rivers. Records are from Cutervo, Tambillo, Chira, and between "Shanyn" (? = Chamaya) and Tambillo.

Gould gave no sex for his type or cotypes, although he recorded a suspicion that *aurora* represented the female plumage of *iris*. His plate 248 in his monograph shows only the female plumage, recognizable as such by the short-forked tail, although, of course, it is not that of female *iris iris*. Nevertheless, Salvin (1892, Catalogue of birds in the British Museum, vol. 16, p. 123) lists three specimens from the Gould collection as "Types" (i.e., cotypes) of the form, and gives the sex of all three as males, which would appear to be incorrect. The locality given for these birds ("Between Illimani and Sorata, Bolivia") is erroneous for the same reason noted above in the discussion of *iris iris* for the ostensible type locality of that form; the bird does not occur in Bolivia. Gould (1861, Introduction to the Trochilidae, p. 134) makes a confusing statement of range as "Peru; locality the same

as *D[iphlogaena] Iris*," whereas, as I have noted earlier, he gave the range of *iris* as in Bolivia! Nevertheless, this only adds weight to the evidence concerning the unreliability of data supplied by Warszewicz who collected the cotypes of both forms. The two subspecies do not occur together, as far as any reliable data show, although both are Peruvian in origin. The cotypes of *aurora* certainly must have come from the general Cutervo region, since the bird is known from no other area, and I have suggested Cutervo as the restricted type locality.

***Coeligena iris eva* (Salvin)**

Diphlogaena eva SALVIN, 1897 (Feb. 27), Bull. Brit. Ornith. Club, vol. 6, p. xxx—Succha, Perú; ?type or cotypes in British Mus.

In respect to the extent of green on the body plumage, *eva*, the most southern form of the species, is the nearest approach to *hesperus*, the most northern, while *aurora*, the subspecies with the least green, occupies part of the intervening range, *iris* the remainder.

The record of *eva* from Chitapuara or Chitahuara, Province of Otusco, Perú (Simon, 1921, Histoire naturelle des Trochilidae, p. 365) requires confirmation. I am unable to find the exact locality on any map, but the Province of Otusco is on the western side of the Western Andes, while the other records are all from the eastern side of this cordillera. These localities of record all appear in the list of specimens examined.

***Coeligena iris fulgidiceps* (Simon)**

D[iphlogaena] Iris fulgidiceps SIMON, 1921, Histoire naturelle des Trochilidae, pp. 174, 364—Leimabamba and Livanto [= Leimebamba and Levanto], Province of Cochabamba, Perú; I suggest Leimebamba as restricted type locality; cotypes in Berlioz collection, Paris.

D[iphlogaena] Iris hypocrita SIMON, *loc. cit.* (in part)—Chachapoyas and Tamiapampa, Perú; type from Chachapoyas in Berlioz collection, Paris.

The birds from the limited area of the Utcubamba Valley are quite recognizably distinct from *iris iris* to which they bear the closest resemblance. The back of the head and neck and most of the anterior part of the mantle of the males are quite blackish in certain lights and weakly, if at all, greenish in others—not so strongly green as in *iris*. Occasionally there is obvious coppery color on the back of the head, and this is even less commonly quite pronounced. The cap is more fiery red in some lights; the blue

occipital spot is a little more lilaceous; the breast is darker green; the castaneous parts of the body are lighter in tone. Present in some *iris* but more strongly developed in *fulgidiceps* is a castaneous "notch" in the lower border of the green breast. The feathers in the midline, at least in the lower portion of the breast, are either broadly rufous at the tip or subterminally rufous, with a narrow green margin not sufficiently broad to conceal the chestnut color. The most strongly marked examples show a rufous stripe nearly reaching the amethystine gular spot which, in turn, is usually weak.

As noted in the discussion of *iris*, Berlepsch inadvertently and ably characterized this form when he described his proposed "*buckleyi*" from Ecuador. It remained for Simon to name the population. In doing so, however, he attempted to separate another subspecies from the same region under the name *hypocrita*, which the material at hand indicates is no more than an extreme variant of *fulgidiceps*. It differs from the more normal individuals by the greater development of the coppery color on the back of the head, neck, and mantle. Three specimens from Leimebamba, one of the original localities of *fulgidiceps*, are the most strongly marked "*hypocrita*" individuals of the series at hand, although I suspect that the male is not fully adult. Mr. Jacques Berlioz, to whom I am greatly indebted for the information concerning Simon's specimens of these two concepts, writes me that he has long had similar doubts concerning the distinctness of the two supposed forms and a suspicion that individual variation was a factor in the case.

