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EDITED BY

LORD ROTHSCHILD, F.R.S., PH.D.,

DR. ERNST HARTERT, AND DR. K. JORDAN.

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CONTENTS OF VOLUME XXXII. (1925).

AVES.

	PAGES
1. Review of the Birds collected by Alcide D'Orbigny in South America. C. E. HELLMAYR :	
Part IV	1—30
Part V	175—194
Part VI	314—334
2. A Collection of Birds from New Ireland (Neu Mecklenburg). (Plate I.) ERNST HARTERT	115—136
3. A new form of Chukar Partridge. ERNST HARTERT.	137
4. Types of Birds in the Tring Museum. ERNST HARTERT :	
Part V	138—157
Part VI	259—276
5. Ueber die Indoaustralischen Glanzkuckucke (<i>Chalcites</i>). ERNST HARTERT and ERWIN STRESEMANN	158—163
6. Review of the Genus <i>Cacomantis</i> Mull. ERNST HARTERT	164—174
7. On a Fourth Collection of Birds made by Mr. George Forrest in North- Western Yunnan. LORD ROTHSCHILD	292—313

LEPIDOPTERA.

1. Geometrid Descriptions and Notes. LOUIS B. PROUT	31—69
2. The species usually referred to the Genus <i>Cigaritis</i> Boisd. (Lycaenidae). N. D. RILEY	70—95
3. Critical List of the collection of Algerian Lepidoptera of the late Captain N. J. E. HELL. LORD ROTHSCHILD	195—229
4. New Oriental Zygaenidae. KARL JORDAN	230—237
5. On <i>Delias belladonna</i> and allied species (Lep. Rhop.). KARL JORDAN	277—287
6. On some subspecies of African <i>Charaxes</i> . KARL JORDAN	288—289

COLEOPTERA

1. A new species of Anthribidae from Sumatra, collected by E. Jacobson. KARL JORDAN	238
2. Five new Indian Anthribidae KARL JORDAN.	239—241
3. Anthribidae from the Eastern Hemisphere. KARL JORDAN	242—257
4. Two new Indian Anthribidae received from the Forest Research Institute and College at Dehra Dun. KARL JORDAN	290—291

SIPHONAPTERA.

	PAGES
1. New Siphonaptera. KARL JORDAN	96—112
2. Siphonaptera collected by Rear-Admiral H. Lynes in Darfur in 1920 to 1922.	
KARL JORDAN	113

INDEX	335—350
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PLATE IN VOLUME XXXII.

PLATE I, FIG. 1. *Domicella albidinucha*, New Ireland. *Micropsitta mceeki* Rothsch. & Hart., Bull. B.O. Club, XXXIII, p. 107 (1914—Manus); cf. also Nov. Zool. 1914, p. 289.

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NOVITATES ZOOLOGICAE

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CONTENTS OF NO. I.

	PAGES
1. REVIEW OF THE BIRDS COLLECTED BY ALCIDE D'ORBIGNY IN SOUTH AMERICA (Continuation) C. E. Hellmayr . . .	1-30
2. GEOMETRID DESCRIPTIONS AND NOTES Louis B. Prout, F.E.S.	31-69
3. THE SPECIES USUALLY REFERRED TO THE GENUS <i>CIGARITIS</i> BOISD. [LEPIDOP- TERA : LYCAENIDAE] N. D. Riley . . .	70-95
4. NEW SIPHONAPTERA Dr. Karl Jordan . . .	96-112
5. SIPHONAPTERA COLLECTED BY REAR- ADMIRAL H. LYNES IN DARFUR IN 1920 TO 1922 Dr. Karl Jordan . . .	113

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APRIL 1925.

No. 1.

REVIEW OF THE BIRDS COLLECTED BY ALCIDE D'ORBIGNY IN SOUTH AMERICA. (CONTINUATION.)

By C. E. HELLMAYR.

PART IV (PARTS I AND II, NOV. ZOOLOG. VOL. XXVIII, PART III, VOL. XXX).

Ramphocelus atrosericeus = R. carbo atrosericeus Lafr. & Orb.

Ramphocelus atrosericeus Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 34 (1837—Yungas, Chiquitos, in Bolivia; descr. orig. ♂♀); d'Orbigny, *Voyage*, Ois., p. 280, pl. xxvi, fig. 1 (= ♂) (Chupé, prov. Yungas; Yuracarès, Guarayos, prov. Moxos et Chiquitos; descr. ♂ ad., ♂ juv., ♀).

No. 1, "♂" ad. (mounted): "236. par M. d'Orbigny, 1834. D. 227, de Yungas, Bolivie. Mâle, *R. atrosericeus* Lafr. & Orb. *Type*."

No. 2, "♂" ad. (skin): "236. d'Orbigny, 1834. D. 227. Guarayos. *Ramphocelus atrosericeus* d'Orb. Mâle."—Wing, 86 [worn]; tail [damaged]; bill $14\frac{1}{2}$ mm.

No. 3, juv. (skin): "236. d'Orbigny, 1834. D. 227. Yungas."—Wing, 73; bill 14 mm.

The Guarayos bird (No. 2) is in every respect identical with specimens from San Mateo (Yuracarès) and Songo (Yungas of La Paz) in the Munich Museum, the entire back, wings, tail, breast, and abdomen being deep velvety black, and shows no approach to *R. carbo connectens* Berl. & Stolz.,¹ which occurs in Southern Peru (Cosnipata, Huiro, Maranura, Chaquimayo, etc.).

No. 3 is in the uniform dull brownish-black juvenile plumage afterwards described as a distinct species under the name *R. aterrimus*.²

Embernagra platensis = $\left\{ \begin{array}{l} \text{Embernagra platensis platensis (Gm.).}^3 \\ \text{Embernagra platensis paraguayensis Chubb.}^4 \\ \text{Embernagra olivascens d'Orb.} \end{array} \right.$

Embernagra platensis (Gm.); L. & O., *Syn. Av.* i. p. 34 (Paraguay, ripis de la Plata); d'Orbigny, *Voy.*, Ois., p. 284 (Montevideo, Buenos Aires, Santa Fé, Entrerios, Corrientes, Patagonie).

Embernagra olivascens d'Orbigny, *Voy.*, Ois., p. 285 (betw. 1839 and 1847—Enquisivi (Sicasica); Palca (Ayupaya); Cochabamba; descr. orig.).

¹ *Rhamphocelus jacapa connectens* Berlepsch & Stolzmann, *Proc. Zool. Soc. Lond.* 1896, p. 344 (1896—La Merced, Chanchamayo, C. Peru).

² Lafresnaye, *Rev. Mag. Zool.* (2) i. p. 244 (1853—Bolivia).

³ *Emberiza platensis* Gmelin, *Syst. Nat.* 1, ii. p. 886 (1789—ex "L'Emberise à cinq couleurs," Buffon, *Hist. Nat. Ois.* iv. p. 364; Buenos Ayres, coll. Commerson).

⁴ *Ibis*, 1918, p. 5 (Sapucay, Paraguay).

No. 1, adult (skin): "No. 140. *Embernagra platensis* D. 33. d'Orbigny, février 1831. Patagonie."—Wing, 96; tail [lacking]; bill, 17 mm. = *E. p. platensis* (Gm.).

No. 2, adult (skin): "d'Orbigny, juillet 1829. No. 140." [No locality, but according to date from Corrientes.]—Wing, 92; tail, 92 [both extremely worn]; bill, 16 mm. = *E. p. paraguayensis* Chubb.

No. 3, adult (mounted): "*E. olivascens* D'Orb. Type. 249. d'Orbigny, 1834. D. 279, de Sicasica, Bolivie."—Wing, 102; tail, 110; bill, 17 mm.

No. 4, adult (mounted): "*E. olivascens* D'Orb. Type. No. 249. d'Orbigny, 1834. d'Ayupaya, Bolivie."—Wing, 97; tail, 107; bill, 17 mm.

In the *Synopsis Avium* Lafresnaye and d'Orbigny confounded two different birds under the heading of *E. platensis*, although certain variations between the Bolivian and Patagonian specimens were duly noticed.

No. 1 is of the *platensis* type, having the upper back heavily, the anterior pileum narrowly, streaked with black. It differs, however, from skins obtained in the vicinity of Buenos Aires by the more olive-brownish (less greenish) ground-colour of the upper parts, and by having the throat as well as the chest buffy brown, instead of ashy grey. It undoubtedly represents the "Patagonian race" mentioned by Lafresnaye and d'Orbigny, whose description should, however, read "subtus [not *supra*] rufescente . . . a precedente tantummodo differunt." On the strength of a single example it is, of course, impossible to say whether the apparent differences are of geographical significance or due to season.

Mr. Chubb¹ has lately distinguished several local races of this bird. While fully acknowledging the value of his observations we cannot help thinking that the author did not pay sufficient attention to the individual and seasonal variation, which in this group is much greater than he imagined. In the striped-backed section the black dorsal streaks, in worn plumage, become nearly obsolete or disappear even altogether, so that much importance should not be attached to that character. Six specimens each from the South Brazilian States of Paraná and Rio Grande do Sul illustrate in an excellent manner the various seasonal changes the plumage undergoes in these birds. On comparing them with a good series from the vicinity of Buenos Aires, I fail to discover the slightest difference, and am forced to regard *E. p. poliocephala* (Gray) (type ex Uruguay) as a synonym of *E. p. platensis*.

As to *E. p. dumetorum* (Less.), I have a specimen from Campanha, S. Minas Geraes, which agrees with Mr. Chubb's definition in having the brighter green back very narrowly lined with dusky; but whether this is anything more than an individual variety can, of course, be ascertained only by a series from Minas. The type of *T. dumetorum* Less., in the Paris Museum, should also be carefully examined.

No. 2, from Corrientes, is in extremely worn plumage, and the back looks almost plain green. An adult male from E. Corrientes (Santo Tomé, Rio Uruguay) and several skins from Paraguay (Bernalcué near Asunción), all in good condition, have the mantle broadly striped with black like *E. p. platensis* from Buenos Aires and S. Brazil. They differ from the latter merely by the slightly darker grey of the head and chest, while the other characters claimed by Mr. Chubb for his *E. p. paraguayensis* do not hold good. I should like to see a fuller series before admitting it as a valid race.

¹ *Ibis*, 1918, pp. 3-7.

Nos. 3 and 4 are the typical examples of *E. olivascens* with plain (unstreaked) dull greyish-brown pileum and olive-greenish back. Underneath, the throat and chest are dingy grey, the flanks somewhat paler and more brownish, with the middle of the abdomen inclining to whitish. *E. olivascens* is most certainly a mere geographic race of *E. platensis*, from which it only differs by the absence of dusky striping above and by having the maxilla almost entirely yellow, instead of mainly black. Besides various Bolivian examples I have examined a series from W. Argentine (Tucumán, Córdoba).

I hope to deal more fully with these birds on a future occasion.

Embernagra silens = $\left\{ \begin{array}{l} \text{Arremon flavirostris polionotus Bonap.}^1 \\ \text{Arremon flavirostris devillii Des Murs.}^2 \\ \text{Arremon flavirostris d'orbignii Sel.}^3 \end{array} \right.$

Embernagra sileus [sic !] (not of Boddaert)⁴; L. & O., *Syn. Av.* i. p. 34 (Chiquitos, Valle Grande, Bolivia).

Arremon silens d'Orbigny, *Foy.*, p. 281 (Corrientes; prov. Yungas, Valle Grande, Chiquitos).

No. 1, (♂), ad. (mounted): "de Corrientes, par M. d'Orbigny, juillet 1829. *Arremon polionotus* Bonap. Type de la description dans le *Conspectus Avium*."—Wing, 79½; tail, 75; bill, 14½ mm. = *Arremon flavirostris polionotus* Bonap.

No. 2, (♂), ad. (mounted): "*Arremon d'Orbignyi* Sel., par d'Orbigny, de Chiquitos, 1834. No. 246.—D. 443."—Wing, 74; tail [damaged]; bill, 14 mm. = *A. flavirostris devillii* Des Murs.

No. 3, (♂), ad. (skin): "*Arremon silens* Nob. D. 443, de Chiquitos, Bolivie, par d'Orbigny, 1834. No. 246."—Wing, 79; tail [lacking]; bill, 14 mm. = *A. flavirostris devillii* Des Murs.

No. 4, imm. (mounted): "Yungas, par d'Orbigny, 1834. No. 346.—D. 107. *Arremon d'Orbignyi* Sel. Type."—Wing, 65; tail, 64; bill, 12 mm. = *Arremon flavirostris d'orbignii* Sel.

As will be seen from this list, *E. silens* of the *Synopsis* is a *mixtum compositum* of three distinct species or rather races. The description of the adult male ("sans raie grise sur la tête, parties supérieures gris ardoisé") as given in the *Voyage* has apparently been taken from No. 1, ♂ ad. Corrientes, which is the only example with uniform black pileum in d'Orbigny's series. It was afterwards made the type of *A. polionotus* Bonap. Some notes regarding the synonymy and distribution of this form I have published in the first part of my Type-studies.⁵

The two specimens from Chiquitos, E. Bolivia (Nos. 2, 3) are adult males of the northern form, with paler back and narrower black jugular crescent, the correct name of which I have shown to be *A. polionotus derillii*,⁶ based upon an immature male from the western district of the province of Goyaz. They agree in every particular with birds from Chapada and Cuyabá, Mattogrosso. No. 2 is erroneously labelled "*A. d'orbignyi*."

¹ *Arremon polionotus* Bonaparte, *Consp. Av.* i. p. 488 (1850—Corrientes; Mus. Paris).

² *Arremon devillii* (Bonaparte MS.) Des Murs in: Castelnau, *Voyage Amér. Sud.*, Ois., p. 69, pl. xx, fig. 2 (June 30, 1856—no locality given); Selater, *Proc. Zool. Soc. Lond.* 24, p. 81 (July 30, 1856—"prov. Goiaz, in Brazil").

³ *Arremon d'orbignii* Selater, *Proc. Zool. Soc. Lond.* 24, p. 81 (July 1856—Yungas, Bolivia; d'Orbigny coll., Mus. Paris).

⁴ *Tanagra silens* Boddaert, *Tabl. Pl. enl.* p. 46 (1783—ex Daubenton, *Pl. enl.* 742; Cayenne).

⁵ *Nov. Zool.* 13, 1906, pp. 311–312.

⁶ *l.c.* pp. 312–313.

The bird from Yungas, No. 4, at last is the type of *A. d'orbignii*. It is an immature specimen with the black jugular band yet imperfectly developed, while the bill has already attained the definitive coloration, viz. broad culmen stripe black, lower lateral portion of upper and whole under mandible yellow. The white superciliaries begin from the front; a broad light-grey vertical stripe runs from the base of the bill over the pileum to the nape, where it joins the deeper grey nuchal area; back bright yellowish olive, etc. It was, no doubt, the Yungas bird, the only one with green back, which d'Orbigny took for the female: "les parties supérieures vertes." *A. f. d'orbignii* ranges from N.W. Argentine (Catamarca, Tucumán) north to the Eastern Yungas of Bolivia.¹

***Embernagra torquata* = *Buarremon torquatus torquatus* (Lafr. & Orb.).**

Embernagra torquata Lafresnaye & d'Orbigny, *Syn. Ar. i.* in *Mag. Zool.* cl. ii. p. 34 (1837—Yungas, Bolivie; descr. orig.).

Arremon affinis d'Orbigny, *Voy., Ois.*, p. 282, pl. xxvii, fig. 1 (betw. 1839 and 1847—Carcuata, prov. Yungas; nom. nov.).²

No. 1, (♂), ad. (mounted): "Yungas, par d'Orbigny, 1834. Figuré sous le nom d'*Embernagra torquata* Lafr. et d'Orb. *Arremon affinis*, Orb. pl. 27. Type de l'espèce."—Wing, 79; tail, 72; bill, 16 mm.

This is an adult male with purely cinereous edges along middle of crown, which, on hind-crown and nape, form a continuous, longitudinal stripe; the white superciliary streak commences above the lores and terminates in a line with the posterior border of the auriculars; the white of the throat and foreneck is bordered below by a broad, black cross-band.

In Count Berlepsch's collection I have examined a considerable series from various places in N.W. Bolivia (Cillutineara, Sandillani, Unduavi, San Antonio), which precisely correspond with the type.

In Eastern Bolivia (Santa Ana) and N.W. Argentine (prov. Jujuy) the form is replaced by *B. torquatus borellii* Salvad.,³ which differs merely in its decidedly smaller bill and by lacking the black jugular band. In all other respects the two races are perfectly alike. Of this rare form the Munich Museum possesses three males, secured by E. Budin in June and July 1911 at San Francisco, Dept. Valle Grande, prov. Jujuy, and Count Berlepsch has an adult bird taken at Santa Ana, Eastern Bolivia, by G. Garlepp.

***Embernagra rufinucha* = *Atlapetes rufinucha* (Lafr. & Orb.).**

Embernagra rufinucha Lafresnaye & d'Orbigny, *Syn. Ar. i.* in *Mag. Zool.* cl. ii. p. 35 (1837—Yungas, Bolivie; descr. orig.).

Arremon rufinucha d'Orbigny, *Voy., Ois.*, p. 283, pl. xxvii, fig. 2 (Yanacaché et Carcuata, prov. Yungas, au nord de Cochabamba).

No. 1, (♂), ad. (mounted): "*Embernagra rufinucha* Lafr. & Orb. Type de l'espèce. (D. 223) No. 244. Yungas, par d'Orbigny, 1834."—Wing, 75; tail, 78; bill, 13½ mm.

¹ *A. flavirostris*, *A. polionotus*, *A. p. devillii*, and *A. d'orbignii* are merely geographic races of a single species, as I hope to demonstrate in another paper which is shortly to appear.