Taczanowski (1884, *Ornithologie du Pérou*, vol. 1, p. 386) comments on a male and female from Nancho in the Raimondi collection (in Lima, Perú) among whose peculiarities in distinction from Chachapoyas and Tamiapampa birds (which he identified as *iris*) was a strong development of coppery color on the nape, hind neck, and mantle. Doubtless on account of this character, Simon, who is unlikely to have examined the birds in question, included Nancho in the localities he gave for "*hypocrita*." Nancho is far from the Utcubamba Valley, and *aurora* and *eva* are interposed, making the reference of the Nancho examples to "*hypocrita*" quite unlikely, even if there were no more substantial evidence available. Fortunately I have a small series of birds from the general Nancho region to establish the identity of that population, as is discussed in the following account.

Other than the localities from which material has been examined, records assignable to *fulgidiceps* are from Chachapoyas, Tamiapampa, Levanto, and Molinopampa, all in the Utcubamba Valley.

Since the plumage represented by *fulgidiceps* appears to be the normal adult plumage of the Utcubamba Valley population and that of "*hypocrita*" a variation, possibly due to immaturity, I have selected *fulgidiceps* as the preferable name.

***Coeligena iris flagrans*, new subspecies**

TYPE: From Chugur, Department of Cajamarca, Perú; altitude 9000 feet. No. 235792, American Museum of Natural History. Adult male collected April 12, 1926, by Harry Watkins; original no. 10216.

DIAGNOSIS: Similar to *C. iris iris* of southern Ecuador and northwestern Perú (Department of Piura) but with the hind neck and back markedly coppery, less blackish on the hind neck and less greenish on the mantle; throat and breast lighter green, about as in *C. i. eva* of the Cajabamba-Cajamarca region. Differs from *eva* by having less strongly coppery upper parts, more extensive and darker rufous uropygial area, less extensive green pectoral region, less metallic red on the crown, and less strongly developed greenish tips on the rectrices. Differs from *fulgidiceps* by having paler green breast, without the median "notch"; deeper rufous belly; greener cap; more coppery hind neck and mantle, less noticeably blackish.

RANGE: Subtropical Zone of northwestern Perú in the Department of Cajamarca, on the western side of the Western Andes.

DESCRIPTION OF TYPE: Top of the head glittering Dark Viridian Green, changing to golden green and, at the divided posterior end, to Grenadine Red in certain positions of the light; middle of occiput Smalt Blue in a triangular patch; the same blue color is continued medially forward as a narrow line that is concealed in the normal position of the feathers; hind neck blackish overlaid with Claret Brown; mantle a little bronzy, tending toward Madder Brown; rump and upper tail-coverts light Auburn. Chin and throat glittering green, lighter than the crown, approaching Peacock Green; in the center of the lower border a few feathers Mauve; breast duller in most lights, near Roman Green; belly, flanks, and under tail-coverts Auburn. Primaries brown, with purplish bronzy reflections on most of exposed portions of

closed wing; outer margin of outermost feather rufescent; remainder with rufescent shaft marking, increasing in prominence toward the inner part of the wing and occupying most of the feather on the inner primaries except for a narrow dark outer margin and broader dark tip; secondaries largely light Auburn, tipped with dusky; tertials similar, with dark tip obsolete on innermost feathers; upper wing-coverts much like the mantle but with traces of light Auburn on the outer webs of most of them; under wing-coverts Auburn. Tail light Auburn, with narrow terminal or latero-terminal margins dusky green. Wing, 82 mm.; tail, 51; exposed culmen, 29.

REMARKS: Females share the coppery dorsal color of the males, although it is of a lighter hue, being, however, darker than in the females of the allied *eva*. The top of the head is about the same as in females of *fulgidiceps*.

There is no doubt that Taczanowski's specimens from Nancho (mentioned in the discussion of *fulgidiceps*) belonged to this form. Nancho is but a few miles from Taulis and Seques, from which localities part of my material originated, and in the same general sector of the Subtropical Zone, as is Chugur. Taczanowski emphasized the coppery color of the hind neck and mantle in the Nancho birds, which is the principal, though not the only, character of *flagrans* in distinction from *fulgidiceps* with which Taczanowski compared the Nancho birds, although *fulgidiceps* had not then been recognized as distinct from *iris*.

Since individual variants of *fulgidiceps* (such as presumably formed the basis of "*hypocrita*") suggest the characters of *flagrans*, it may be useful to point out the distinctions observed in the examples at hand. The male of *fulgidiceps* from Leimebamba has the hind neck and mantle about as coppery as have the males of *flagrans*, but the cap is more strongly red, the throat and breast are deeper green, the feathers in the center of the breast have pronounced rufous subterminal areas, the lower under parts are lighter rufous than in the other males of *fulgidiceps*, and there are rufous margins on some of the subocular feathers, suggesting that immaturity may be a factor in some of the characters noted. Two females from Leimebamba have the hind neck and mantle rather exactly the same as shown by the male (more coppery than in the other males of *fulgidiceps* but more obscure than in the females of *flagrans*). Below, the green of the throat and breast is deeper than in females of *flagrans*, and the subterminal parts of

the feathers of the throat are more strongly buffy, as they are in the females of *fulgidiceps* from San Pedro, one of which agrees better with the Leimebamba females than with the other from San Pedro.

The bills of *flagrans* appear to average longer than those of *fulgidiceps*, but there is some overlap. Males of *flagrans* show 28 to 29 mm.; those of *fulgidiceps*, 24 to 28; females of *flagrans*, 30.5, 34; those of *fulgidiceps*, 27.5 to 28.5. *Flagrans* in size of bill thus approaches *eva* (males, 30.5–31.5; females, 34–35).

The concealed blue stripe down the middle of the crown is variable in *flagrans* as it is in *fulgidiceps*. Some examples of both forms show little of it, but it is strongest in one specimen (not the type) of *flagrans*, where, however, it is weaker than in *hesperus*. It was given as one of the characters of "*hypocrita*."

The Nancho record is the only one assignable to *flagrans*.

SPECIMENS EXAMINED

C. i. hesperis.—

ECUADOR:

- Cuenca road, 1 ♂;
- Naranjal to Cuenca, 5 ♂, 3 ♀;
- Molletura, 1 ♂, 1 ♀;
- "W. Ecuador," 1 ♂;
- Ecuador, 1 ♀;
- "Bolivia" [errore], 1 ♂.

C. i. iris.—

ECUADOR:

- Zamora, 1 ♂;
- Salvias, 1 ♀;
- Loja, 1 (?);
- San Lucas to Loja, 4 [♂];
- Taraguacocha, 4 ♂;
- San Bartolo, 1 ♂;
- Ecuador, 1 [♂].

PERÚ:

- Palambla, 1 ♂;
- El Tambo, 3 ♂.

PERÚ OR ECUADOR: 1 ♂.

C. l. flagrans.—

PERÚ:

- Chugur, 1 ♂ (type), 2 ♀;
- Taulis, 2 ♂;
- Seques, 1 ♂.

C. i. aurora.—

PERÚ:

- Cutervo, 2 ♂.

C. i. fulgidiceps.—

PERÚ:

Leimebamba, 1 ♂, 2 ♀ ;

San Pedro, 4 ♂, 2 ♀ ;

La Lejia, 8 ♂.

C. i. eva.—

PERÚ:

Cajabamba, 1 ♂, 3 ♀ ;

Cajamarca, 1 ♂ ;

Succha, 1 ♂ ;

Perú, 1 ♂.

Coeligena torquata torquata* (Boissonneau)Ornismia torquata* BOISSONNEAU, 1840, Rev. Zool., p. 6—Bogotá, Colombia.

I have tentatively assigned a young male from Chaupe, Perú, to this form (1948, Auk, vol. 65, pp. 413, 415) on the basis of the proximity of the locality to Loja, Ecuador, where the subspecies was found to occur. Adults will be needed to establish the certainty of this identification.

***Coeligena torquata margaretae* Zimmer**

Coeligena torquata margaretae ZIMMER, 1948 (July 27), Auk, vol. 65, p. 411—La Lejia, north of Chachapoyas, Perú; ♂; Amer. Mus. Nat. Hist.

I have nothing further to add to the discussion in the original account where records are cited from Huambo, Compan, Ray-Urmana, Sorritor, and Uchco, and specimens are recorded from La Lejia and Utcubamba.

***Coeligena torquata insectivora* (Tschudi)**

Tr[ochilus] insectivorus TSCHUDI, 1844 (May), Arch. Naturgesch., 10th year, vol. 1, p. 298—Perú [= between Huari and Chagacancha, Junín, Tschudi, 1846, Fauna Peruana, Aves, p. 250]; ♀ or ♂ imm.; Neuchâtel Mus.