² Proposed as a substitute for *E. torquata* Lafr. & Orb. 1837, because Vieillot (*Tabl. enc. méth.*, Ornith., ii. livr. 91, 1822, p. 794) had named a Guianan bird *Arremon torquatus* [= *A. luciturnus* (Herm.) 1783].

³ *Buarremon borellii* Salvadori, *Boll. Mus. Zool. Torino*, 12, No. 292, p. 6 (1897—San Lorenzo, prov. Jujuy; one male, May 1896, A. Borelli coll.).

The type agrees, in general coloration and size, with an adult male from Coapata, W. Bolivia, in the Munich Museum. Owing to exposure to light during many years, the under-parts and the pileum are much faded, but otherwise the specimen is in good condition. Females are considerably smaller; the wing, in two examples from San Antonio, resp. Sandillani, measures 66, the tail 68 mm.

This species is peculiar to the mountain forests (Yungas) of the northern slopes of the Andes in Northern Bolivia.

Saltator coerulescens = $\begin{cases} \text{Saltator coerulescens coerulescens Vieill.}^1 \\ \text{Saltator coerulescens azarae d'Orb.} \end{cases}$

Saltator caerulescens L. & O., *Syn. Av.* i. p. 35 (Corrientes; Santa Cruz, Bolivia); d'Orb., *Voy.*, p. 287 (Corrientes).

Saltator Azarae d'Orbigny, *Voy.*, Ois., p. 287 (betw. 1838 and 1847—Moxos et Santa Cruz de la Sierra, Bolivia; descr. orig. ♂♀).

No. 1, vix adult (mounted): "Habia bleuâtre. *Saltator caerulescens* Vieill. *Tan. superciliaris* Spix, de Corrientes, par M. d'Orbigny."—Wing, 98; tail, 94½; bill, 19 mm. = *Saltator coerulescens coerulescens* Vieill.

No. 2, "♂" ad. (mounted): "Habia d'Azara, ♂. *Saltator Azarae* D'Orb. (*Type*), Mojos, Bolivie, par M. d'Orbigny, 1834. (D. 251-317)."—Wing, 104; tail, 92; bill, 20 mm. = *Saltator coerulescens azarae* D'Orb.

Nos. 3, 4, adults (skin): "D. 317, de Mojos, Bolivie. *Saltator azarae* D'Orb., par d'Orbigny, 1834. No. 251."—Wing, 110, 111; tail, 100; bill, 20 mm. = *S. c. azarae* D'Orb.

No. 5, "♀" ad. (mounted): "Habia d'Azara, ♀. *Saltator Azarae* D'Orb. (*Type*), de Santa Cruz, Bolivie, par d'Orbigny, 1834. No. D. 317-251. femelle."—Wing, 102; tail, 98; bill, 21½ mm. = *S. coerulescens coerulescens* Vieill!

While discussing the status of *S. azarae* d'Orb.,² I have explained that only the supposed "males" from Mojos, North Bolivia, belonged to the Upper Amazonian race, while the "female" obtained at Santa Cruz de la Sierra, East Bolivia, was referable to typical *S. c. coerulescens*, of Paraguay, N. Argentine, and Mattogrosso.

A renewed comparison of d'Orbigny's series with numerous specimens from Upper Amazonia and Paraguay necessitates some further remarks.

The birds from Mojos, Nos. 2-4, which correspond to d'Orbigny's description of *S. azarae* "mâle," are in terribly worn breeding plumage. Compared with two adults from Chanchamayo, Central Peru, C. O. Sehunke, coll. Munich Museum, they are decidedly paler above, more of an olive grey (however, without the greenish tinge characteristic of *S. c. coerulescens*), especially on the upper tail coverts. On the under-parts they are likewise so much abraded that the original coloration is hardly recognisable. The breast is distinctly lighter than in the Peruvian skins, but the intact basal portion of the feathers appears to be of the same dark-grey tone. Two adults obtained by Bridges in Bolivia, which I have examined in the British Museum, though slightly more olive than a large series from Bogotá, East Ecuador, and Peru, are much darker above than *S. c. coerulescens*, and, like the Amazonian skins, have the edges to the remiges deep

¹ *Saltator coerulescens* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. édit., 14, p. 105 (1817—ex *Azara* No. 81: Paraguay).

² *Nov. Zool.* 13, 1906, pp. 314-315.

slate grey. In the colour of the under-surface they are precisely matched by one of the Chanchamayo skins. Therefore, I have little doubt that the inhabitants of the head-waters of the Rio Madeira in N. Bolivia (Mojos) are conspecific with the Peruvian and Ecuadorian birds. The proper name of this dark race is, as previously intimated, *S. coerulescens azarae* d'Orb.

The mounted specimen from Santa Cruz de la Sierra, E. Bolivia, corresponding to d'Orbigny's diagnosis of *S. azarae* "femelle" ("plus terne de teintes"), is a perfectly adult bird in fresh plumage, which agrees in every detail with topotypical examples of *S. c. coerulescens* from Paraguay. The back is even more strongly olive greenish and the breast paler greyish than in the Corrientes specimen. Both have the under tail-coverts very much lighter (buff instead of ochraceous) than the three Mojos birds.

The ranges of the four races of *S. coerulescens* may be summarised as follows:

(a) *S. coerulescens coerulescens* Vieill.¹

Eastern Argentine: northern prov. Buenos Aires (Baradero); Entreríos (Paraná), Corrientes, Santa Fé (Ocampo, Mocovi), Terr. Formosa (Colonia Milanovitch); Paraguay: Villa Concepcion, Bernalcé near Asunción; Puerto Pinasco; Western Mattogrosso: Coimbrá, Corumbá, Carandasinho, Urucúm; Villa Bella de Mattogrosso, S. Vicente on the R. Guaporé; Cuyabá; Eastern Bolivia: Santa Cruz de la Sierra; S.E. Bolivia: Caiza; N.W. Argentine: Salta (Orán), Tucumán.

(b) *S. coerulescens azarae* d'Orb.

From Northern Bolivia (Mojos) through Eastern and Central Peru north to Eastern Ecuador (Napó region) and E. Colombia (Bogotá coll.) and Western Brazil (Calama, upper R. Madeira; Rivers Purús, Juruá).

(c) *S. coerulescens mutus* Sc.

Lower Amazonia: Isl. Marajá, Mexiana; north bank of the main river (Arumanduba, R. Jamundá, Faro); south of the Amazons, from Pará west to the Tapajóz.²

(d) *S. coerulescens superciliaris* (Spix).³

Eastern Brazil: States of Bahia (Joazeiro, Rio São Francisco; Faz. Pedre Gulhu, Rio Grande) and Piauí (Paranaguá, Lake of Missão).

N.B.—As a fifth race *S. coerulescens olivascens* Cab., from Guiana, N. Brazil (upper Rio Branco), and Venezuela should be mentioned in this connection.

¹ *S. fulviventris* Lawr. is merely the freshly moulted autumn plumage. Cf. Hellmayr, *Abhandl. Bayer. Akad. Wiss.*, ii. Kl., 22, No. 3, 1906, pp. 677–8.

² Cf. Hellmayr, *Abhandl. Bayer. Akad. Wiss.*, math. phys. Kl., 26, No. 2, 1912, p. 103; Sneath, *Bol. Mus. Goeldi*, 8, 1914, p. 460.

³ This race synonymised with *S. c. coerulescens* in my revision of Spix's types (*Abhandl. Bayer. Akad. Wiss.*, ii. Kl., 22, Abt. iii. 1906, p. 677) is a perfectly valid one. It is most nearly allied to *S. c. mutus*, of Lower Amazonia, but may be distinguished by the much clearer, less plumbeous upper parts, and decidedly lighter grey foreneck and breast. From *S. c. coerulescens* it differs in smaller size, darker grey, less olivaceous upper parts and sides of head, pure-white throat, light ashy-grey (not buffy or olive-greyish) breast, and by having the ochraceous abdominal area much paler as well as less extended. Besides the type, I have examined two adult females, an immature male, and a young bird obtained by Reiser in Western Bahia and Southern Piauí, and recorded by this gentleman as *Saltator superciliaris caerulescens* (sic) in *Denkschr. math. phys. Kl. Akad. Wiss. Wien*, 76, 1910, p. 83.

Saltator aurantirostris = $\left\{ \begin{array}{l} \textit{Saltator aurantirostris aurantirostris} \text{ Vieill.}^1 \\ \textit{Saltator aurantirostris albociliaris} \text{ (Phil. \& Landb.)}.^2 \end{array} \right.$

T. (sic) *aurantiiostris* L. & O., *Syn. Av.* i. p. 35 (Corrientes, Arg.; La Paz, Bolivia).

Saltator aurantiiostris d'Orb., *Voy.*, p. 288 (Corrientes, au 30 degré lat. sud.; Sicasica, Cochabamba, Mizque, Valle Grande, Ayupaya, Chuquisaca, La Paz; Bolivia).

No. 1, "♂" juv. (mounted): "♂. de Corrientes, No. 117, par M. d'Orbigny, juillet 1829."—Wing, 99; tail, 94; bill, 18 mm. = *S. aurantiiostris aurantiiostris* Vieill.

No. 2 (♂), ad. (mounted): "Corrientes, d'Orbigny, 1829. No. 62 de d'Orbigny."—Wing, 98; tail, 94; bill, 19 mm. = *S. a. aurantiiostris* Vieill.

No. 3, juv. (skin): "Corrientes. *Saltator aurantiiostris* Vieill. femelle. par M. d'Orbigny, juillet 1829. No. 117."—Wing, 94; tail, 92; bill, 18½ mm. = *S. a. aurantiiostris* Vieill.

No. 4, "♂" ad. (mounted): "Mâle. No. 252. *S. aurantiiostris* Vieil. Ayupaya, Bolivie, D. 194. d'Orbigny 1834."—Wing, 103; tail, 101; bill 18 mm. = *S. aurantiiostris albociliaris* (Phil. & Landb.).

No. 5, "♀" ad. (mounted): "Femelle. D. 194. La Paz, par d'Orbigny, 1834. No. 252."—Wing, 100; tail, 100; bill, 17½ mm. = *S. aurantiiostris albociliaris* (Phil. & Landb.).

The Corrientes birds agree with others from Santa Fé (Ocampo) in size and colour. The outermost rectrix shows but a limited, sometimes even obsolete, white spot at the tip of the inner web. Specimens from Cordoba (Cosquin) and Mendoza (Weissaupt coll.) in the Berlepsch Collection are also similar in this respect. Typical Paraguayan birds which I have not been able to examine appear to have more white on the lateral tail-feathers, judging from Azara's account. Therefore it is possible that more than one form are at present united under the name of *S. a. aurantiiostris*, whose range extends from the southern portion of Rio Grande do Sul (São Lourenço), Uruguay, and Southern Entrerios (Concepcion del Uruguay), west to Cordoba and Mendoza, north to Paraguay, the Gran Chaco, and Tucumán.³

The Bolivian specimens, Nos. 4, 5, differ from the Argentine ones by having a large patch (about 32 to 34 mm. long) on the apical portion of the inner web of the lateral rectrix, and a somewhat smaller one on the next pair pure white. Like a considerable series from N.W. Bolivia (Chicani), they have the middle of throat and foreneck extensively buffy white. In birds from S.E. Peru (vicinity of Cuzco; topotypical *S. latilavivus* Sel. & Salv.⁴) and Central Peru (Vitoc), which represent, without doubt, true *S. a. albociliaris*; this light-coloured throat-patch is much restricted, sometimes even hardly apparent. I should not hesitate to separate the Bolivian birds as a particular race were it not that those from

¹ *Saltator aurantiiostris* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. édit., 14, p. 103 (1817—ex Azara No. 83: "au Paraguay, jusqu'au 32° degré et demi . . .").

² *Pitylus albociliaris* Philippi & Landbeck, *Arch. f. Naturg.*, 29, i. p. 122 (1863—"Sorocoma in Peru," 5,000 ft., coll. Froben; nowadays prov. Tacna, N.W. Chili).

³ *Saltator maxillosus* Cab. (Mus. Hein. i. May 1851, p. 142: "Montevideo," errore!), from the highlands of S.E. Brazil (Minas, São Paulo, Paraná) and adjoining parts of Misiones, is most closely related to *S. aurantiiostris*, of which it may prove to be a geographical representative. Its reference to a separate genus, *Stelgidostomus* Ridgway—on account of its larger, more swollen bill—only serves to obliterate its proper affinities.

⁴ *Proc. Zool. Soc. Lond.* 1869, p. 151 (1869—Tinta, s.e. of Cuzco, S.E. Peru).

Northern Peru (Cajabamba, Suceha, Tamiapampa, etc.) which we would naturally expect to belong to the Central and South Peruvian form again resembled the Bolivian skins! In view of these facts, it seems best to wait for further material before proposing a new name.¹

***Saltator validus* = *Saltator atricollis* Vieill.²**

Saltator validus Vieill.³; L. & O., *Syn. Ar. i.* p. 35 (Chiquitos, E. Bolivia).

Saltator atricollis, d'Orbigny, *Voy.*, p. 288 (Chiquitos).

No. 1, adult, in worn plumage (skin): "No. 254. d'Orbigny, 1834. *Saltator atricollis* Vieill. D. 347, de Chiquitos."—Wing, 86; tail [moulting]; bill, 18 mm.

Not different from Brazilian examples.

S. atricollis is peculiar to the campos of the central Brazilian table-land, ranging from Southern Maranhão (Barra do Galiota, Rio Parnahyba) and Piauí to Western Minas (Bagagem), northern S. Paulo (Irisanga, Batataes, Avanhandava, Baurú), Paraguay, west to Mato Grosso (Cuyabá, Chapada) and the adjoining parts of E. Bolivia (Chiquitos).

***Saltator rufiventris* Lafr. & Orb.**

Saltator rufiventris Lafresnaye & d'Orbigny, *Syn. Ar. i.* in *Mag. Zool.* cl. ii. p. 35 (1837—Sicasica, Bolivia; descr. orig.); d'Orb., *Voy.*, Ois., p. 289, pl. xxviii, fig. 1 ("environs d'Enquisivi, prov. Sicasica; près Palca, prov. Ayupaya").

No. 1, adult (mounted): "*S. rufiventris* Lafr. & Orb. (un des types), pl. 28, fig. 1, No. 253.—D. 281. Sicasica, par d'Orbigny, 1834."—Wing, 112; tail, 103; bill, 17 mm.

No. 2, adult (mounted): "*S. rufiventris* d'Orb., d'Ayupaya, d'Orbigny, 1834. L'un des types. (253.—D. 281), pl. 28, fig. 1."—Wing, 118; tail, 104; bill, 18 mm.

No. 3, juv. (skin): "253. d'Orbigny, 1834. d'Ayupaya, D. 281. *Saltator rufiventris*, Nob."—Wing, 107; tail, 97; bill, 17 mm.

The young bird (No. 3) differs from the adults in having the upper parts much paler, olive grey (instead of deep blue grey), the superciliaries bright buff (not white), the sides of the head dark olive brown (instead of sooty black), the throat and chest olive brown (not deep blue grey), and the abdomen lighter cinnamonaceous.

The rufous-bellied *Saltator* is as yet only known from Central Bolivia (provinces Sicasica and Ayupaya).

***Saltator similis similis* Lafr. & Orb.**

Saltator similis Lafresnaye & d'Orbigny, *Syn. Ar. i.* in *Mag. Zool.* cl. ii. p. 36 (1837—Corrientes, Argentine; descr. orig.); d'Orbigny, *Voy.*, Ois., p. 290, pl. xxviii, fig. 2 ("Rincon de Luna, au sud de la province de Corrientes, au 29° degré latitude sud").

No. 1, adult (mounted): "Habia semblable, *Saltator similis*, d'Orb. & Lafr. Type de l'espèce et de la description de M. Ch. Bonaparte. Sud de Corrientes, Rép. Argentine, 1829. No. 117.—Pl. 28, fig. 2, par M. d'Orbigny."—Wing, 105; tail, 100; bill, 18½ mm.

The type, a perfectly adult bird, agrees in the pale coloration of the lower

¹ Cf. also Berlepsch, *Bericht V. Internat. Ornith. Congr. Berlin*, 1912, p. 1147.

² *Nouv. Dict. d'Hist. Nat.*, nouv. édit., 14, p. 104 (1817—ex Azara No. 82: Paraguay).

³ *Ic.* p. 106 (1817—ex Azara No. 84: Paraguay).

parts with specimens from Bahia¹ and the Rio Meia Ponte (south of the city of Goyaz). Birds from Mattogrosso, Western Minas, and Espirito Santo (Victoria) belong likewise to this pale-bellied race, and I have also examined several examples secured by Venturi at Posades (Misiones) and Ocampo (Santa Fé), in the Tring Museum.

The birds found in Southern Paraná (Curytiba), Santa Catharina, and Rio Grande do Sul have been separated by Count Berlepsch as *S. similis ochraceiventris* Berl.,² by reason of their much darker fulvous belly. Birds from Rio de Janeiro and São Paulo, however, are so variously intermediate, as I have shown elsewhere,³ that it is difficult to draw a fast line between the two forms.

***Saltator rubicus* = *Phoenicothera rubica amabilis* Berl.⁴**

Saltator rubicus (nec Vieillot)⁵; L. & O., *Syn. Av.* i. p. 36 (Yuracarès, Guarayos).

Pyrranga rubicus, d'Orbigny, *Voy.*, p. 265 (Guarayos, Yuracarès; descr. ♂♀).

No. 1, "♂" ad. (skin): "*Pyrranga rubicus* D'Orb. Mâle. No. 235, par d'Orbigny, 1834. D. 380. Yuracarès."—Wing, 96; tail, 84; bill, 16½ mm.

This bird is precisely similar to an adult male from Yuntas, lowlands of Yuracares, N. Bolivia, coll. G. Garlepp, in the Tring Museum. Count Berlepsch having explained the characters of the present form I need not further dwell on the subject. The known range of *P. r. amabilis* is restricted to the hot, low country at the foot of the northern slopes of the Cochabamba chain of the Bolivian Andes. It is, however, possible that the birds found on the upper stretches of the Rio Guaporé (Engenho do Gama), W. Mattogrosso⁶ may also belong to the same race. Unfortunately, Natterer's specimens are all immature or females.

***Saltator atra* = *Schistochlamys atra* (Gm.).⁷**

Saltator atra, L. & O., *Syn. Av.* i. p. 36 (Chiquitos, Bolivia).

Saltator melanotis Lath.⁸; d'Orbigny, *Voy.*, p. 291 (Concepcion, Moxos; San-José-de-Chiquitos, E. Bolivia; descr. adult).

No longer in the Paris Museum. Bolivian examples, obtained by G. Garlepp, in the Berlepsch Collection, are not different from Cayenne and Brazilian skins. After studying a very large series of this bird from various localities I am unable to recognise *S. atra aterrima* Todd.⁹ The supposed difference in the intensity of the black colour about the head is most certainly due to the fresher condition of the plumage.

***Saltator olivaceus* = *Saltator maximus* (P. L. S. Müll.).¹⁰**

Saltator olivaceus Vieill.¹¹; L. & O., *Syn. Av.* i. p. 36 (Corrientes, Arg.; errore!).

Saltator cayana, d'Orbigny, *Voy.*, p. 290 (Yuracarès, au nord de Cochabamba, Bolivia).

¹ *Saltator similis pallidiventris* Berlepsch, *Zeits. ges. Ornith.* ii. p. 121 (1885—Bahia; type examined).

² *Bericht. V. Internat. Ornith. Congr. Berlin*, p. 1114 (1912—Taquara, Rio Grande do Sul).

³ *Nov. Zool.* 15, 1908, p. 31; *Verhandl. Ornith. Ges. Bayern*, 12, Heft 2, 1915, p. 133.

⁴ *Ornis*, 14, p. 348 (1907—San Mateo, Yuracarès, N. Bolivia).

⁵ *Nouv. Dict. d'Hist. Nat.*, nouv. édit., 14, p. 107 (1817—ex Azara No. 85; Paraguay; descr. ♂♀).

⁶ *Phoenicothera rubra* (nec Vieillot) Pelzeln, *Zur Orn. Bras.* iii. 1869, p. 212.

⁷ *Tanagra atra* Gmelin, *Syst. Nat.* 1, ii. p. 898 (1789—ex Daubenton, *Pl. enl.* 714, fig. 2; Cayenne).

⁸ *Tanagra melanotis* Latham, *Ind. Orn.* i. p. 422 (1790—ex Daubenton, *Pl. enl.* 714, fig. 2; Cayenne).

⁹ *Ann. Carnegie Mus.* viii. No. 2, p. 203 (1912—Guarico, Estado Lara, N. Venezuela).

¹⁰ *Tanagra maxima* P. L. S. Müller, *Natursyst.*, Suppl., p. 159 (1776—ex Daubenton, *Pl. enl.* 205; Cayenne).

¹¹ *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 14, p. 108 (1817—based on the same).

No. 1, adult (skin): "*Salt. cayennensis* Nob. 250. d'Orbigny, 1834. D. 127. d'Yuracarès."—Wing, 97; tail, 89; bill, 20 mm.

This species is widely diffused in South America, ranging from Colombia, Venezuela, and Guiana, down to Mattogrosso, Goyaz, and the neighbourhood of Rio de Janeiro.

***Saltator bicolor* = *Cissopis leveriana minor* Tsch.¹**

Saltator bicolor (nec Vieillot)²; L. & O., *Syn. Av.* i. p. 36 (Yuracarès, Bolivia).

Bethylus picatus (nec Latham)³; d'Orb., *Voy.*, p. 269 (Yuracarès).

No. 1, adult (mounted): "Yuracarès, par M. d'Orbigny, février 1834.—No. 101.—D. 403. *Cissopis minor* Tsch."—Wing, 105; tail, 132; bill, 14 mm.

This bird agrees in every way with specimens from S.E. Peru (Chaquimayo, prov. Puno) and Eastern Ecuador (Rio Napo) in the Munich Museum. It is very different from *C. leveriana major* Cab., of Brazil, being much smaller in all dimensions and having much less black on the upper parts. Judging from the smallness of the bill, d'Orbigny's example appears to be a female.

***Phytotoma rara* Mol.**

Phytotoma rara Mol.⁴; L. & O., *Syn. Av.* i. p. 37 (Chili; descr. ♂♀); d'Orb., *Voy.*, p. 293 (Valparaiso, Chili).

No. 1, "♂" juv. (mounted): "♂. Bolivie, d'Orbigny, 1830."

No. 2, ♀ (skin): "d'Orbigny, No. 160. Valparaiso, Chili, 1830. *Phytotoma rara*."

The locality "Bolivia" is unquestionably a mistake. No. 1 is an immature male of the common Chilean species with cinnamon-rufous basal portion of the tail.

Beyond Chilean limits *Ph. rara* has as yet only been met with in the western part of Neuquen, near the Lake Nahuel-Huapi. The Munich Museum possesses three specimens from this locality, procured by Dr. Adolf Lendl, of Budapest.

***Phytotoma angustirostris* Lafr. & Orb.**

Phytotoma angustirostris Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 37 (1837—La Paz, Bolivie; descr. orig. ♂♀); d'Orb., *Voy.*, Ois., p. 292, pl. xxix. fig. 2 (La Paz; à Cavari, Enquisivi, Palca, prov. Sicacica, Ayupaya, Cochabamba, Mizque, Chuquisaca; descr. ♂ ad. et juv., ♀).

No. 1 (♂), ad. (skin), without original label, from Bolivia, d'Orbigny, 1834.—Wing, 100; tail, 94; bill, 13 mm.

No. 2, "♀" ad. (skin): "D. 192. La Paz. *Phyt. angustirostris* Nob. femelle. d'Orbigny, 1834. No. 321."—Wing, 96; tail, 90; bill, 13½ mm.

No. 3, "♀" (skin): "321. d'Orbigny, 1834. D. No. 192. *Phyt. angustirostris*, Nob. fem. Bolivie."—Wing, 94; tail, 90; bill, 13 mm.

There can be no doubt about the distinctness of this Bolivian form, although it may be subspecifically related to *P. rutila*, of Argentine.

¹ *Cissopis minor* Tschudi, *Faun. Peru.*, Aves, p. 211 (1846—"peruanische Wald region").

² *Cissopis bicolor* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 26, p. 417 (1818—"Guyane et Brésil").

³ *Lanius picatus* Latham, *Ind. Orn.* i. p. 73 (1790—Cayenne).

⁴ *Saggio Stor. Nat. Chili*, p. 254 (1782—Chili).

Phytotoma rutila Vieill.

Phytotoma rutila Vieill.¹; L. & d'O., *Syn. Av.* i. p. 38 (Corrientes); d'Orb., *Voy.*, p. 293, pl. xxix, fig. 1 (Rincon de Luna, près du Rio Batel; descr. ♂).

No. 1 (♂), imm. (skin): "No. 147. d'Orbigny, juillet 1829. Corrientes, *Ph. rutila* Vieill."—Wing, 90; tail, 88; bill, 13 mm.

Agreeing with specimens from Buenos Aires. This species is widely distributed in Argentine, extending from the lower Rio Negro through the central and eastern parts of the Republic north to Tucumán and Salta. In Paraguay it must be very rare. Azara procured only a single male, and since that time it has never been found again in that country as far as I am aware.

Rupicola peruviana = Rupicola peruviana saturata Cab. & Heine.²

Rupicola peruviana (nec Latham)³; L. & O., *Syn. Av.* i. p. 38 (Yungas, Yuracarès); d'Orb., *Voy.*, p. 294 (prov. Yungas et à l'est de Cochabamba).

No. 1, ♂ ad. (mounted), from Bolivia (without exact locality), coll. d'Orbigny, 1834. No. des galleries 3196.

Of this well-characterised southern race we have examined numerous examples, in the Berlepsch and Munich Collections, from C.E. Peru (Santa Ana), S.E. Peru (Marcapata), and N. Bolivia.

There are, thus, four races of the Peruvian Cock-of-the-Rock:

(a) *R. peruviana peruviana* (Lath.), N. and N.E. Peru; E. Ecuador; E. Colombia (Bogotá coll.).

(b) *R. peruviana aurea* Chapm.,⁴ W. Colombia (Cauca).⁵

(c) *R. peruviana sanguinolenta* Gould., W. Ecuador.

(d) *R. peruviana saturata* Cab. & Heine., C.E. and S.E. Peru; N. Bolivia.

Pipra rubrocapilla = Pipra chloromeros Tsch.⁶

Pipra rubrocapilla (nec Temminck)⁷; L. & O., *Syn. Av.* i. p. 38 (Santa-Cruz-de-la-Sierra, Yuracarès, Bolivia; descr. ♀); d'Orbigny, *Voy.*, p. 294 (Yuracarès; descr. ♂♀).

No. 1, "♂" ad. (skin): "187. d'Orbigny, 1834. D. 430, d'Yuracarès."—Wing, 63; tail, 28; bill [damaged] mm.

No. 2, "♂" ad. (skin): "187. d'Orbigny, 1834. D. 430, de Santa Cruz. *Pipra rubrocapilla*, Nob. Mas."—Wing, 63; tail, 27; bill, 10 mm.

Both are typical *chloromeros*, with the characteristic, strongly rounded tail and stiffened shafts of the lateral rectrices. The chin as well as the axillaries and under wing-coverts are black like the belly. The thighs are yellow, in No. 2 (Santa Cruz) with a few pale-reddish feathers on the posterior joint.

About the characters and range of this species, see my revision of the genus *Pipra* in *Ibis*, 1906, pp. 17–19.

I have not succeeded in discovering a female among d'Orbigny's series in the Paris Museum.

¹ *Nouv. Dict. d'Hist. Nat.*, nouv. édit., 26, p. 64 (1818—ex Azara No. 91: Paraguay; descr. ♂ ad.).

² *Rupicola saturata* Cabanis & Heine, *Mus. Hein.* ii. p. 99 (Oct. 1859—Bolivia; descr. ♂♀).

³ *Pipra peruviana* Latham, *Ind. Orn.* ii. p. 555 (1790—ex Daubenton, *Pl. enl.* 745: Peru).

⁴ *Bull. Amer. Mus. N.H.* 31, p. 156 (1912—Salento, Cauca, W. Colombia).

⁵ The Munich Museum has a series from Riollina, Cauca, secured by the late J. H. Batty.

⁶ *Arch. f. Naturg.* 10, i. p. 271 (1844—Peru; descr. ♂ ad.).

⁷ *Rec. Pl. col.*, livr. 9, pl. liv, fig. 3 (1821—"Brésil," t. typ. subst. *Bahia*, auct. Hellmayr 1906).

Pipra fasciata = Pipra aureola fasciicauda Hellm.¹

Pipra fasciata (nec Thunberg)²; Lafresnaye & d'Orbigny, *Syn. Av. i.* in *Mag. Zool.* cl. ii. p. 38 (1837—Yuracarès, rep. Boliviana; descr. orig. ♂ ad.); d'Orbigny, *Voy.*, Ois., p. 295, pl. xxx. fig. 1 (Santa-Cruz-de-la-Sierra, Guarayos; descr. ♂♀).

No. 1, "♂" ad. (mounted): "Bolivie, Guarayos, d'Orbigny, 1834.—No. 188. ♂. *P. fasciata* Lafr. & Orb. *Type*. No. des galleries 3141."—Wing, 65; tail, 31; bill, 10 mm.

No. 2, "♂" vix ad. (skin): "188. *P. fasciata* Nob. d'Orbigny, 1834. D. 320. Guarayos."—Wing, 65; tail, 31; bill, 10 mm.

No. 3, "♂" juv. (skin): "D. 320. Sta. Cruz, *Pipra fasciata* Nob. d'Orbigny, 1834. No. 188."

The type, No. 1, is a fully adult male, with broad yellowish white bar across both webs of all the rectrices. Although considerably faded, it is unquestionably referable to that form which inhabits the hot lowlands of N. Bolivia (San Mateo) and S.E. Peru (Yahuarmayo, Carabaya). Like the two adult males in the Munich Museum, the type shows dull orange-red tips only to the feathers of the foreneck, breast, and sides of throat, while the middle of throat as well as the abdomen are clear yellow. The auriculars are bright yellow, with mere traces of orange dots along the posterior edge.

For further particulars about *P. aureola fasciicauda* and its Brazilian ally, *P. aureola scarlatina*, cf. my account in *Verhandl. Ornith. Ges. in Bayern*, xii. Heft 2, 1915, pp. 121–124.

Cephalopterus ornatus Geoffr. St. Hil.

Cephalopterus ornatus L. & O., *Syn. Av. i.* p. 39 (Bolivia); d'Orb., *Voy.*, p. 296 (Rio Beni).

No specimen was brought home. D'Orbigny examined a poor skin in the possession of some Indian.

The Umbrella-bird is widely diffused in the Amazonian forest-region from Venezuela down to N. Bolivia.

Querula cinerea = Lathria cineracea (Vieill.).³

Querula cinerea (Vieill.)⁴; L. & O., *Syn. Av. i.* p. 39 (Moxos, rep. Boliviana).

Querula cineracea Vieill.; d'Orb., *Voy.*, p. 296 (Mission de Magdalena, prov. Moxos).

There is no d'Orbignyan example in the Paris Museum. Bolivian skins in Count Berlepsch's Collection, however, are not different from Guianan birds. After examining some sixty specimens from various parts of South America I am unable to uphold the distinctness of the East Brazilian *L. plumbea*,⁵ even as a subspecies.

Ampelis rubrocristata = Heliochera rubrocristata (Lafr. & Orb.).

Ampelis rubrocristata Lafresnaye & d'Orbigny, *Syn. Av. i.* in *Mag. Zool.* cl. ii. p. 39 (1837—Ayupaya Yungas, Bolivia; descr. orig. ad. et juv.); d'Orbigny, *Voy.*, Ois., p. 297, pl. xxxi. fig. 1 (Chupé prov. Yungas; Palea, prov. Ayupaya; descr. ad. et juv.).

¹ *Pipra fasciicauda* Hellmayr, *Ibis* (8), vi. p. 9 (1906—nom. nov. for *P. fasciata* Lafr. & Orb.).

² *Mém. Ac. Imp. Sci. St. Pétersb.* viii. p. 285 (1822—S.E. Brazil).

³ *Ampelis cineracea* Vieillot, *Tabl. enc. méth., Ornith.* ii. livr. 91, p. 760 (1822—ex "Le Cotinga cendré," Levaillant, *Hist. Nat. Ois. nouv. et rar.* i. 1801, pl. xlv.: Cayenne).

⁴ *Ampelis cinerea* Vieillot (*Nouv. Dict. d'Hist. Nat.*, nouv. éd., 8, 1817, p. 162: ex Levaillant pl. xlv.), commonly employed for this bird, is preoccupied by *Ampelis cinerea* Latham (*Ind. Ornith.* i. 1790, p. 367: new name for *Lanius nengata* Linn. 1766).

⁵ *Muscicapa plumbea* Lichtenstein, *Verz. Dubl. Berl. Mus.* p. 53 (1823—Bahia).

No. 1, adult (mounted): "d'Ayupaya, Bolivie, par d'Orbigny, 1834. *Heliochera rubrocristata* Lafr. & Orb. *Type*."

No. 2, juv. (skin): "*Amp. rubrocristata* Nob. 185. d'Orbigny, 1834. D. 333. Bolivie."

Bolivian birds agree well with others from Peru (Marcapata) and Ecuador.

***Ampelis cayana* = *Cotinga cayana* (Linn.).¹**

Ampelis cayana L. ; L. & O., *Syn. Av.* i. p. 40 (Yuracarès, rep. Boliviana).

Ampelis cayennensis (ex Brisson) d'Orbigny, *Voy.*, Ois., p. 297 (Yuracarès ; descr. ♂).

There is no specimen of d'Orbigny's in the Paris Museum. The description in the *Voyage* leaves, however, hardly any doubt as to its being referable to *C. cayana*, and not to *C. maynana* (Linn.), another Upper Amazonian species. Moreover, the former was obtained by Rusby in the same general district, viz. on the lower Beni, N. Bolivia.²

***Ampelis viridis* = *Euchlornis riefferii signata* Hellm.³**

Ampelis viridis Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 40 (1837—Yungas, in Bolivia ; descr. orig. ♀) ; d'Orbigny, *Voy.*, Ois., p. 298, pl. xxxi. fig. 2 (Chulumani, prov. Yungas : "un échantillon capturé dans une église en construction").

No. 1 (♀), ad. (mounted): "No. 3017. *Pipreola viridis* d'Orb. *Type*. Bolivie—Yungas, 1834. M. d'Orbigny, D. 258—186."—Wing, 95 ; tail, 85 ; bill, 13 mm.

The type is a female with the top of the head green like the back, yellowish chin, olive-green throat and breast. All of the rectrices have a well-defined, white apical margin (about 2 mm. wide), which constitutes the essential distinguishing character of this form, as is shown by a series of both sexes from N. Bolivia in the Berlepsch Collection.

Further particulars regarding the races of *E. riefferii* may be found in *Verhandlungen Ornith. Ges. i. Bayern*, xii, Heft 3, 1915, pp. 207–8.

***Procnias coerulea* = *Tersina viridis viridis* (Ill.).⁴**

Procnias coerulea Vieill.⁵ ; L. & O., *Syn. Av.* i. p. 41 (Santa Cruz de la Sierra, Bolivia).

Tersina tersa L.⁶ ; d'Orbigny, *Voy.*, p. 299 ("Rio Pyray, non loin de Santa Cruz" ; descr. ♂).

No. 1, "♂" ad. (skin): "182. d'Orbigny, 1834. D. 430. Santa Cruz. *Tersina tersa* Nob. Mâle."—Wing, 90 ; tail, 58 ; bill, 10 mm.