The characters of this form have been noted in the original account of *margaretae*. Specimens were recorded (p. 416) from Chilpes, Culumachay, and Tambo de Aza. Additional records are from Maraynioc, Vitoc, Pumamarca, Puyas-yacu ["Tuyas-yacu"], and between Huari and Chagacancha.

***Coeligena torquata omissa* Zimmer**

Coeligena torquata omissa ZIMMER, 1948 (July 27), Auk, 65, p. 413—Huaisampillo, Perú; ♂; Amer. Mus. Nat. Hist.

The original account contains the details concerning this sub-

species. Specimens are recorded from Huaisampillo, Limbani, below Limbani, Oconeque, Urubamba Cañon, Santa Rita, and San Miguel. Earlier records assignable to *omissa* are from Cusco and Torontoy.

Ensifera ensifera (Boissonneau)

Ornismya ensifera BOISSONNEAU, 1839, Rev. Zool., p. 354—Bogotá, Colombia.

Trochilus derbianus FRASER, 1840, Proc. Zool. Soc. London, pt. 8, p. 16—Bogotá.

D[ocimastes] *Schliephackei* HEINE, 1863, Jour. f. Ornith., 11th year, p. 215—Riobamba, Ecuador.

?*Docimastes ensiferus caerulescens* LOWE, 1939, Ibis, ser. 3, vol. 1, p. 73—locality unknown; ?South America.

I am unable to make any satisfactory subdivision of this species. The various names listed in the synonymy appear to have been based on mere variations that have no taxonomic value. I have seen no specimens that show the blue pectoral coloration of the supposed "*caerulescens*" but doubt that it occurs normally in any part of the entire population.

There is enormous variation in the length of bill, ranging from 67 to 97 mm. in the males and from 80.5 to 107 in the females. Curiously the Venezuelan and Ecuadorian birds show the longest measurement and the Colombian and Peruvian the smallest, a condition that I have noted in some other species. The longest bill among the males at hand is on a Mérida skin; the longest bill among the females is on an Ecuadorian bird. Venezuelan specimens have a higher average bill-length than the Ecuadorian examples, Peruvian birds are next, and the Colombian series lowest, although the Peruvian series, perhaps because of greater numbers of specimens, shows both upper and lower extremes beyond the dimensions of the Colombian birds.

The character thus varies in an irregular manner that does not offer any clear lines of demarcation, and I believe it best to keep *ensifera* intact as a variable but indivisible species.

Peruvian records not covered by the material examined are from Cutervo, Tamiapampa, "Montaña Ponero, Huanaco" (= Pano, Huánuco), Higos, Pariayacu, and Vitoc.

SPECIMENS EXAMINED

E. ensifera.—

VENEZUELA:

Mérida (Mérida, Culata, Escorial, and "Sierra"), 8 ♂, 3 ♀, 1 [♀].

COLOMBIA:

(Cerro Munchique, Páramo de Choachi, Laguneta, E. Roble, Almaguer),

1 ♂, 1 "♂" [= ♀], 1 [♂], 3 ♀;

"Bogotá," 3 ♂¹, 2 [♂]¹, 10 [♂], 7 [♀], 1 ♀¹, 1 [♀].¹

ECUADOR:

(Oyacachi, Papallacta, below Cuyuja, Pichincha, below Papallacta, Yanacocha, Taraguacocha, upper Sumaco, Gualea, Quito, and "Ecuador"),

11 ♂, 1 [♂], 9 ♀, 4 [♀].

PERÚ:

Leimebamba, 1 ♂, 1 ♀;

Chugur, 3 ♂, 1 ♀;

La Lejía, 2 ♂, 2 ♀;

San Pedro, 1 ♂;

Taulis, 3 ♂, 3 ♀;

mountains above Huánuco 10 ♂¹, 1 ♀¹;

Maraynioc, 2 ♂, 1 ♀;

Cachupata, 1 ♂, 1 ♀.

Oreotrochilus estella stolzmanni Salvin

Oreotrochilus stolzmanni SALVIN, 1895, Novitates Zool., vol. 2, p. 17—Huamachuco and near Cajamarca, Perú; ♂, ♀ cotypes in Amer. Mus. Nat. Hist., and ?British Mus.