No. 2 (♀), ad. (skin): "182. *Tersina tersa*, Nob., d'Orbigny, 1834. D. 430. Sta. Cruz, Bolivie."—Wing [worn] ; tail ; bill, 9 $\frac{3}{4}$ mm.

As pointed out by the late Count Berlepsch,⁷ the Bolivian birds are difficult to place satisfactorily. The adult male from the Rio Pyray (N.W. of Santa

¹ *Ampelis cayana* Linnaeus, *Syst. Nat.* 12, i. p. 298 (1766—ex Brisson : "Brasilia, Cayana").

² Cf. Allen, *Bull. Amer. Mus. N.H.* ii. 1889, p. 88.

³ *Euchlornis riefferii signata* nom. nov. pro *Ampelis viridis* Lafr. & Orb. 1837 nec *Ampelis viridis* Tullberg, *Ampelis* nov. spec. (*Dissert. praes.* C. P. Thunberg), Upsala, 1823, p. 4 (Brazil : coll. Freyreis).

⁴ *Hirundo viridis* Illiger, *Prodr. Syst. Mamm.* Av. p. 229 (1811—based on "L'Hirondelle verte," Temminck, *Cat. Syst. Cab. d'Ornith.* 1807, p. 245, No. 986 (= ♀) : "Iles Sandwich" (i.e. p. 136), errore l, we substitute *Eastern Brazil*).

⁵ *Tersina coerulea* Vieillot, *Nouv. Dict. d'Hist. Nat.* 33, p. 401 (1819—"du Brésil et du Pérou" ; descr. ♂♀).

⁶ *Ampelis tersa* Linn. 1766 is unidentifiable. Cf. Berlepsch, *Ibis*, 1881, p. 243.

⁷ *Bericht V. Internat. Ornith. Kongr. Berlin*, 1912, p. 1122.

Cruz de la Sierra) is fully as large as Bahia skins (which we may consider as typical *T. viridis viridis*), with which it also agrees in the light Nile-blue coloration, although the back and rump show a slightly more bluish tint.

Males from N.W. Bolivia (Songo, San Antonio) are smaller and of a darker, more bluish colour. They are nearer *T. viridis occidentalis* (Scl.),¹ though not quite typical.

Large series from various Bolivian localities are required to ascertain the exact range of the two races which evidently inhabit that vast republic. For the present, I refer the birds from the country round Santa Cruz de la Sierra to *T. v. viridis*, which is also found in the adjoining Brazilian state of Mattogrosso (Cuyabá, Chapada); those from the north-western parts (Western Yungas), however, to *T. v. occidentalis* (Scl.).

***Psaris cayanus* = *Tityra cayana* (Linn.).²**

Psaris cayanus, L. & O., *Syn. Av.* i. p. 41 (Guarayos, Bolivia); d'Orb., *Voy.*, p. 301 ("dans les grandes forêts qui séparent Santa Cruz de la Sierra de Chiquitos . . . au pays des Guarayos," E. Bolivia; descr. ♂).

No. 1 (♂), ad. (skin): "*Psaris cayanus* Nob. 102. d'Orbigny, 1834. D. No. 333. Guarayos."—Wing, 116; tail, 75; bill, 25½ mm.

No. 2 (♀), ad. (skin): "D. 333. *Psaris cayanus*. No. 102, d'Orbigny, 1834. Bolivie."—Wing, 120; tail, 73; bill, 27½ mm.

Both examples—in perfect adult plumage—are typical of *cayana*, having the apical portion of the bill for about 12 mm. black, the remainder reddish yellow. In the female, the top and sides of the head are dull black; below, the foreneck and chest only are marked with narrow, blackish shaft streaks.

Cf. Hellmayr, *Abhandl. Bayer. Ak. Wiss.* ii. Kl., 22, 1906, pp. 667–668.

***Psaris semifasciatus* = *Tityra semifasciata semifasciata* (Spix).³**

Psaris semifasciatus (Spix); L. & O., *Syn. Av.* i. p. 41 (Santo-Corazón, Chiquitos, E. Bolivia); d'Orb., *Voy.*, p. 307 (Santo-Corazón; descr. ♂♀).

No. 1, "♂" ad. (skin): "D. 329. Sto. Corazón de Chiquitos, d'Orbigny, 1834. No. 103. *Psaris semifasciatus* Nob. Mas."—Wing, 130; tail, 77; bill, 25½ mm.

No. 2, "♀" ad. (skin): "D. 329. Santa Cruz [E. Bolivia], d'Orbigny, 1834. No. 103. *Psaris semifasciatus* Nob. foem."—Wing, 121; tail, 79; bill [damaged] mm.

These birds agree in coloration with others from Amazonia (Pará, Rio Madeira). While the female from Santa Cruz does not differ in size either, the male has even longer wings than another from Chaquimayo, prov. Puno, S.E. Peru, in the Munich Museum,⁴ which ought to belong to *T. semifasciata fortis* Berl. & Stolz.,⁵ although—in contradiction to the original description—it possesses a broad continuous black band across both webs of the external rectrices. It should also be noted that, of two adult males from the upper

¹ *Procnias occidentalis* Sclater, *Proc. Zool. Soc. Lond.* 22, "1854," p. 249 (April 1855—"Nova Grenada").

² *Lanius Cayanus* Linnaeus, *Syst. Nat.* 12, i. p. 137 (1766—ex Brisson: Cayenne).

³ *Pachyrhynchus semifasciatus* Spix, *Av. Bras.* ii. p. 32, pl. 44, fig. 2 (1825—"in provincia Pará").

⁴ Wing, 128; tail, 79; bill, 28 mm.

⁵ *Proc. Zool. Soc. Lond.* 1896, p. 369 (1896—La Gloria and La Merced, Chanchamayo, Central Peru).

Madeira (Allianca, Calama),¹ one has a broad, black subapical tail-band, whereas in the other there is merely a limited marginal patch on the inner web separated by a broad whitish interspace from the black outer vane. In view of these facts, we are not prepared to accept *T. s. fortis* as a valid form. More ample material, however, might prove the inhabitants of Mattogrosso, Bolivia, S.E. and C. Peru to be distinguishable by their larger size. In this case the subspecific term *fortis* would come into use again.

West of the Andean chain and north of the Panamic isthmus *T. s. semi-fasciata* is replaced by a number of more or less well-marked geographic races, which need not be discussed here.

***Psaris inquisitor* = *Tityra inquisitor pelzelni* Salv. & Godm.²**

Psaris inquisitor (nec Lichtenstein)³; L. & O., *Syn. Av. i.* p. 41 (Chiquitos, Santa Cruz, E. Bolivia); d'Orbigny, *Voy.*, p. 302 (Santa-Cruz-de-la-Sierra, Chiquitos; descr. ♂♀).

No. 1, "♂" ad. (skin): "D. 328. Chiquitos, par d'Orbigny, 1834. No. 104. *Psaris inquisitor* d'Orb. Mas."—Wing, 105; tail, 67; bill, 22 mm.

No. 2, "♂" ad. (skin): "D. 328. Santa Cruz, par d'Orbigny, 1834. No. 104. *Psaris inquisitor*, d'O. Mas."—Wing, 108; tail, 63; bill, 22½ mm.

No. 3, "♀" ad. (skin): "D. 328. Chiquitos, d'Orbigny, 1834. No. 104. *Psaris inquisitor* d'Orb. femelle."—Wing, 102; tail, 64; bill, 24 mm.

The adult males agree in all essential characters with two others from Villa Bella de Mattogrosso, including the type of *T. pelzelni*. In No. 1 the white area at the base of the tail is hardly more extended than in *T. i. inquisitor*, but involves also the outer web of the rectrices, which is never the case in the typical race. The three other examples have very nearly as much white as *T. a. albitorques*, from which they may, however, easily be distinguished by the black (instead of white) coloration of the cheeks and auriculars.

Birds from Chapada,⁴ whence there is a couple in the British Museum, are likewise referable to *T. i. pelzelni*.

The range of this form is apparently restricted to Western Mattogrosso (Chapada, Villa Bella de Mattogrosso, and Engenho do Gama, on the R. Guaporé; ⁵ Corumbá, on the Upper Paraguay) and Eastern Bolivia (Chiquitos, Santa Cruz de la Sierra).

A synopsis of the three geographic races of *T. inquisitor* I have given in the report on Prof. Müller's ornithological collections from Lower Amazonia.⁶

***Psaris atricapillus* = *Platypsaris rufus rufus* (Vieill.).⁷**

Psaris atricapillus (Vieill.)⁸; L. & O., *Syn. Av. i.* p. 42 (Chiquitos).

Psaris roseicollis, d'Orbigny, *Voy.*, p. 302 (part: descr. ♂ juv.; Chiquitos).

¹ Wing, 118, 119; tail, 72; bill, 24, 26½ mm.

² *Tityra pelzelni* Salvin & Godman, *Biol. Centr. Americ., Aves*, ii. p. 120 (Dec. 1890—[Villa Bella de] Mattogrosso, Western Mattogrosso; coll. Natterer).

³ *Lanius Inquisitor* (ex Olfers MS.) Lichtenstein, *Verz. Dobl. Berliner Mus.* p. 50 (1823—São Paulo, S.E. Brazil).

⁴ *Tityra inquisitor* Allen, *Bull. Amer. Mus. N.H.* v. 1893, p. 110.

⁵ *Tityra albitorques* Pelzelni, *Ornith. Brasil*, ii. 1868, p. 120 (part).

⁶ *Abhandl. Bayr. Akad. Wiss., math.-phys. Kl.*, 26, No. 2, 1912, pp. 32-33.

⁷ *Tityra rufa* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., iii. p. 347 (1816—ex Azara, No. 208: Paraguay; = ♀).

⁸ *Tityra atricapilla* Vieillot, l.c. iii. pp. 347-348 (1816—ex Azara, No. 209: Paraguay; = ♂ juv.).

No. 1, "♂" ad. (skin): "D. 361, de Chiquitos, d'Orbigny, 1834. No. 183. *Psaris roseicollis* fem."—Wing, 96; tail, —; bill, 17½ mm.

This bird is practically identical with others from São Paulo and the Sertão of Amaroleite, prov. Goyaz, in the Paris Museum. It is a typical example of *P. r. rufus*, with the under-parts dingy brownish buff, and very different from *P. rufus audax* (Cab.),¹ of which we have both sexes from Tucumán, N.W. Argentine.² No. 1 is an adult male, with sooty-black upper-parts and the singularly modified second primary.

In the *Voyage* d'Orbigny united this species to *P. roseicollis*, considering the ♂ ad. of *P. r. rufus* to represent the immature stage of the latter bird. There is no female of d'Orbigny's in the Paris Museum.

P. r. rufus ranges from northern Santa Fé (Argentine), Paraguay, and Santa Catharina north to the hill districts of Eastern Bolivia (Chiquitos), Mattogrosso, Goyaz, and Bahia.

P. r. audax is evidently its Andean representative in Peru (Bolivia) and N.W. Argentine. It has as yet only been found in Central Peru (Chanchamayo) and the mountains of Tucumán.

***Psaris roseicollis* Lafr. & Orb. = *Platypsaris minor* (Less.).³**

Psaris roseicollis Lafresnaye & Orbigny, *Syn. Av. i. in Mag. Zool. cl. ii. p. 42* (1837—Guarayos, Yuracarès; deser. orig. ♂); d'Orb., *Voy., Ois., p. 302* (part: descr. ♂ ad.; Yuracarès, Guarayos).

No. 1, "♂" ad. (skin): "183. d'Orbigny, 1834. D. 373. *Psaris roseicollis* Nob. Type. Mâle. Guarayos."—Wing, 96; tail, 69; bill, 19 mm.

Very similar to an adult male procured by Castelnau and Deville at Sarayacu, Eastern Peru, but slightly greyer, less blackish below. Both have a large pink patch on the foreneck.

P. minor is widely diffused in the Amazonian forest-region, ranging from Guiana and Venezuela south to Northern Bolivia.

***Pachyrhynchus marginatus* = *Pachyrhamphus marginatus* (Licht.).⁴**

Pachyrhynchus marginatus (Licht.); L. & O., *Syn. Av. i. p. 42* (Yuracarès, rep. Boliviana; deser. ♀); d'Orb., *Voy., p. 303, pl. xxxi. fig. 2* (Yuracarès).

No. 1 (♀), ad. (skin): "D. 422. d'Yuracarès, par d'Orbigny, 1834. No. 132. *Pachyrhynchus marginatus*, d'Orb."—Wing, 65; tail, 52; bill, 12 mm.

This bird differs from a topotypical Bahia specimen (female) merely by smaller size. After examining large series from various parts of its range I do not consider it possible to divide the *P. atricapillus* auct.⁵ into two geographic

¹ *Hadrostomus audax* Cabanis, *Journ. f. Ornith.* 21, p. 68 (1873—Monterico, N.E. Ayacucho, C. Peru; descr. ♂♀).

² I have not yet had an opportunity of comparing them with topotypical Peruvian skin, but they agree well with Cabanis' description.

³ *Querula minor* Lesson, *Traité d'Orn.*, livr. 5, p. 363 (end of 1830—Cayenne, coll. Martin).

⁴ *Todus marginatus* Lichtenstein, *Verz. Dubl. Berliner Mus.* p. 51 (1823—Bahia, E. Brazil; deser. orig. ♀, type examined by Count Berlepsch; cf. *Nov. Zool.* 15, 1908, p. 141).

⁵ *Lanius atricapillus* Merrem (*Av. Icon. et Descript.*, fasc. ii. 1786, p. 26, pl. viii.: Surinam) appears unidentifiable. I follow, therefore, Count Berlepsch in adopting Lichtenstein's specific title for this bird.

raees, although it cannot be denied that northern specimens are, as a rule, slightly smaller. This may be illustrated by the appended figures.

♂♂ ad.	Wing.	Tail.	Bill.	
One from Bahia, E. Brazil	69	54	13½	mm.
Two from Rio de Janeiro ¹	70, 73½	57	13½	,,
Two from Caura, E. Venezuela	65½, 68	48, 52	13, 14	,,
Six from the Upper Rio Negro (Marabitanas)	65-69	50-54	12½-13½	,,
One from Maroins, Rio Machados	67½	51	13	,,
One from Pebas, N.E. Peru	64	48	13	,,
♀♀ ad.				
One from Bahia, E. Brazil	68	53	14	,,
Six from the Caura R., Venezuela	63-65½	47-51	12-14	,,
Three from the Rio Negro (Marabitanas) . .	63-65	47-50	12¾-14½	,,
One from Maroins, Rio Machados	65	48	14	,,
One from Pebas, N.E. Peru	62	44	13½	,,
One from Yuracarès, N. Bolivia	65	52	12	,,

Tyrannus sulphuratus = { *Pitangus sulphuratus maximiliani* (Cab. & Heine).²
Pitangus sulphuratus bolivianus (Laf.).³

Tyrannus sulphuratus (nec Linnaeus)⁴; L. & O., *Syn. Av.* i. p. 42 (Montevideo; Corrientes, Arg.; Cochabamba, Chuquisaca, Bolivia).

Tyrannus sulfuratus, d'Orb., *Voy.*, p. 304 (Buenos Ayres, Montevideo, Corrientes, Chiquitos, Cochabamba, Chuquisaca).

No. 1, "♂" ad. (skin): "Envoi de M. d'Orbigny, 13.9^{bre}.1827. *Tyrannus sulphuratus* Nob., de Montevideo, No. 13. Pass. Mâle."—Wing, 120; tail, 97; bill, 33 mm. = *Pitangus sulphuratus maximiliani* (Cab. & Heine).

No. 2, adult (skin): "d'Orbigny, juillet 1829. No. 108. Corrientes. *Tyrannus sulphuratus*. Nob."—Wing, 120; tail, 94; bill, 33 mm. = *P. s. maximiliani* (Cab. & Heine).

No. 3, imm., moulting (skin): "*Tyrannus sulphuratus*. Nob. d'Orbigny, juillet 1829. No. 108" [Corrientes].—Wing, —; tail, —; bill, 31½ mm. = *P. s. maximiliani* (Cab. & Heine).

There are no Bolivian examples in the Paris Museum. Adult and young from Chuquisaca passed into the hands of Lafresnaye and formed the basis of his *S. bolivianus*, which, as shown by ten skins from the highlands of Bolivia (Cochabamba, Sucre, and Santa Cruz), is easily recognisable by its large size. Birds from Argentine (Buenos Aires, Chaco, Corrientes, Tucumán), Matto-grosso, and Rio Grande do Sul are much smaller and agree well with Bahia skins.

¹ The marked type of *Pachyrhynchus Spixii* Swainson (*Anim. in Menag.* 1838, p. 289: "Brazil?"), which I have examined in the Paris Museum, was procured by Ménétrics in Southern Brazil, presumably in the vicinity of Rio de Janeiro. It is by no means referable to *P. polychropterus* (Vieill.), with which *P. spixii* has often been associated, but proves to be an adult male of *P. marginatus*. The type specimen (No. 3625 of the galleries) is precisely similar to a Bahia skin, and measures: wing, 70; tail [damaged]; bill, 13 mm.

² *Sauropagus maximiliani* Cabanis & Heine, *Mus. Hein.*, ii. p. 63 (1859—Brazil).

³ *Sauropagus bolivianus* Lafresnaye, *Rev. Mag. Zool.* (2) iv. p. 463 (1852—Chuquisaca, Bolivia, coll. d'Orbigny; types in coll. Lafresnaye, No. 4706, 4707, now in Mus. Boston Soc. N. Hist.).

⁴ *Lanius sulphuratus* Linnaeus, *Syst. Nat.*, 12, i. p. 137 (1766—ex Brisson: Cayenne).

Tyrannus audax = Myiodynastes solitarius (Vieill.).¹

Tyrannus audax (nec Gmelin)²; L. & O., *Syn. Ar. i.* p. 43 (Santo Corazón, Chiquitos); d'Orb., *Voy.*, p. 305 (Corrientes, au 28° degré lat. sud; Santa Cruz, Chiquitos, Bolivia).

Nos. 1, 2, adults (skins): "D. 316. Chiquitos, d'Orbigny, 1834. No. 122. *Tyr. audax* Vieill."

No. 3, adult (skin): "D. 316. S^{to} Corazon de Chiquitos, d'Orbigny, 1834. No. 122. *Tyrannus audax* Vieill."

All three are typical examples of *M. solitarius*, having the entire underparts broadly striped with black and no trace of rufous along inner web of rectrices. They agree perfectly with skins from Paraguay and Santa Fé (Argentine).

There is no Corrientes specimen in the Paris Museum.

Tyrannus crinitus = Myiarchus tyrannulus chlorepsciscus Berl. & Lev.³

Tyrannus crinitus (nec Linnaeus)⁴; L. & O., *Syn. Ar. i.* p. 43 (Corrientes); d'Orb., *Voy.*, p. 306 (Corrientes, Arg.; "vues dans la province de Yungas," Bolivia).

No. 1, adult (skin): "d'Orbigny, juillet 1829. No. 107. Corrientes. *Tyrannus crinitus* Nob."—Wing, 96½; tail, 91; bill [damaged] mm.

After carefully examining a considerable series from Mattogrosso (Cuyabá, Chapada), E. Bolivia (San Miguel), and northern Argentine (Corrientes, prov. Santa Fé, Salta, Tucumán), I am unable to separate the latter from *M. t. chlorepsciscus*, although some of the southern examples have the upper parts darker as well as of a more brownish tinge.

D'Orbigny's Corrientes bird, however, is, above, very nearly as light olivaceous grey as the adult male collected by Behn at San Miguel, E. Bolivia, on June 19, 1847, one of the types of *M. t. chlorepsciscus*,⁵ with which it has been compared. In both examples, the inner web of the four lateral rectrices (of each side) is bright cinnamon-rufous on its inner half.

The range of this pale southern form extends from Eastern Bolivia and Mattogrosso southwards to Paraguay and northern Argentine. The eastern limits of its area are still very imperfectly known. The inhabitants of S.E. Brazil (states Rio de Janeiro, S. Paulo, Paraná) which I have not seen might belong to either *M. t. chlorepsciscus* or *M. t. bahiae*. Cf. also Hellmayr, *Nov. Zool.* 15, 1908, p. 53.

Tyrannus ferox { ♂ = *Myiarchus cephalotes* Tacz.⁶
 { ♀ = *Myiarchus pelzelni ferocior* Cab.⁷

Tyrannus ferox (nec Gmelin)⁸; L. & O., *Syn. Ar. i.* p. 43 (Chiquitos, Santa Cruz, Yungas, Bolivia); d'Orbigny, *Voy.*, p. 306 (Moxos et Chiquitos, Santa Cruz-de-la-Sierra, prov. Yungas; descr. ♂ ♀).

¹ *Tyrannus solitarius* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 35, p. 88 (1819—ex Azara No. 196: Paraguay).

² *Muscicapa audax* Gmelin, *Syst. Nat.* 1, ii, p. 934 (1789—ex Daubenton, *Pl. enl.* 453, fig. 2: Cayenne); = *Myiodynastes maculatus* (P. L. S. Müll.), 1776.

³ *Myiarchus tyrannulus* (St. Müll.), subsp. n. *chlorepsciscus* Berlepsch & Leverkühn, *Ornis*, vi, p. 16 (1890—San Miguel, distr. Guarayos, E. Bolivia; Cuyabá, Mattogrosso).

⁴ *Turdus crinitus* Linnaeus, *Syst. Nat.*, 10, i, p. 170 (1758—ex Catesby, *Carolina*, i, p. 52, pl. lii: Carolina).

⁵ This bird is now in the Vienna Museum, No. 19499.

⁶ *Proc. Zool. Soc. Lond.* 1879, p. 671 (1879—Paltaypampa, Ropaybamba, C. Peru; Tambillo, N.W. Peru).

⁷ *Myiarchus ferocior* Cabanis, *Journ. f. Ornith.* 31, p. 214 (1883—Tucumán, N.W. Argentine).

⁸ *Muscicapa ferox* Gmelin, *Syst. Nat.* 1, ii, p. 934, excl. var. β (1789—ex Brisson: Cayenne).

No. 1 (♀, ad. (mounted): "*Myiarchus ferox* (Gm.) ♂. d'Orbigny, 1834. No. 125. Yungas, Bolivie. No. 3737A."—Wing, 85; tail, 87; bill, 19 mm. = *Myiarchus cephalotes* Tacz.

No. 2 (♂, ad. (mounted): "*Myiarchus ferox* (Gm.) ♀. Chiquitos, Bolivie, par d'Orbigny, 1834. No. 125. No. 3737B."—Wing, 97; tail, 87; bill, 19 mm. = *Myiarchus pelzelni ferocior* Cab.

The bird from Yungas (No. 1) is an example of *M. cephalotes*, agreeing in every respect with three adults from Chirimoto, N. Pern. The outer web of the outermost rectrix is decidedly whitish; the upper wing coverts show broad, dingy whitish, apical edges; the upper surface is of a deep, smoky olive colour. The Munich Museum has specimens of the same form from Chaquimayo, Carabaya, S.E. Peru. From *M. f. ferox* (Gm.) and *M. f. swainsonii* Cab. & Heine, this species may be distinguished by the conspicuous whitish outer margin to the external rectrix, darker upper parts, and whitish (instead of greyish buff or greyish brown) markings on the wing coverts. Its range extends from Eastern Ecuador (Machay), through the central and eastern parts of Peru, to the forest region of N.W. Bolivia (Western Yungas).

The Chiquitos-bird (No. 2) is practically identical with an adult male from Ocampo, prov. Santa Fé, Argentine, November 7, 1900, S. Venturi coll., No. 08.553, Munich Museum, which, thanks to the good offices of the late Count Berlepsch, I had been able to compare with the type of *M. ferocior* Cab., from San Xavier, Tucumán, belonging to the Berlin Museum. D'Orbigny's specimen, although slightly soiled, still shows the characteristic light olivaceous grey ground-colour of the upper parts, and the whitish grey tone of the throat and foreneck, while the pale horn-brown bill is of exactly the same shape as in our Argentine skins. In all the four individuals examined in the present connection the light markings of the upper wing coverts are dull whitish, as is also the outer web of the lateral rectrix.

[*M. ferocior* has been either synonymised with or regarded as a geographic race of *M. ferox*. Neither of these views, however, can be upheld, as a careful investigation of the case tends to show. This bird, in shape of the wing and bill as well as in coloration, agrees so closely with *M. pelzelni* that there can be no doubt whatever as to the near relation of the two "species." In fact, the four specimens from Argentine and E. Bolivia, *M. p. ferocior*, differ from twelve *M. pelzelni* merely by somewhat larger size and slightly more greenish upper-parts. These divergencies are, however, slight, and not quite constant, so that the relationship of the two forms is more properly expressed by trinomials. Thus, we have—

(a) *Myiarchus pelzelni pelzelni* Berl.

Brazil: Bahia (Isl. Itaparica, in the Bay of Bahia; ¹ Fazenda da Serra, on the Rio Grande ²); Mattogrosso (Potinho ³); Piahy (coastal zone ⁴); Amazonia (Boim, Rio Tapajóz; ⁴ Marajó; ⁴ Faz. Nazareth, Isl. Mexiana ⁵); C.E. Peru; Santa Ana, ⁶

¹ Nicoll, *Ibis* (8), vi. 1906, p. 668.

² *Myiarchus ferox cantans* Reiser, *Denkschr. math.-naturw. Kl. Akad. Wiss. Wien*, 76, 1910, p. 76 (part: Nos. 426, 1319).

³ Berlepsch & Leverkühn, *Ornis*, vi. 1890, p. 17.

⁴ Sneath, *Bol. Mus. Oeldi*, viii. 1914, p. 389.

⁵ Hellmayr, *Abhandl. Bayer. Akad. Wiss., math. phys. Kl.*, 26, No. 2, 1912, p. 110.

⁶ Berlepsch & Stolzmann, *Ornis*, xiii. 1906, p. 89.

	Wing	Tail	Bill
Seven (unsexed) Bahia skins (incl. the type)	83-90½	79-84	18½-20½ mm.
One (unsexed) adult, Potinho, Mattogrosso	89	82½	20 "
One adult male from Fac. da Serra, Bahia.	94	89	18½ "
One adult female from Piauhý . . .	81	79	17 "
One adult female from Mexiana . . .	83	78	17½ "
One adult male from Santa Ana, C.E. Peru	90	87	18½ "
One adult female from Santa Ana, C.E. Peru	83½	80½	18 "

(b) *Myiarchus pelzelni ferocior* Cab.¹

Eastern Bolivia: Chiquitos; Western Argentine: Tucumán (San Xavier, Tapia), Cordoba (Schulz); Santa Fé (Mocovi, Ocampo, Chaco).—Also recorded from Concepcion del Uruguay, Entrerios, by Barrows, and from Barracas al Sud, prov. Buenos Aires, by Hartert & Venturi.

	Wing	Tail	Bill	
One adult male from Chiquitos, E. Bolivia .	97	87	19	mm.
One adult male from Rio Surutu, Dep. Sta. Cruz, Bolivia ²	95	84	19½	"
One adult from Tucumán (type)	98	89	19	"
One adult male from Miraflores, Oran ²	93	85	18½	"
Two adult males from Santa Fé	94, 97	87, 89	18, 19	"]

In the *Voyage* (p. 307), d'Orbigny says "les mâles sont beaucoup plus foncés en dessus que les femelles et leurs couleurs sont plus vives." This statement is fully borne out by the specific differences separating *M. cephalotes* (= "♂") and *M. pelzelni ferocior* (= "♀"). On the other hand, it is quite certain that the sex of these birds cannot have been ascertained by dissection, but was more probably conjectured from their external appearance, since No. 1 agrees in small size with sexed females of *M. cephalotes* (males having the wing from 91 to 95 mm.), while No. 2, *M. pelzelni ferocior*, is most certainly a male!

***Tyrannus atriceps* Lafr. & Orb.**

Tyrannus atriceps Lafresnaye & Orbigny, *Syn. Av. i.* in: *Mag. Zoot.* cl. ii. p. 43 (1837—new name for *Muscicapa atra* Gmelin³; Yungas, Guarayos, rep. Boliviana).

Not mentioned in the *Voyage*. No specimen is to be found in the Paris Museum that could possibly be referred to the above species. The name as given is a pure synonym of *M. atra* = *Sayornis phoebe* (Lath.), a well-known North American bird. As this does not occur in Bolivia, *Tyrannus atriceps* might well have been intended for its ally *Sayornis cineracea* auct. (nec Lafr.).⁴

¹ Part 2 of vol. xxxi. of the *Journ. f. Ornith.*, although dated "April 1883," was evidently published much later, since on p. 224 the receipt of the April issue of the *Ibis* for 1883, containing the description of *M. pelzelni*, is acknowledged by the editor.

² Authentic specimens of *Myiarchus* (?) *fortirostris* Todd (*Proc. Biol. Soc. Wash.* 26, 1913, p. 171: Prov. del Sara, E. Bolivia) forwarded by the author to my inspection. Comparison with the type of *M. ferocior* proves them to be inseparable from that species.

³ *Syst. Nat.* 1, ii. p. 946 (1789—ex "Dusky Flycatcher" Pennant, *Arctic Zool.* ii. p. 389: New York); = *Sayornis phoebe* (Lath.).

⁴ = *Sayornis nigricans latirostris* (Cab. & Iffene). See Bangs & Penard, *Bull. Mus. Comp. Zool.* 63, No. 2, June 1919, pp. 28-9.

Tyrannus tuberculifer = Myiarchus tuberculifer tuberculifer (Laf. & Orb.),

Tyrannus tuberculifer Lafresnaye & d'Orbigny, *Syn. Av. i.* in: *Mag. Zool.* cl. ii. p. 13 (1837—Guarayos, Bolivia; descr. orig.); d'Orbigny, *Voy., Ois.*, p. 307, pl. xxxii. fig. 1 (Guarayos).

No. 1, "♀" ad. (mounted): "No. 3737c. *Myiarchus tuberculifer* (d'Orb. & Laf.) ♀. *Type.* de Guarayos, Bolivie, 1834, par d'Orbigny, No. 126."—Wing, 77; tail, 73½; bill, 17½ mm.

This bird has been dealt with in Nov. Zool. 13, 1906, pp. 323–324, where I have shown *Myiarchus gracilirostris* Pelz. and *M. coalei* Ridgw. to be synonymous with the species described by Lafresnaye and d'Orbigny. From Eastern Brazil no new material has come to hand since, so I am still in doubt whether *M. tuberculifer tricolor* Pelz. can be maintained as a distinct race as suggested in that paper.

Tyrannus fumigatus = Myiochanes fumigatus fumigatus (Laf. & Orb.).

Tyrannus fumigatus Lafresnaye & d'Orbigny, *Syn. Av. i.* in: *Mag. Zool.* cl. ii. p. 43 (1837—Yungas, Bolivia; descr. orig.); d'Orbigny, *Voy., Ois.*, p. 307 ("à Irupana, prov. Yungas . . . un seul exemplaire").

No. 1, adult (skin): "D. 261, Bolivie. *Tyrannus fumigatus* Nob., par d'Orbigny, 1834. No. 175."—Wing, 93; tail, 78½; bill, 16 mm.

The species is discussed at length in Nov. Zool. 20, Feb. 1913, pp. 245–246. The well-known "*Contopus ardesiacus*" of authors is a northern form of this bird, and should stand as *Myiochanes fumigatus ardesiacus* (Laf.). A list of the geographic races of the group is given l.c.

Tyrannus rufescens Laf. & Orb. = **Attila bolivianus bolivianus** Laf.¹

Tyrannus rufescens Lafresnaye & d'Orbigny (nee Swainson),² *Syn. Av. i.* in: *Mag. Zool.* cl. ii. p. 44 (1837—Guarayos, E. Bolivia; descr. orig.); d'Orbigny, *Voy., Ois.*, p. 308 (Guarayos, Moxos, Chiquitos).

Nos. 1–3, adults (skin): "D. 367. Guarayos, Bolivie, d'Orbigny 1834. *Tyrannus rufescens* Nob."—Wing, 94½, 95, 98; tail, 80, 83, 83; bill, 22½, 23, 24 mm.

As I have shown elsewhere,³ *A. bolivianus* is the species afterwards redescribed as *A. validus* by Pelzel.⁴ The specimens in the Paris Museum which must be considered as the types agree in every respect with Natterer's series from Matto-grosso. *A. b. bolivianus* inhabits the plains of Eastern Bolivia (Guarayos), the adjoining parts of Brazil (Villa Maria, Engenho do Gama, Villa Bella de Mattogrosso, Chapada, Mattogrosso; Cachoeira, on the upper Purús⁵), and Eastern Peru, where Count Castelnau secured an adult male at Sarayacu, lower Ucayali, in 1846, which is preserved in the Paris Museum. On the lower Rio Madeira (Borba) and in Lower Amazonia (Monte Alegre, Rio Jamundá (Faro), Pará) it is replaced by the darker-coloured *A. bolivianus nattereri* Hellm.⁶

¹ *Attila Bolivianus* Lafresnaye, *Rev. Zool.* 11, p. 46 (1848—nom. nov. for *T. rufescens* Laf. & d'Orb. nee Swainson).

² *Quart. Journ. Sci., Lit. & Arts*, 20, No. 40, p. 278 (Jan. 1826—hab. ign.) = *Attila spadicea spadicea* (Gm.) 1789.

³ *Verhandl. Zool. Bot. Ges. Wien*, 52, 1902, pp. 96–97; *Nov. Zool.* 13, 1906, p. 330.

⁴ *Zur Ornith. Bras. ii.* p. 169 (1868—Villa Maria [= San Luis de Cáceres]; Villa Bella de Mattogrosso; Engenho do Gama, R. Guaporé, Western Mattogrosso).

⁵ Snethlage, *Journ. f. Ornith.* 56, 1908, p. 13 (specimen examined by me).

⁶ *Attila nattereri* Hellmayr, *Verhandl. Zool.-Bot. Gesells. Wien*, 52, p. 95 (1902—Borba, Rio Madeira (type); Pará, N. Brazil).

Tyrannus rufus = Casiornis rufa rufa (Vieill.).¹

Tyrannus rufus (Vieill.); L. & O., *Syn. Av. i.* p. 14 (Yungas, Chiquitos).

Tyrannus thamnophiloides (nec Spix²). d'Orbigny, *Voy.*, Ois., p. 308 (Yungas, Chiquitos).

No. 1, adult (skin): "171. d'Orbigny, 1834. D. 256. Yungas. *Tyrannus thamnophiloides* Nob."—Wing, 88; tail, 86; bill, 16½ mm.

This bird as well as an adult male from Santa Cruz de la Sierra, July 30, 1909, José Steinbach coll., in the Carnegie Museum, while agreeing with Brazilian examples as far as coloration is concerned, exhibit decidedly larger dimensions. The measurements of a large series from Goyaz, C. Brazil, are to be found in Nov. Zool. 15, 1908, p. 56. Topotypical Paraguay skins which I have not seen might possibly belong to this supposed Bolivian race. In this case, the specific term *typus*³ would become available for the smaller Brazilian bird.

Tyrannus caesioides = Thamnomanes caesioides schistogynus Hellm.⁴

Tyrannus caesioides "Licht." (nec Temminck)⁵; d'Orbigny, *Voy.*, Ois., p. 309 (Yuracarès, N. Bolivia; descr. ♂♀).