There appears to be a gradual average reduction in length of bill in this form from the northern part of its range to the southern, but it is not certain that any taxonomic recognition should be accorded the smaller extreme. Males from the north (including topotypes) have the exposed culmen 18.5 to 20.5 mm. in length; three males from the Department of Pasco have it 16.5 to 19; and three from an intermediate locality have it 18 to 19. The wing similarly shows a length of 76 mm. in the north and a minimum of 70 in central Perú, while the tail shows 52 and 45, respectively. Thus, of 12 males, five are in the zone of overlap as regards the wing, 10 as regards the tail, and six as regards the bill. Unless larger series from the various areas show a greater segregation than this, recognition of any additional subspecies is impossible on the basis of size. No other characters have been noted.

No indication of a particular type specimen is given in the original account which was based on a male or males from Huamachuco and one or more specimens of both sexes from near Cajamarca. Nor is there indication of whether the specimens in question were all in the Rothschild collection or in part in the Salvin and Godman collection, now in the British Museum. The

¹ Specimens in Chicago Natural History Museum.

paper in which the description occurs covers material in both series. The Rothschild series is at hand and includes five males from Huamachuco and a male and a female from near Cajamarca. One of the Huamachuco males is marked as "Cotype," from which I judge that another specimen or other specimens similarly marked may be in the British Museum and that Huamachuco can be accepted as restricted type locality.

Records of *stolzmanni* are from Huamachuco, Cajamarca, Cutervo, Chota, and between Chota and San Gregorio.

Oreotrochilus estella estella D'Orbigny and Lafresnaye

T[rochilus] Estella D'ORBIGNY AND LAFRESNAYE, 1838, Mag. Zool., vol. 8, cl. 2, "Synopsis avium," p. 32—La Paz and Potosí, Bolivia; Paris Mus.

Trochilus Ceciliae LESSON, 1839, Rev. Zool., vol. 2, p. 43—loc. ign.; Bourcier Coll.

Oreotrochilus bolivianus BOUCARD, Humming Bird, vol. 3, p. 7 (in part, ♂); Bolivia; Lagonillas suggested by Berlioz and Rousseau-Deçelle (1933, Rev. Française d'Ornith., vol. 3, p. 344).

Although the original description cites La Paz and Potosí as localities for this form, Lafresnaye (1847, Voyage dans l'Amérique Méridionale, Oiseaux, p. 376), states that the only place the expedition in question obtained the bird was in the valley in which the town of La Paz was situated. La Paz may, therefore, be accepted as restricted type locality. Curiously, Chapman (1921, Bull. U. S. Natl. Mus., no. 117, p. 67) cites Mojos as the original locality, an error that I have not been able to trace to an earlier source.

I can find no distinctions among birds from Perú, Bolivia, Argentina, and Chile, although there is a certain amount of variation throughout. The males vary principally in the shape and pattern of the outer rectrices. Most of them have these feathers relatively broad, lightly curved, and with the basal half or more white and the terminal portion blackish brown. At the other extreme, examples have these outer feathers either a little narrower, more strongly incurved, or with the terminal dark area occupying all of the feather that is exposed beyond the under wing-coverts and with steely blue coloration. Two examples show traces of steel blue on a few of the rufescent feathers in the median abdominal stripe, although I have seen no example with this stripe extensively bluish. All these characters, however, are in the direction of *leucopleurus*, and I believe the latter form belongs in the *estella* group.

The most serious objection that exists to belief in such conspecific relationship lies in the fact that both *estella* and *leucopleurus* have been recorded from the Province of Tucumán, Argentina, but the records are from slightly different localities and so far the two birds have not been found at exactly the same place. *Estella* was recorded from Cerro Muñoz at 4000 meters and *leucopleurus* from Ancajuli at 1200 meters (Lillo, 1905, Rev. Letr. Cienc. Social., no. 3, p. 57). There are other records of *leucopleurus* from Tucumán, but none from Cerro Muñoz and none of *estella*.

The matter is somewhat further complicated by the occurrence of *leucopleurus* in southern Bolivia (specimens examined) where there is a tendency toward distinction from typical Chilean birds by reason of slightly longer wing and tail on an average. Chilean males at hand have the wing 66.5 to 69 mm. (average, 67.7); Bolivian: 67.5 to 71 (69.3), with only four of eight specimens beyond the Chilean maximum. The tail in Chilean specimens measures 44 to 49 (46.1); the Bolivian males: 46.5 to 51 (48.6), but only three of the Bolivian birds exceed the Chilean maximum. There is a tendency toward a narrower abdominal stripe in the Bolivian series, but I can find no constancy in this feature. Possibly the Bolivian birds are a little darker on the upper surface, particularly on the tail, but I believe the observable difference is due in large part to the fresher condition of the specimens in question. I believe, therefore, that subdivision of *leucopleurus* is inadvisable. I am indebted to Mr. James Bond of the Academy of Natural Sciences of Philadelphia for suggesting the possibility and lending the Bolivian material necessary for the study.