Nos. 1, 2, "♂" ad. (skins): "No. 94. d'Orbigny, 1834. *Tyrannus caesioides* Nob. Mâle. d'Orbigny, *Voyage*, p. 309. Yuracarès, D. 412."—Wing, 70, 74; tail, 63; bill [damaged] mm.

No. 3, "♀" ad. (skin): "No. 170. *Tyrannus caesioides* Nob. femelle, par d'Orbigny, 1834. D. 413. Yuracarès."—Wing, 68½; tail, 63; bill, 16½ mm.

Besides, I have examined 5 ♂♂, 4 ♀♀ from San Mateo, Yuracarès, N. Bolivia, in the Berlepsch and Munich collections. More recently we have received 2 ♂♂, 4 ♀♀ from the Carabaya district, S.E. Peru (Rio San Gaban, 2,500 ft.; Yahuar-mayo, 1,200 ft.), through the brothers Watkins, which agree perfectly with the typical Bolivian examples. As pointed out in the original description,⁴ the males of this species differ from *T. caesioides glaucus* Cab. [which they resemble in the possession of a large white interscapular blotch] merely by the much darker, more bluish slate colour of the plumage, while the females may be recognised at once by having the upper parts, sides of the head, throat, and chest bluish slate, like the male, instead of olive-brown as in the other species of *Thamnomanes*. The types of *Th. purusianus* Sneathl.,⁶ from the Rio Purús, W. Brazil, are in every respect identical with d'Orbigny's Bolivian examples.

About the affinities of this race my remarks in another paper (*Arch. f. Naturg.* 85, A. Heft 10, 1920, pp. 95–96) should be consulted.

¹ *Thamnophilus rufus* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd. iii. p. 316 (1816—ex Azara: "Bataia roxo" [No. 218; édit. Sonnini, No. 217]; Paraguay).

² *Muscicapa thamnophiloides* Spix, *Av. Bras.* ii. p. 19, pl. xxvi. fig. 1 (1825—"in locis sylvaticis fl. Amazonum").

³ *Casiornis typus* (Bonaparte MS.) Des Murs in: Castelnau, *Expéd. Amér. Sud.*, Ois. p. 55, pl. xviii. fig. 1 (1856—Goyaz).

⁴ *Rev. Franç. d'Orn.* ii. No. 22, p. 25 (Feb. 1911—San Mateo, Yuracarès, N. Bolivia; descr. orig. ♂♀).

⁵ *Muscicapa caesia* Temminck, *Pl. col.*, livr. iii. pl. xvii. fig. 1 (♂), 2 (♀) (Oct. 1820—S.E. Brazil; cf. Hellmayr, *Nov. Zool.* 12, 1905, p. 285).

⁶ *Ornith. Monatsber.* 22, p. 40 (1914—Ponto Alegre, Rio Purús, W. Brazil).

Tyrannus savana = Muscivora tyrannus (Linn.).¹

Tyrannus Savana Vieill.² ; L. & O., *Syn. Av.* i. p. 44 (Montevideo, Maldonado, Corrientes, Patagonia, Moxos, Chiquitos).

Tyrannus tyrannus (Lath.) ; d'Orb., *Voy.*, p. 310 (Corrientes, Entrerios, Buenos Ayres, Montevideo, Rio Negro (au 41° degré lat. sud), Santa Cruz, Chiquitos, Moxos).

No. 1, "♂" ad. (skin) : "Envoi de M. d'Orbigny. *Tyrannus tyrannus* Nob., de Montevideo, 9^{bre} 1826. Mâle. Passereaux No. 18."

No. 2, adult (skin) : "de Maldonado, No. 18 Pass. Envoi de M. d'Orbigny, 13 9^{bre} 1827. *T. tyrannus* Nob."

Tyrannus melancholicus melancholicus Vieill.

Tyrannus melancholicus Vieill.³ ; L. & O., *Syn. Av.* i. p. 44 (Corrientes, Arg. ; Guarayos, Santa Cruz, Yungas, Bolivia) ; d'Orb., p. 311 (embouchure de La Plata, Montevideo, prov. Buenos Ayres, Corrientes, Santa Cruz de la Sierra, Chiquitos, Moxos).

No. 1, adult (skin) : "d'Orbigny, juillet 1829. No. 107. *T. melancholicus* Vieill., Corrientes."

No. 2. Skin : "D. 445. Santa Cruz, par d'Orbigny, 1834."

No. 3. Skin : "D. 445. d'Orbigny, 1834. de Yungas, Bolivie."

No. 4. Skin : "D. 445. de Guarayos, No. 119, par d'Orbigny, 1834."

The Bolivian birds appear to be indistinguishable from the Corrientes specimen and others secured in Paraguay.

Tyrannus rufiventris Lafr. & Orb. = **Orodynastes striaticollis striaticollis** (Sel.).⁴

Tyrannus rufiventris (nee Vieillot)⁵ ; Lafresnaye & d'Orbigny, *Syn. Av.* i. in : *Mag. Zool.* cl. ii. p. 45 (1837—Yungas, Bolivia ; descr. orig.) ; d'Orbigny, *Voy.*, Ois., p. 312, pl. xxxii. fig. 2 (Yungas, près du rio de Meguella, à l'est des Cordillères de La Paz).

No. 1, (♂) ad. (skin) : "*Tyrannus rufiventris*, Nob. No. 123, par d'Orbigny, 1834. D. 226. d'Yungas."—Wing, 135 ; tail, 97 ; bill, 22 mm.

Not appreciably different from Peruvian and Ecuadorian examples, but a series of fresh skins should be compared, in order to make sure of the identity of the Bolivian bird.

Birds from N.W. Argentine (Salta, Tucumán) are fairly differentiated by reason of their smaller bill and paler under-parts. They have to stand as *O. striaticollis pallidus* (Berl.).⁶

The genus *Orodynastes* is exceedingly distinct from *Myiotheretes* Reichb.

Tyrannus aurantio-atro-cristatus = Empidonomus aurantio-atro-cristatus (Lafr. & Orb.).

Tyrannus aurantio-atro-cristatus Lafresnaye & d'Orbigny, *Syn. Av.* i. in : *Mag. Zool.* cl. ii. p. 45 (1837—Valle Grande, Bolivia ; descr. orig.) ; d'Orbigny, *Voy.*, Ois., p. 312 (Corrientes, Arg. ; Valle Grande, Bolivia).

¹ *Muscicapa tyrannus* Linnaeus, *Syst. Nat.* 12, i. p. 325 (1766—ex Brisson : "Canada" [erreur!] et Cayenne").

² *Hist. Nat. Ois. Amér. sept.* i. p. 72, pl. xliii ("1807"—Cayenne, Montevideo, etc.).

³ *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 35, p. 84 (1819—ex Azara No. 198 : Paraguay).

⁴ *Taxioptera striaticollis* Sclater, *Proc. Zool. Soc. Lond.* 19, "1851," p. 193, pl. xlii. (June 1853—"in republicâ Equatorianâ").

⁵ *Tabl. enc. méth.*, Ornith. ii. livr. 93, p. 856 (1823—ex Azara No. 205 : "dans les campagnes nues de Montevideo").

⁶ *Myiotheretes striaticollis pallidus* Berlepsch, *Bull. B.O.C.* 16, p. 98 (1906—Norco, Tucumán).

Nos. 1, 2 (♂♂) ad. (skin): "D. 306. *Tyrannus aurantio-atro-cristatus* Nob. Type. par d'Orbigny, 1834. No. 130. de Valle Grande, Bolivie."—Wing, 101, 102; tail 86, 87; bill, 14 $\frac{1}{3}$, 15 mm.

These are adult males with the three outer primaries strongly attenuated and pointed at the tip. Birds from Argentine (Tucumán, Santa Fé) agree well with the Bolivian ones. A male (immature?) from Fazenda de Thomas da Saga, Rio Tocantins, prov. Goyaz, procured by Count Castelnau in September 1844, is smaller (wing 90, tail 76 mm.) and has much paler (ashy instead of sooty grey) under-parts. Having seen but that single specimen, I cannot say whether these differences are racial or due to age.

***Tyrannus animosus* = *Tyrannus tyrannus* (Linn.).¹**

Tyrannus animosus (Licht.).²; L. & O., *Syn. Av. i.* p. 45 (Santa Cruz, Bolivia; descr. juv.).

Tyrannus intrepidus Vieill.³; d'Orbigny, *Voy.*, p. 313 (Santa-Cruz-de-la-Sierra, en hiver).

No. 1, adult (skin): "No. 127. d'Orbigny, 1834. *T. intrepidus* Vieill., Sta. Cruz."

Nos. 2, 3, juv. (skin): "No. 127. d'Orbigny, 1834. *T. intrepidus* Vieill. D. 318, Santa Cruz."

The first-named example is an adult with yellow vertical spot, the two others young birds with the middle of crown dull greyish brown.

The Kingbird breeds in the United States, and visits South America in winter. Santa Cruz de la Sierra and Caiza ' in Bolivia are, as far as I know, the most southerly winter-record for the species.

***Hirundinea bellicosa* = *H. bellicosa pallidior* Hart. & Goods.⁵**

Hirundinea bellicosa (nec Vieill.)⁶; L. & O., *Syn. Av. i.* p. 46 (Cochabamba, Chiquitos, Chuquisaca); d'Orb., *Voy.*, p. 314 (Cochabamba, Chuquisaca, Challuani; mission Santiago (Chiquitos)).

No. 1, adult (skin): "No. 172, par d'Orbigny, 1834. *Hirundinea bellicosa* Nob. D. 294. Chiquitos."

No. 2, imm. (skin): "No. 172, par d'Orbigny, 1834. D. 293, de Cochabamba."

No. 3, adult (skin): "No. 172, par d'Orbigny, 1834, de Chuquisaca, D. 293. *Hirundinea bellicosa* Nob."

Besides, I have examined six other Bolivian examples in the Berlepsch Collection, viz. two ♂s, one ♀ from Chicani, one ♀ from S. Antonio, Yungas of La Paz, and a couple taken at Samaipata, prov. Santa Cruz. The series agree with two skins secured by E. W. White in Catamarca, W. Argentine, and should no doubt be referred to *H. bellicosa pallidior* Hart. & Goods. Compared with numerous specimens from Paraguay and Brazil (Bahia, Minas Geraes, S. Paulo, Rio Grande do Sul) the western birds differ in their lighter earthy-brown upper-parts, much wider cinnamon-rufous edges to the wing coverts, and shorter

¹ *Lanius tyrannus* Linnaeus, *Syst. Nat.* 10, i. p. 94 (1758—ex Catesby; Carolina).

² *Muscicapa animosa* Lichtenstein, *Verz. Säugeth. & Vögel Berliner Mus.* p. 18 (1818—ex *Lanius carolinensis* Gmelin, *Syst. Nat.* 1, i. 1788, p. 302; ex Buffon et Catesby: Carolina).

³ *Tyrannus intrepidus* Vieillot, *Tabl. enc. méth.*, Ornith. ii, livr. 93, p. 849 (1823—ex Catesby et Buffon: Carolina).

⁴ *Tyrannus pipiri* Salvadori, *Boll. Mus. Zool. Torino*, 12, No. 292, 1897, p. 16.

⁵ *Nov. Zool.* 24, No. 2, p. 411 (1917—Salta, N.W. Argentine).

⁶ *Tyrannus bellicosus* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 35, p. 74 (1819—ex Azara, No. 189: Paraguay).

blackish tips to the rectrices. I do not find, however, the under surface to be paler or the dusky portion of wings and tail "less blackish" than in *H. b. bellicosa*. The birds from E. Bolivia are perfectly similar to the Argentine ones, showing no approach to *H. b. bellicosa*.

H. b. pallidior replaces the typical race in the mountainous parts of western South America, ranging from La Rioja and Catamarca to N. Bolivia.

Todirostrum cinereum = Todirostrum cinereum coloreum Ridgw.¹

Todirostrum cinereum (nec Linnaeus)²; L. & O., *Syn. Ar.* i. p. 46 (Mojos, Bolivia); d'Orb., *Voy.*, p. 315 (Concepcion de Moxos).

No. 1, adult (skin): "D. 439. Mojos, Bolivie. *Todirostrum cinereum* Nob., d'Orbigny, 1834. No. 179."—Wing, 47; tail, 37; bill, 14 mm.

This bird agrees with one of our specimens from Western Minas (Agua Suja near Bagagem) in having the slaty grey back washed with greenish. Other examples from Agua Suja, like an adult female from Goyaz and a couple from Corumbá (the type locality of *coloreum*), are even brighter above, the back being nearly uniform light olivaceous green and contrasting with the dark slaty pileum. At all events, the Mojos bird must be referred to *T. c. coloreum* if this race is separable. Cf. Hellmayr, *Abhandl. Bayer. Akad. Wiss., math.-naturwiss. Kl.*, xxvi, No. 2, 1912, p. 130.

The range of *T. c. coloreum* appears to be restricted to the dry campos-districts in the interior of Brazil, extending from S.W. Minas (Bagagem), northern São Paulo (Rio Paraná), and Goyaz west to Mattogrosso (Chapada, Cuyabá, Corumbá, Caiçara, S. Vicente), and the adjoining Mojos district of Bolivia.

Todirostrum gularre { ♂ = *Euscarthmus gularis viridiceps* Salvad.³
♀ = *Todirostrum latirostre* (Pelz.).⁴

Todirostrum gularre (nec Temminck)⁵; L. & O., *Syn. Ar.* i. p. 46 (Yungas, Chiquitos; descr. ♀ = *T. latirostre* (Pelz.)); d'Orbigny, *Voy.*, p. 315 (Circuata, prov. Yungas; Santo-Corazón-de-Chiquitos; descr. "♂♀").

Nos. 1, 2, adult (skin): "No. 178. d'Orbigny, 1834. —*Todirostrum gularre* Nob. Mâle, d'Yungas. D. 269."—Wing, 45, 45½; tail, 36, 38; bill, 13 mm. = *Euscarthmus gularis viridiceps* Salvad.

No. 3, adult (skin): "158. d'Orbigny, 1834. *Todirostrum gularre* Nob. femelle, de Chiquitos. D. 440."—Wing, 43; tail, 31; bill, 14 mm. = *Todirostrum latirostre* (Pelz.).

Under the heading of *Todirostrum gularre* two distinct species were confused by Lafresnaye and d'Orbigny.

The alleged male with slaty pileum represents the western form of *E. gularis*, whose correct name is *E. g. viridiceps*, as we shall show presently, while the "female" turns out to belong to *T. latirostre*.

In addition to Nos. 1 and 2, I have examined two more Bolivian examples in Count Berlepsch's Collection, viz. an adult male taken by Kalinowski at Chulu-

¹ *Proc. Biol. Soc. Wash.* 19, p. 115 (1906—Corumbá, Mattogrosso).

² *Todus cinereus* Linnaeus, *Syst. Nat.*, 12, i. p. 178 (1766—ex Edwards: Surinam).

³ *Euscarthmus viridiceps* Salvadori, *Boll. Mus. Zool. Torino*, 12, No. 292, p. 12 (1897—San Lorenzo, Jujuy, N.W. Argentine; descr. juv.).

⁴ *Euscarthmus latirostris* Pelzeln, *Zur Orn. Bras.* ii. p. 173 (1868—Borba, Rio Madeira).

⁵ *Muscicapa gularre* (Natterer MS.) Temminck, *Rec. Pl. col.*, livr. 28, pl. 167, fig. 1 (1822—"Brésil," coll. Natterer, sc. São Paulo, S.E. Brazil; cf. Pelzeln, *Zur Orn. Bras.* p. 102).

mani, and an immature male from Coroico, secured by G. Garlepp; three males, two females from Ledesma, prov. Jujuy, N.W. Argentine. L. Dinelli coll., in the Tring and Munich Museums; and the type of *E. viridiceps* Salvad., likewise from Jujuy (San Lorenzo), kindly lent by its describer from the Turin Museum. The type, as manifested by the fluffy texture of the plumage, is an immature bird, and most of the differences supposed to separate it from the Brazilian *E. gularis* are evidently due to age. The very satisfactory series from near the type locality¹ shows that adult birds from N.W. Argentine have the pileum slate grey and the whole bill black, exactly like those from Brazil. They may, however, be distinguished from the latter by the deeper rufous sides of the head, broader wing-bands, more greyish chest, and more yellowish-green flanks. In most of the western skins, the dusky auricular patch is smaller or even wanting. The Bolivian birds have, as a rule, the chest slightly more shaded with greyish than those from Jujuy, though this is not quite constant.

The range of the two races is as follows:

(a) *E. gularis gularis* (Temm.). Wood-region of Eastern Brazil (from Pernambuco to Rio Grande do Sul), Paraguay, and N.E. Argentine (Misiones; Corrientes [S. Tomé, White coll.]).²

(b) *E. gularis viridiceps* Salvad. N.W. Argentine, Jujuy (San Lorenzo, Ledesma); Western Bolivia (Circuata, Simacu, Coroico, Songo, Chulumani).³

The "female" of *T. gulare*, with "pileo brunnescenti, non plumbeo, gutture albicante, non rufo, alisque tectricibus minoribus aurantio-rufis, non viridibus," from Chiquitos, is in every respect a typical example of *Todirostrum latirostre* (Pelz.). It agrees well with the type and other specimens from Mattogrosso (Chapada) and Eastern Ecuador (Sarayaçu). About the affinities of this species cf. my remarks in *Verhandl. Zool. Bot. Gesell. Wien*, 53, 1903, p. 205.

***Todirostrum margaritaceiventer* = *Euscarthmus m. margaritaceiventer* (Laf. & Orb.).**

Todirostrum margaritaceiventer Lafresnaye & d'Orbigny, *Syn. Ar.* i. in: *Mag. Zool.* cl. ii. p. 46 (1837—Chiquitos, Bolivia; descr. orig.); d'Orbigny, *Voy.*, Ois., p. 316, pl. xxxiii. fig. 3 (Corrientes, Arg.; Santo-Corazón-de-Chiquitos, Bolivia).

No. 1, adult (skin): "No. 161, par d'Orbigny, 1834. de Chiquitos, *Todirostrum margaritaceiventer* Nob. type."—Wing, 51; tail, 45; bill, 13 mm.

Geographie variation and synonymy of this little Tyrant were discussed at length by Berlepsch and Hellmayr in *Journ. f. Ornith.* 53, 1905, pp. 9–11, so I need not dwell further on this subject.

Birds from Corrientes (also mentioned by d'Orbigny) I have not seen, but several from Santa Fé (Mocovi, Ocampo) agree perfectly with the Bolivian ones.

¹ San Lorenzo and Ledesma, places in the eastern part of Jujuy, lie close together, not far from the boundary of the Dept. Oran.

	Wing.	Tail.	Bill.
² Two adult males from São Paulo, S.E. Brazil . . .	42, 44	36½, 37	12½ mm.
One adult female from Espirito Santo, S.E. Brazil . . .	40	34	13½ ..
One adult female from São Paulo, S.E. Brazil . . .	42	35	13 ..
One adult male from Misiones, Argentine . . .	46	42	13 ..
³ Three adult males from Jujuy, N.W. Argentine . . .	43–44	38–39	13 ..
Three adult females from Jujuy, N.W. Argentine . . .	41–42	35–37	13 ..
Three adult males from Western Bolivia . . .	45–45½	36–38	13 ..

Todirostrum ecaudatum = Orchilus ecaudatus (Lafr. & Orb.).

Todirostrum ecaudatum Lafresnaye & d'Orbigny, *Syn. Av.* i. in: *Mag. Zool.* cl. ii. p. 47 (1837—Yuracarès (Bolivia); descr. orig.); d'Orbigny, *Voy.*, Ois., p. 316, pl. xxxiii. fig. I (Yuracarès).

No. 1, adult (skin): "No. 180. *Todirostrum ecaudatum* Nob. *Type*, par d'Orbigny, 1834. d'Yuracarès, D. 423."—Wing, 34; tail, 15; bill, 10 mm.

This tiny Flycatcher is widely diffused in South America, ranging from Trinidad and the Venezuelan north coast, all over Amazonia south to N. Bolivia. After comparing some thirty examples from various localities, I am unable to detect any differences connected with particular geographic areas.

Muscipeta cayennensis = Myiozetetes cayanensis cayanensis (Linn.).

Muscipeta cayennensis "Gm."¹; L. & O., *Syn. Av.* i. p. 47 (Mojos, rep. Bolivia); d'Orbigny, *Voy.* p. 317 (Rio Blanco et Rio Itonama, prov. Moxos, Bolivia).

No. 1, adult (without original label), from "Bolivie, par d'Orbigny, 1834."

This bird, as well as two females from western Matto Grosso (Rio Guaporé), agree well with Cayenne skins. Cf. *Nov. Zool.* 15, 1908, pp. 48-49.

Muscipeta regia = Onychorhynchus coronatus (P. L. S. Müll.).²

Muscipeta regia (Gm.)³; d'Orbigny, *Voyage*, Ois., p. 317 (Yuracarès).

No longer in the Paris Museum, nor otherwise recorded from Bolivia. It will, however, be remembered that the types of *Onychorhynchus castelnau* Deville⁴ were secured in the neighbouring Republic near the Mission of Sarayaçu. Pampa del Sacramento. Peruvian examples apparently do not differ from the typical Guianan bird. Cf. *Nov. Zool.* 14, 1907, pp. 356-357.

Muscipeta albicollis = Legatus leucophaeus leucophaeus (Vieill.).⁵

Muscipeta albicollis (Vieill.)⁶; L. & O., *Syn. Av.* i. p. 47 (Guarayos, Bolivia); d'Orb., *Voy.* p. 318 (rivière San-Miguel, prov. Guarayos).

Nos. 1, 2 (skins): "D. 387. Guarayos. *Muscipeta albicollis* Nob. No. 167. par d'Orbigny, 1834."

Bolivian specimens agree well with others from Paraguay and Brazil.

Muscipeta coronata = Pyrocephalus rubinus (Bodd.).⁷

Muscipeta coronata Gm.⁸; L. & O., *Syn. Av.* i. p. 47 (Maldonado, Buenos Ayres, Corrientes, Arg.; Chiquitos, Moxos, Bolivia; Arica, Lima, W. Peru).

Suiriri coronata, d'Orbigny, *Voy.*, Ois., p. 336 (Maldonado, Montevideo, Buenos Ayres, Corrientes, Chiquitos (Bolivia); Taena, Arica, N.W. Chili; Lima, W. Peru).

I could not find a single specimen of this species among d'Orbigny's collections in the Paris Museum, all having been given away or exchanged as duplicates. I hope to discuss the geographic variation of the Ruby-coloured Flycatcher on an early occasion.

¹ *Muscipeta cayanensis* Linnaeus, *Syst. Nat.* 12, i. p. 327 (1766—ex Brisson: Cayenne).

² *Muscipeta coronata* P. L. S. Müller, *Natursyst.*, Suppl., p. 168 (1776—ex Daubenton, *Pl. enl.* 289: Cayenne).

³ *Todus regius* Gmelin, *Syst. Nat.* 1, i. p. 445 (1788—based on the same).

⁴ *Rev. Mag. Zool.* (2) i. 1849, p. 56.

⁵ *Platyrhynchus leucophaeus* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 27, p. 11 (1818—"l'Amérique méridionale"; cf. Pucheran, *Arch. Mus. Paris*, 7, 1855, p. 358; type locality, Cayenne).

⁶ *Tyrannus albicollis* Vieillot, l.c., 35, p. 89 (1819—ex Azara No. 186: Paraguay).

⁷ *Muscipeta rubinus* Boddaert., *Tabl. Pl. enl.* p. 42 (1783—ex Buffon: "Pays des Amazones").

⁸ *Muscipeta coronata* (nec Müller, 1776) Gmelin, *Syst. Nat.* 1, ii. p. 932 (1789—ex Daubenton, *Pl. enl.* 675, fig. 2 (not fig. 1) et Buffon: "Pays des Amazones").

Muscipeta querula = Empidonax sp.

Muscipeta querula (errore), L. & O., *Syn. Av.* i. p. 47 (Santo-Corazón, Chiquitos, E. Bolivia).

Muscipeta acadica (errore), d'Orbigny, *Voy.*, Ois., p. 318 (Santo-Corazón-de Chiquitos, E. Bolivia).

Unfortunately, this example is no longer to be found in the collection of the Paris Museum. It cannot possibly have belonged to *Muscipeta querula* Wilson,¹ which is the same as *Empidonax virescens* (Vieill.)² (= *Empidonax acadicus* auct.³), a well-known North American species not likely to wander as far south as Eastern Bolivia.⁴ D'Orbigny's description in the *Voyage* suggests some olive-backed species like *E. lawrencei* Allen, which was secured on the Rio Madeira by Natterer and Hoffmanns,⁵ or *E. bolivianus* Allen,⁶ discovered by Rusby in (?) N. Bolivia. Without actual examination of the specimen the question will always remain doubtful.

Muscipeta albiceps = Elaenia albiceps albiceps (Lafr. & Orb.).

Muscipeta albiceps Lafresnaye & d'Orbigny, *Syn. Av.* i. in: *Mag. Zool.* cl. ii. p. 47 (1837—"Rio de Janeiro, imp. Brasil," Yungas, rep. Boliviana et Tacna, rep. Peruviana; descr. orig.); d'Orbigny, *Voy.*, Ois., p. 319 ("nous l'avons observée à Rio de Janeiro"; à Tacna, au Pérou, dans la province de Yungas, Bolivie).

Nos. 1, 2, adults (skin): "D. 242. d'Orbigny, 1834. No. 134. *Muscipeta albiceps* Nob. Yungas."—Wing, 74, 82; tail, 68, 69; bill, 11½, 12 mm.

No. 3, adult (skin): "D. 242. d'Orbigny, 1834. No. 134. *Muscipeta albiceps* Nob."—Wing, 73; tail, 64; bill, 11 mm.

No. 4, juv. (skin): "d'Orbigny, janvier 1831, de Tacna, No. 186 de d'Orbigny. *Muscipeta albiceps* Nob."—Wing, 81; tail, 67; bill [damaged] mm.

These specimens have been most carefully compared with a large series from the West Bolivian Yungas (Omeja, Chaco), Chili (La Concepcion), Western Argentine (Catamarca, Cordoba, Neuquen, Tierra del Fuego), and Brazil (Chapada, Mattogrosso; Bahia), as well as with a good number of Peruvian skins (*E. albiceps modesta* Tsch.⁷).

Nos. 1 and 2, from Yungas, correspond exactly to the original description, having the under-parts "sordide albescens gutture pectoreque cinerascens," and two distinct whitish bands, formed by the tips of the median and greater wing coverts, across the wing. No. 3 agrees in every respect, and is no doubt from the same locality.

No. 4, from Tacna, N.W. Chilian coast, is an immature bird in partly fluffy plumage, with whitish tips to the rectrices, dull greyish buff wing-bands, etc.

We feel, therefore, justified in regarding Nos. 1 and 2 as the *types*, and in designating *Yungas*, Bolivia, as the type locality of *M. albiceps* Lafr. & Orb.

¹ *Muscipeta querula* Wilson (nec Vieillot 1807), *Amer. Ornith.* ii. p. 77, pl. xiii fig. 3 (1810—Eastern United States).

² *Platyrhynchus virescens* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 27, p. 22 (1818—new name based on *Muscipeta querula* Wilson nec Vieillot 1807).

³ I agree with Ridgway and other American authors that Pennant's "Lesser Crested Flycatcher" (*Arct. Zool.* ii. p. 386), upon which *Muscipeta acadica* Gmelin (*Syst. Nat.* 1, ii. 1789, p. 947) was established, is quite unidentifiable.

⁴ The most southerly winter record is Chimbo, S.W. Ecuador.

⁵ Cf. Hellmayr, *Nov. Zool.* 17, 1910, p. 300.

⁶ *Bull. Amer. Mus. N. Hist.* ii. p. 86 (1889—Bolivia (Yungas ?)).

⁷ *Elaenia modesta* Tschudi, *Arch. f. Naturg.* 10, i. p. 274 (1844—coast region of Peru; cf. *Faun. Peru.*, Aves, p. 160).

Adult birds from Omeja and Chaco, Bolivian Yungas, in Count Berlepsch's collection are perfectly identical with those obtained by d'Orbigny. An adult male from Chapada (Mattogrosso), a Bahia skin, and twelve adults from Western and Southern Argentine (Fuerte de Andalgala, Catamarca; Cosquin, Cordoba; Lago Nahuel Huapi, Terr. Neuquen; Valle del Lago Blanco, Chubut; Ushueia, Tierra del Fuego), while agreeing in coloration with the Bolivian birds, have decidedly narrower, slenderer bills. Eight specimens from Chili (mostly from La Concepcion) differ from all the preceding ones by their fuller crest with more white in the middle, and by having the pileum of a lighter brown colour, which does not form so distinct a dusky cap as in the Bolivian and Argentine birds. In view of the great variability exhibited by members of this genus much larger series are required before any serious attempt at discriminating local races can be made. I concur, however, with Count Berlepsch¹ in recognising *E. a. modesta* as a fairly well-marked race, though I should assign it rather different limits. On the other hand, *Elaenia parvirostris* Pelz.² is quite a distinct species, as shown by the late Count Berlepsch.³

From Rio de Janeiro, which is also mentioned among the localities of *Muscipeta albiceps*, the Paris Museum contains no specimen, and it is not clear from d'Orbigny's account ("nous l'avons observée à Rio de Janeiro") whether he actually got any there. The birds observed in the Brazilian capital must, of course, have belonged to some other species, probably *Elaenia f. flavogaster* (Thunb.), which is very common throughout Eastern Brazil.

***Muscipeta obscura* = *Elaenia obscura obscura* (Lafr. & Orb.).**

Muscipeta obscura Lafresnaye & d'Orbigny, *Syn. Av. i.* in: *Mag. Zool.* cl. ii. p. 48 (1837.—Yungas, Bolivia; descr. orig.).

Muscipeta Guillemini d'Orbigny, *Œoy., Ois.*, p. 319 (prov. Yungas).

Nos. 1, 2, adults (skin): "No. 135. *Muscipeta obscura* Nob., de Yungas, par d'Orbigny, 1834. D. 216."—Wing, 84, 85; tail, 78, 83; bill, 13 mm.

Several additional specimens from Bolivia (Chaco, Tanampaya, Omeja) I have examined in the collections of Count Berlepsch and in the Vienna Museum. Birds from Tucumán, N.W. Argentine, in the Munich Museum are in every way similar. In northern Peru (Callacate, Tambillo) the typical form is replaced by a smaller race of somewhat brighter coloration, *E. obscura stolzmanni* Ridgw.⁴

***Muscipeta bimaculata* = *Empidochanes fuscatus bimaculatus* (Lafr. & Orb.).**

Muscipeta bimaculata Lafresnaye & d'Orbigny, *Syn. Av. i.* in: *Mag. Zool.* cl. ii. p. 48 (1837—Yungas, rep. Boliviana; descr. orig.); d'Orbigny, *Œoy., Ois.*, p. 320 (Yungas).

No. 1, adult (skin): "D. 300, par d'Orbigny, 1834. *Muscipeta bimaculata* Nob., de Yungas."—Wing, 67; tail, 66; bill [damaged] mm.

¹ *Ornis*, 14, 1907, p. 405.

² *Zur Ornith. Bras.* ii. pp. 107, 178 (1868—type from Curytiba, state Paraná, S.E. Brazil, in Vienna Museum examined).

³ *Ornis*, 14, 1907, pp. 412–414.

⁴ *M. guillemini* is proposed as a substitute of *Muscipeta obscura* Lafr. & Orb., erroneously considered to be invalidated by *Muscicapa obscura* Vieillot (*Nouv. Dict. d'Hist. Nat.*, nouv. éd., 21, 1818, p. 451: Cayenne).

⁵ *Elaenia frantzii stolzmanni* Ridgway, *Proc. Biol. Soc. Wash.* 19, p. 116 (Sept. 1906—Tambillo, N. Peru; J. Stolzmann).—*E. obscura tambillana* Berlepsch, *Ornis*, 14, p. 419 (Feb. 1907—Tambillo, N. Peru; J. Stolzmann).

As Berlepsch and Hellmayr¹ have pointed out, *Muscipeta bimaculata* is by no means referable to the small *Empidonax euleri* (Cab.), of S.E. Brazil, with which the late P. L. Selater² had erroneously identified it, but belongs to the pale race of *Empidochanes fuscatus* (Wied), found in the interior provinces of Brazil and Eastern Bolivia.³

The type, an adult bird in fresh plumage, agrees in every detail with specimens from Mattogrosso (Chapada, Cuyabá), Goyaz, and the Brazilian stretches of the Rio Paraná. Lately I have had an opportunity of inspecting a second Bolivian example belonging to the Carnegie Museum. It is a young female and was secured by José Steinbach on January 7, 1909, at Puerto Suarez, E. Bolivia.

E. fuscatus bimaculatus (Lafr. & Orb.) inhabits the campos of Brazil, ranging from S.W. Minas (Bagagem), Goyaz (Rio Araguaya, R. Thesouras, Goyaz city), northern São Paulo (Paraná, Barretos, Rio Grande, Rio Paranapanema; S. Jeronymo and Itapurá, R. Tietê), and Paraguay (Sapucay) west to Mattogrosso and Eastern Bolivia, north along the Madeira and Tapajóz Rivers to the south bank of the Amazons. Cf. also Nov. Zool. 15, 1908, pp. 52-53; l.c. 17, 1910, p. 301.⁴

***Muscipeta armillata* = *Myadestes raloides raloides* (d'Orb.).**

Muscipeta armillata (nec Vieillot, 1807⁵). L. & O., *Syn. Av.* i. p. 48 (Yungas, Bolivia).

Muscipeta raloides d'Orbigny, *Voy., Ois.*, p. 322 (betw. 1838 and 1847—"Chulumani, prov. de Yungas, à l'est des Cordilleres orientales de la Bolivie, au 17° de degré lat. mérid."; descr. orig.).

I have not succeeded in detecting the type of *M. raloides* in the Paris Museum, where it was examined many years ago by Selater and Salvin⁶; but there are specimens from near the type locality in the Munich Museum and Berlepsch Collection which agree with others from Sto. Domingo, Marcapata, S.E. Peru, and Cumpang, Dept. Libertad, N. Peru. Birds from the Venezuelan mountains (Cumbre de Valencia; Cerro del Avila; Andes of Mérida) and E. Colombia (Bogotá) are much more rufous above, and constitute an easily separable race, entitled to the name *M. raloides venezuelensis* Sel.,⁷ while another allied form, *M. r. plumbeiceps* Hellm., dwells in the Andes of W. Colombia. The status of the birds of Ecuador is yet doubtful, although they certainly are not referable to *M. r. raloides*.

¹ *Journ. f. Ornith.* 53, 1905, pp. 21-22, footnote.

² *Ibis*, 1887, p. 68.

³ In spite of all that has been written by us on the subject, Chubb (*Ibis*, 1910, p. 591) still uses the specific name *bimaculatus* in the wrong sense as sanctified by the Cat. of Birds!

⁴ Ihering & Ihering (*Cat. Faun. Braz.* i. 1907, p. 291) call this form "*E. fuscatus brunneus* (Thunb.)," which is, of course, inadmissible. *Pipra brunnea* Thunb. 1822 equals *Empidonax bimaculatus* Sel. (nec Lafr. & Orb.) = *Empidonax euleri* (Cab.), which belongs to quite another genus! Cf. Lönnberg, *Ibis*, 1903, p. 242.