Inclusion of *leucopleurus* in the *estella* group is supported by the existence of intermediate birds in Bolivia that have been described as a separate form, *Oreotrochilus bolivianus* Boucard, Bolivia (Lagonillas suggested by Berlioz and Rousseau-Degele, 1933). Todd (1942, Ann. Carnegie Mus., vol. 24, p. 338) records a male of *estella* with a few steel blue feathers mixed in the chestnut belly stripe and two with this stripe wholly steel blue. He did not find certain characters in the tail as described for the type by Simon and Hellmayr (1908, Novitates Zool., vol. 15, p. 4), but these characters I observe in other examples of *estella* with the belly stripe normally chestnut; they are within the range of variations I have noted above.

Todd does not give the exact locality for the three birds mentioned, but all the material he lists of *estella* came from the prov-

inces of La Paz and Cochabamba, within the normally accepted range of that form. The birds (two males) listed by Berlioz and Rousseau-Deçelle as *bolivianus* (compared with the type) from Lagonillas also came from the range of *estella*.

I think, therefore, that "*bolivianus*" must be no more than a major variation of *estella* in the direction of *leucopleurus* and a strong argument for placing *leucopleurus* in the *estella* group.

I believe, furthermore, that the Ecuadorian members of the genus should be added to the conspecies of *estella*. It is true that the upper part of the head and the nape, as well as the anterior and lateral parts of the throat (in *jamesonii* the whole throat), are violaceous instead of green, although the top of the head is green in young birds, but the progression from *jamesonii* to *chimborazo* is that of acquisition of an extensive green area on the lower throat, a process that has been carried still farther in all the more southern forms together with the loss of the violaceous cap. The high mountain (Páramo Zone) habitat of these hummers excludes the possibility of continuous distribution throughout, and even the range of *jamesonii* is broken into "islands." Nevertheless, there are a few places between the range of *chimborazo* and that of *stolzmanni* where a population might exist that would show closer intermediacy between these two forms than is at present demonstrable, although exact intergradation is unlikely. Even without such intermediacy, I believe the relationship is best expressed by trinomials.

I am puzzled by four specimens collected by O. T. Baron and labeled "mountains near Cuenca to Chimborazo." Three of them are indeterminate subspecifically, being a female and two young males. The fourth bird is an adult male and is quite clearly the northernmost form, *jamesonii*. Hartert and Hartert (1894, *Novitates Zool.*, vol. 1, p. 58) recorded *jamesonii* from the locality cited on the basis of these specimens and even remarked that confirmation of the distribution had been obtained from F. C. Lehmann who claimed he had collected this bird in the same region. Nevertheless, I believe the record is inadmissible without further confirmation by actual specimens from south of Chimborazo.

The little-known *söderstromii* is represented in the material at hand by a single male from Quilatoa (or Quillatoa), the type locality. It is an exact intermediate between *jamesonii* and *chimborazo*, with only a slight trace of the green edges on the

lower throat that are so marked in *chimboraço*. The character is variable in *chimboraço*, both as to the width and exact hue of green and the extent of the patch, but although the difference is slight, I am unable to match the Quilatoa bird exactly in a good series of *chimboraço*, although two "Quito-skins" show a definite approach. More material from Quilatoa is highly desirable.

Oreotrochilus adela is specifically distinct from *estella*, and I am inclined to segregate *O. melanogaster* also for reasons that are discussed under that species. With these two exceptions, the other members of the genus appear to represent a single species.

Additional records of *estella* are from above Machu Picchu, Puno, Chihuata, and Pitumarca.

***Oreotrochilus melanogaster* Gould**

Oreotrochilus melanogaster GOULD, 1847, Proc. Zool. Soc. London, pt. 15, p. 10—no locality; I suggest Maraynioc, Department of Junín, Perú; cotypes in British Mus.

This interesting form occupies a range in central Perú that, in large part, is not occupied by any member of the *estella* group as far as records and material at hand indicate. That it is not completely isolated is indicated by eight specimens from Chipa, from which locality I have also a single specimen of *estella stolzmanni*, while other specimens of *stolzmanni* are from the same "nudo" at La Quinua, a little west of Chipa. Seasonal overlap is quite problematical, since the Chipa birds were taken in December and the La Quinua specimens in May. An example of *melanogaster* from Oroya, dated March 7, is marked as breeding, and a young bird nearly ready to fly is dated March 1. One of the Chipa specimens was taken on the same day, December 27, 1921, as the Chipa example of *stolzmanni*. Consequently, until more is known of the possible local movements of these birds, it seems best to keep them specifically distinct. There is in any case a sharp break in the pattern of coloration exhibited by the two species, both on the under parts of the males and the tails of both sexes, which shows no signs of intergradation in the material at hand, although the characters of *melanogaster* might be considered as a mere trend toward melanism in these areas. At any rate, the case may well await further evidence.

It is on the basis of the pattern of the tail that I have identified nearly all central Peruvian females as *melanogaster* in spite of the occurrence of *stolzmanni* in the same region. In *melanogaster*

females the outer few rectrices have dark bases, sometimes with a small whitish spot on the outer web of the outermost feather. Females of *stolzmanni* and the other forms of *estella* have a large, white, basal area concealed by the under tail-coverts. One female from central Perú shows this as clearly as do north-Peruvian specimens, in distinction from the Junín examples of *melanogaster*.

Other records of *melanogaster* are from Ingapirca, above Maraynioc and Condormay, Quebrada de Jachjas, Huancavelica, Yauli, Lachocc, and (sight record) below Talahuarra.

SPECIMENS EXAMINED

O. e. jamesonii.—

ECUADOR:

(Mt. Pichincha, west side of Cotopaxi, Antisana, "Gualea" [errore], Quito, and "Quito-skins"), 10 ♂, 27 [♂], 4 ♀, 5 [♀];
"mountains near Cuenca to Chimborazo" [?errore], 3 ♂, 1 ♀.

O. e. söderstromii.—

ECUADOR:

Quilotoa, 1 [♂].

O. e. chimborazo.—

ECUADOR:

Chimborazo and "Quito" [errore], 27 ♂, 1 [♂], 1 "♀" [=♂], 6 ♀, 3 [♀].

O. e. stolzmanni.—

PERÚ:

Huamachuco, 5 ♂ (including a cotype);
near Cajamarca, 1 ♂, 2 ♀;
Santa Clara, Department of Ancash, 1 ♂¹;
Yánac, 1 ♀¹;
Quirivilca, Department of La Libertad, 1 ♀¹;
Huánuco Viejo, 2 ♂², 1 ♀²;
mountains near Huánuco, 2 ♂²;
La Quinua, 2 ♂²;
Chipa, 1 ♂;
Rock Forest, 1 ♀¹.

O. e. estella.—

PERÚ:

Ttica-Ttica, Cuzco, 5 ♂, 1 ♀;
Tirapata, Carabaya, 1 ♂, 2 ♀;
Quispicanchis, Marcapata, 1 ♂²;
"Perú," 1 ♂, 1 ♀².

BOLIVIA:

(La Paz, Pongo, Malagá, Cocapata, Guaqui, and "Bolivia"), 9 ♂, 7 ♀.

¹ Specimens in Academy of Natural Sciences of Philadelphia.

² Specimens in Chicago Natural History Museum.

CHILE:

Putre, 3 ♂¹, 3 ♀¹.

ARGENTINA:

(No other locality), 1 [♂]¹, 1 ♀¹.

O. e. leucopleurus.—

BOLIVIA:

San Lorenzo, Tarija, 8 ♂², 1 ♀².

ARGENTINA:

(Mendoza, Tucumán, Puente del Inca, Cachí [Salta]), 3 ♂, 1 [♂], 1 “♀”
[=♂], 1 “♂” [=♀];

Colalao del Valle, 1 ♂².

CHILE:

(Río Blanco, Aconcagua, and “Chile” [or “Chili”]), 10 ♂, 5 ♀.

O. melanogaster.—

PERÚ:

Maraynioc, 1 ♂;

Chipa, 4 ♂, 4 ♀;

Oroya, 1 ♂, 4 ♀;

Cumbre de Oroya, 2 ♂², 1 ♀²;

La Galera, 1 ♂²;

Lake Patocancha, 1 ♂²;

Queta, 1 ♀;

“Perú,” 1 ♂;

Obrajillo, Canta, 1 ♀²;

Upamayo, Junín, 1 ♀².

No LOCALITY: 1 ♀.

O. adela.—

BOLIVIA:

Chuquisaca, 1 ♂, 1 ♀ (cotypes);

Pulque, 5 ♀;

Oploca, 2 ♂², 1 ♀²;

Finca Salo, 1 ♂², 2 ♀²;

Tiraque, 1 ♂², 1 ♀².

Topaza pyra (Gould)

Trochilus (Topaza) pyra GOULD, Proc. Zool. Soc. London, pt. 14, p. 85—Rio Negro, Brazil; cotypes in British Mus.

Three males, kindly lent by Mr. deSchauensee of the Academy of Natural Sciences of Philadelphia, are the only certain evidences of the occurrence of *pyra* in Perú, although there are other less conclusive data. The three males in question are from “Nina Quinde,” Río Corrientes. One of the specimens is further labeled “Ecuador” but, although I am unable to find “Nina Quinde” on a map, the Río Corrientes appears to be entirely within Peruvian boundaries.

¹ Specimens in Chicago Natural History Museum.

² Specimens in Academy of Natural Sciences of Philadelphia.

Another specimen, kindly lent by Mr. H. G. Deignan of the United States National Museum, is not so certain. Its label is marked "Coca, Río Napo, E. Ecuador, June, 1899," and the collectors were Goodfellow and Hamilton. I have had occasion in previous papers to comment on the unreliability of the Goodfellow and Hamilton localities as taken from the labels, a circumstance reputedly due to the fact that the labels were added by a dealer in London, not attached in the field by the collectors.

In the present case, there is other more substantial information. The hummingbirds of the Goodfellow and Hamilton collection were sent to Oberholser for study, and a report on them was published (1902, Proc. U.S. Natl. Mus., vol. 24, pp. 300-342) with various comments supplied by Goodfellow from his field notes. In the case of the *Topaza pyra* (the only example secured by the party), these notes state that the bird was shot at the mouth of the Río Curaray and that it was doubtful if the species occurred on the upper waters of the Napo (where the Río Coca is situated). The date of June is also wrong for the specimen since, according to Goodfellow's published itinerary (1901, Ibis, ser. 8, vol. 1, p. 309), the party remained on the Río Coca through July, and even in the first two weeks of August was still above the mouth of the Curaray, on the Río Tiputini. The June date, therefore, correctly belongs to the Río Coca material, but it appears certain that this *Topaza pyra* was not collected there but at the mouth of the Curaray, which is now a Peruvian locality.

A female from the "Napo River" is of uncertain assignment to one country rather than the other, since the Napo flows in part through both of them. A male labeled "Upper Amazon, Gardner" is probably Peruvian in origin, although I have no further information concerning it or the collector.

The "Upper Amazon" and the Curaray males are lighter in color than a bird of the same sex from the Rio Negro, Brazil, although it is equally ancient. That the difference is, nevertheless, due to some post-mortem alteration is indicated by the fresher Río Corrientes specimens which are as deeply colored as the Rio Negro example. Several recently collected specimens of both sexes, from southern Venezuela, kindly lent by Dr. W. H. Phelps of Caracas, rather exactly match the Rio Negro male and the "Napo River" female. One more female from the Río Uaupés, Colombia (opposite Tahuapunto), agrees well with the other specimens of the same sex except that the terminal half of the

outer web of the outer rectrices and the tip of the inner web are whitish instead of rufescent. It may be added that one of the Río Corrientes males has similar markings on the tail (and there is a trace of the same on the Río Negro male), although they are light rufescent, becoming whitish only at the tip. In both cases, it may be noted, this pale area on the outer web is less extensive basad than in the other females. It is possible that both these birds are in their first annual plumage, with the rectrices still retained from the juvenal dress. The male lacks the elongate submedian feathers, and the rectrices of the female are slender and acute.

SPECIMENS EXAMINED

T. pyra.—

VENEZUELA:

Sabana, Alto Río Asisa, Territorio Amazonas, 1 ♂¹, 2 ♀¹;

Caño Pimichín, Territorio Amazonas, 1 ♂¹.

COLOMBIA:

Opposite Tahuapunto, Río Uaupés, 1 ♀.

BRAZIL:

Río Negro, 1 ♂.

PERÚ:

Nina Quinde, Río Corrientes, 2 ♂², 1 "♀" [♂]²;

"Coca, Río Napo" [= mouth of Río Curaray], 1 ♂³;

"Upper Amazon," 1 ♂.

PERÚ OR ECUADOR:

Napo River, 1 ♀.

¹ Specimens in collection of W. H. Phelps, Caracas, Venezuela.

² Specimens in Academy of Natural Sciences of Philadelphia.

³ Specimen in the United States National Museum.