⁵ *Muscicapa armillata* Vieillot, *Hist. Nat. Ois. Amér. sept.*, ii. p. 69, pl. xlii ("1807"—"Antilles")

⁶ See *Exotic Ornithology*, 1867, p. 53.

⁷ *Myiadestes venezuelensis* Selater, *Ann. Mag. Nat. Hist.* (2), xvii. p. 468 (1856—"in vicin. urbis Caraccas, in Venezuela," coll. Levraud, Paris Museum).

(To be continued.)

GEOMETRID DESCRIPTIONS AND NOTES.

BY LOUIS B. PROUT, F.E.S.

SUBFAM. OENOCHROMINAE.

1. *Eumelea fumicosta antipnoa* subsp. n.

♂, 45–48 mm. Smaller than *f. fumicosta* Warr. (1896) from the Solomons, New Ireland, New Britain and New Hanover, less suffused with purple, notably in the subterminal area, where there is only a narrow, inconspicuous shade adjacent to the postmedian yellow spots; median line traceable, gently curved; the yellow apical spot of forewing less clear (more irrorated). Underside also distinguished by the developed median line.

♀, 50–53 mm. Smaller than *f. fumicosta*, rather lighter yellow, less coarsely irrorated; median shade strengthened, showing slight outward teeth on the veins; subterminal shade thin and weak except on R^2 , where it forms a conspicuous spot or large dot. Underside with considerably less purple clouding than in *f. fumicosta*.

St. Matthias Island, June–July 1923, 4 ♂♂, 4 ♀♀, including the type. Squally Island, August 1923, 2 ♂♂, 2 ♀♀. All in Tring Museum, collected by A. F. Eichhorn.

The ♀ upperside is remarkably like an undersized *unipuncta* Warr. (1896), which—in spite of the great divergence in the ♂♂—seems to represent *fumigrisea* in New Guinea and the D'Entrecasteaux Islands.

2. *Eumelea ludovicata rhodeogyna* subsp. n.

♀. All the irroration, clouding and maculation strong, coloured *rosy-purple* (as in the ♂ forms), the sexual dimorphism consequently very much less pronounced than in the other races; the characteristic costal dots and spots of forewing remaining unaltered (blackish).

♂. Intermediate between name-typical ♂♂ and the uniform reddish subsp. *rubra* Prout of New Guinea, perhaps nearer to the latter.

New Ireland, November–December 1923, both sexes, including the ♀ holotype. New Hanover, February 1923, 3 ♂♂, 1 ♀. All in coll. Tring Mus. (A. F. Eichhorn).

3. *Alex longipecten amaura* subsp. n.

More reddish than *l. longipecten* Warr. (1905), from the Solomons, and much more strongly irrorated with purple-grey, the resultant tone nearly as in *continuaria* Walk. or even darker; only the costal area of the hindwing remaining (as in the allies) clear yellow.

New Ireland, November–December 1923, type and three paratypes; New Hanover, March 1923, 1 ♂. All in coll. Tring Mus., collected by A. F. Eichhorn.

One ab. shows remnants of the ochreous colour in the median area (only) of the forewing.

4. *Ozola macariata despica* subsp. n.

♂♀, 26-28 mm. Paler and less rufescent than *m. macariata* Walk. (*List Lep. Ins.* xxvi. 1637, Ceram), the irroration paler smoke-grey or drab-grey (less purple-grey), the lines weak, the median best developed, almost straight, the ♀ without the characteristic distal cloud of *m. macariata* ♀.

St. Matthias Island, June 1923 (A. F. Eichhorn), 3 ♂♂, 3 ♀♀ in coll. Tring Mus.

The same race occurs on Squally Island (3 ♂♂, 1 ♀, August 1923, A. F. Eichhorn), though the sole ♀ yet known shows a faint distal cloud reminiscent of that of *m. macariata*.

SUBFAM. HEMITHEINAE.

5. *Terpna mölleri* (Warr.).

Dindica mölleri Warr., *Proc. Zool. Soc. Lond.* 1893, p. 349.

Warren's description was evidently founded on a mixture of two species which also remained mixed in Hampson (*Faun. Ind. Moths*, iii. 477, No. 4017). One specimen of each bears a label "*Dindica mölleri*" in Warren's handwriting, and no type was selected. One of them represents true *leopardinata* Moore (1867), which is on an average rather smaller than the other species, not quite so dark, the postmedian not quite so distally placed, the subterminal represented by a complete row of whitish spots (in the other species partly obsolete), accompanied proximally by a scarcely interrupted reddish shade, the hindwing with the first two submarginal black spots broadly confluent, the central spot on an average more elongate, the smoky suffusions of abdominal margin always strong and broad, both wings beneath more mixed with white in terminal area. Warren's mention of the submarginal whitish spots and of smoky abdominal "half" of hindwing must have arisen from his including 4 specimens (♂♂) of *leopardinata* in his series, but the name *mölleri* should be restricted to the majority of the series, not only because this conserves a name, but also on the ground of the following: (1) ♂ "♀"; (2) "much" darker; (3) hindmargin [i.e. termen] of hindwing "broadly blackish" [least inaccurate for some *mölleri*]; (4) "3 distinct roundish blotches," etc. [decisive].

6. *Agathia obnubilata libera* subsp. n.

♂, 40 mm.

Forewing with the dark grey markings not quite so brownish as in the other races; the border almost as ample as in *o. obnubilata* Warr. (1903), but with the green postdiscal band continuing narrowly to the hindmargin.—*Hindwing* nearly as in *o. obnubilata* except for the less brownish tone of the grey part.

Underside with the submarginal bands darker and more uniform than in the other races.

New Hanover, April 1923 (A. F. Eichhorn). Type in coll. Tring Mus.

7. *Uliocnemis elegans negligens* subsp. n.

Both wings with all the white markings extremely slender, the subterminal in particular almost obsolete. Hindwing with the apical patch slightly shortened, scarcely crossing R¹.

St. Matthias Island, June–July 1923 (A. F. Eichhorn), 6 ♂♂ in coll. Tring Mus.

8. *Dichorda porphyropis* sp. n.

♂, 37 mm. Head red-purple. Palpus a little darker, at base white; second joint aberrant in being tufted above and beneath, partly concealing the short third joint. Antenna pale buff, the first few joints deep purple; pectinations about 3. Thorax purple in front, then green, beneath white. Legs white; tibial tufts predominantly purple-black; hindtibia with the spurs approximated, a moderate terminal process.

Forewing bright green, in distal area clouded with white between SC¹ and SC², and between R¹ and tornus; an irregular purple patch at base, mixed (especially in cell) with red-brown, extending along costal edge and again on M to antemedian line, much restricted posteriorly; antemedian line white, from one-third costa to two-fifths hindmargin, gently incurved between costa and cell-fold, rather more deeply between cell-fold and M, directed baseward for a short distance behind M, then rather oblique outward; this line finely edged distally with red-brown from costa to the last bend; a minute red-brown cell-dot; postmedian double, almost straight, slightly more oblique than termen, its proximal two-thirds yellow, its distal third pure white; a small reddish mark on costa proximally to this line.—*Hindwing* with termen strongly convex, fullest about R¹–R²; M¹ almost as long-stalked as SC²; concolorous with forewing but with no purple or reddish markings; ill-defined white subbasal, apical and (large) tornal clouds; postmedian line central, coloured as on forewing.

Underside similar but more washed out.

Argentina: Misiones, March 23, 1922, type in coll. Tring Mus.

The palpus, the hindtibial process, the stalking of M¹ of hindwing and perhaps the femora (only the hind shows appreciable hairiness, but the others may be abraded) remove this from typical *Dichorda*, but the palpus, tufted foretibia, full hindwing and the pattern bring it into this rather than into *Phrudocentra*—the other nearest genus. Perhaps it should be made the type of a new genus.

9. *Chrysochloroma electrica herbida* subsp. n.

♂, 39–40 mm. Rather smaller than *e. electrica* Warr. (1896). Ground-colour much less bluish (grass-green rather than terre-verte), the pale postmedian line thinner, whiter; cell-dot of hindwing less elongate; terminal line less thickened, this and the fringes lighter, more reddish, the fringes traversed by a paler (sometimes nearly white) line.

♀, 40–42 mm. Quite like that of *meeki malthuca* Prout (Nov. Zool., xxiii, 205, St. Aignan); almost as light and bright as *megaloptera* Lower (1894, Queensland), to which also it bears a very close resemblance, except in the more ex-curved postmedian line of the hindwing; hindwing wanting the apical patch of *e. electrica* ♀ and with only an extremely limited red suffusion round the cell-dot.

St. Matthias Island, June 1923 (A. F. Eichhorn), 4 ♂♂, 2 ♀♀, in coll. Tring Mus.

The relation between the supposed species *electrica* and *meeki* Warr. (1896) is at present problematical. They may easily be forms of a single species, but the undersides are constant to the two types; *meeki* is known to me from the

Trobriand Islands (name-type) and in smaller forms from the Louisiades (*m. malthaca*). New Hanover and Squally Island (perhaps worthy of names); *electrica electrica* from Ron Island (name-type), the coasts of New Guinea and perhaps Dampier Island (only 3 ♀♀ yet known from there), a transitional form towards *e. herbida* from Vulcan Island.

10. *Thalassodes javensis* sp. n.

♂, 38 mm. Face green. Palpus $1\frac{1}{3}$, with terminal joint short; green above, white beneath. Vertex white; occiput green. Antennal pectinations tinged with green. Thorax and abdomen green above, white beneath. Hindtibia not dilated.

Forewing, as in the allies, green with fine, short, whitish strigulae and with the costal edge narrowly buff; antemedian line obsolescent; postmedian weak, indicated chiefly by white dots on the veins, almost straight from SC^5 at about 7 mm. from termen to SM^2 at about 5 mm. from termen, the hindmost dot the strongest; termen with some extremely minute blackish irroration, condensing into noticeable (though extremely small) black dots at the veins; fringe pale buff, tipped with grey.—*Hindwing* slightly narrower than in the *quadraria* group, inclining towards the shape of *immissaria* Walk., etc.; postmedian line punctiform, as weak as on forewing; termen and fringe as on forewing.

Underside whitish green.

W. Java: Buitenzorg, type in coll. Tring Mus., 1 paratype, 800 ft., at light, April 17, 1923 (H. M. Pendlebury), in coll. Fed. Malay States Mus. "Java" (C. W. Andrews), paratype in coll. Brit. Mus.

I detected the British Museum example among *immissaria* (from which it differs structurally in the non-dilated hindtibia) when working at Wytsman's "Genera Insectorum," a good many years ago, but refrained from describing it, as it had damaged palpi.

11. *Thalassodes leucoceraea* sp. n.

♂♀, 45–47 mm. Face green. Palpus in ♂ $1\frac{1}{3}$, with third joint moderate, in ♀ slightly over 2, with third joint long; green, beneath white. Thorax and abdomen green above, white beneath. Hindtibia of ♂ not dilated.

Forewing rather dull bluish green, not very opaquely scaled, with scattered white irroration or minute strigulation; costal edge buff; lines obsolete, only a very faintly indicated deeper green (i.e. less irrorated) shade marking what—by analogy with many *Hemitheinae*—must be the proximal boundary of the postmedian; fringe reddish brown; terminal line very slightly darker than the fringe, occasionally developing slightly blacker dots at veins.—*Hindwing* fairly broad, the angle at R^3 obtuse; as forewing, but with a conspicuous, slightly raised white mark along DC^3 , recalling *Eretmopus marinaria* Guen., in which, however, it is shorter, more punctiform (Guenée's description and Oberthür's figure ignore it—probably the type is worn).

Underside whitish green, the fringes slightly paler brownish than above.

Malay Peninsula: Kedah Peak, 3,200 ft., December 1915. Type in coll. Brit. Mus., kindly presented by the Federated Malay States Museum; other examples in coll. Fed. Malay States Mus., coll. Raffles Mus., coll. L. B. Prout.

12. *Prasinocyma eichhorni* sp. n.

♀, 42 mm. Face green. Palpus about 2, third joint as long as second; green above, white beneath. Vertex and base of antenna white; occiput green. Thorax and abdomen above green, with a bright yellow-ochre central line on methathorax and abdomen, becoming posteriorly weaker and more mixed with white; beneath whitish green. Legs whitish, tinged with green.

Forewing with apex rather acute, termen very faintly sinuous, moderately oblique; SC¹ free, R¹ stalked, DC incurved in middle, M¹ connate; slightly diaphanous bluish green; costal edge pale buff, finely underlined with a fleshy tinge; cell-mark olive yellowish, slightly elongate; lines white, bordered in median area with olive yellowish; antemedian at 5 mm., lunulate-dentate, the vein-teeth directed proximad; postmedian from costa at 12 mm. to hindmargin at 9 mm., more deeply lunulate-dentate, with slight incurvature between radials and at submedian fold; termen with an extremely fine reddish-grey line, which is accentuated at the veins; fringe pale buff.—*Hindwing* angled at R⁴; DC oblique, M¹ stalked; as forewing, the postmedian line more protuberant at R³–M¹.

Underside whitish green, with the markings scarcely discernible.

New Ireland, February 1924 (A. F. Eichhorn), type in coll. Tring Mus.

13. *Prasinocyma absimilis semimacula* subsp. n.

♂♀. Differs from *a. absimilis* Warr. (1901) in having the white spot on hindmargin of forewing reduced to a comma-shaped dot, the head of the comma on SM², the tail behind.

New Ireland, November 1923–February 1924, 3 ♂♂, 1 ♀ (A. F. Eichhorn), in coll. Tring Mus.

Warren's type from Etna Bay was a rather rubbed ♀ with discoloured abdomen (thus not showing the white dorsal dots), and has not yet been matched from New Guinea, but since the same form (so far as can be judged) has been taken on Ceram and Buru it is evidently widely distributed, and I conclude that it is safe to regard the present as a local race. The ♂ shows characteristic dense whitish hairy clothing on the posterior part of the abdomen ventrally and laterally, the anal tuft rather well developed.

14. *Comostola nereidaria levata* subsp. n.

♀, 21–22 mm. Crown not, or only extremely narrowly, white in front. —*Forewing* with cell-spot much reduced in size; postmedian spot of hindmargin less marked with red than in *n. nereidaria* Snell. (1881); terminal yellow line with much smaller dark spots between the veins.—*Hindwing* with similar distinctions, the reduction of the angular cell-mark giving it quite a different aspect from that of *n. nereidaria*.

St. Matthias Island, June 1923 (type); Squally Island, August 1923; all in coll. Tring Mus., collected by A. F. Eichhorn.

The examples are not of such a bluish green as the majority of *n. nereidaria*, but aberrations of that race closely resemble *n. levata* in tone.

15. *Eucrostes euryxantha* sp. n.

♂♀, 14–17 mm. Face orange, mixed above with red. Palpus with terminal joint moderate; whitish buff, mixed with red. Crown green. Fillet white.

Antennal pectinations in ♂ about 3, in ♀ about 2. Thorax and abdomen above green, beneath whitish green. Legs pale, the foreleg strongly, the midleg moderately marked with red or reddish.

Forewing with apex slightly more rounded than in the allies; of the same bright green, or slightly more yellowish; costal edge red; cell-dot red, minute; a yellow band of about 1 mm. width proximal to the red terminal line; the latter somewhat suffused with purple-grey, produced proximally into sharp interneural triangles; fringe red.—*Hindwing* the same, except costal edge.

Underside similar, the red costal edge of forewing broader, at least proximally.

St. Matthias Island, July 1923, 2 ♂♂, 3 ♀♀, including the type; Squally Island, August 1923, 1 ♂, 1 ♀; all in Tring Mus., collected by A. F. Eichhorn.

16. *Acidaliastis porphyretica* sp. n.

♂, 12–15 mm.; ♀, 13–18 mm. Face and palpus rosy. Vertex and antennal shaft white; occiput rosy. Thorax and abdomen above rosy, the abdomen with small whitish mediodorsal spots; beneath whitish yellow; the first two pairs of legs with rosy suffusion.

Forewing bright rosy with purple suffusion (recalling many *Ptochophyle* and *Chrysoeraseda*, e.g. *togata* Fb. ♀), more or less irrorated with whitish; costal edge in some examples darkened, in others more tinged with olivaceous; cell-spot whitish, rarely conspicuous; lines yellowish white, generally slender; ante-median from about one-third costa to two-fifths hindmargin, generally obsolete at costa, oblique outward anteriorly, bent or angled at cell-fold, then slightly oblique inward, with an inward curve between M and SM²; postmedian anteriorly rather less oblique than termen, slightly tremulous, then sinuous (excurved between R¹ and M², incurved between M² and SM²); terminal line purple; fringe pale yellowish, in proximal part overlaid with rose-colour.—*Hindwing* concolorous or slightly more mixed with whitish; indications of a whitish cell-spot; a postmedian line as on forewing; fringe as on forewing.

Forewing beneath paler rosy, almost unmarked; hindwing whitish, with variable rosy suffusion, sometimes developing a rosy postmedian line, always a rosy terminal; fringe yellowish.

N.E. Madagascar: Diego Suarez, a long series; Sakaramy, 1 ♂ (G. Melou). Type in coll. Tring Mus.

Rather variable, but recognisable at a glance by the rosy coloration; otherwise near *prophanes* Prout (*Ann. Transv. Mus.* viii. 154), agreeing in structure. Some specimens show whitish rays in the terminal area.

SUBFAM. STERRHINAE.

17. *Anisodes minorata vinotincta* subsp. n.

♂♀, 25–28 mm. Differs from *m. minorata* Warr. (Nov. Zool. iv. 48 = *ephyrata* Warr., Nov. Zool. iv. 60, Tenimber) in having the ground-colour strongly suffused with deep vinaceous (slightly rufous), the dark median band somewhat broadened and an additional dark band generally more or less strongly developed outside the postmedian dots, containing a series of subterminal spots of the ground-colour.

St. Matthias Island, June 1923 (A. F. Eichhorn), 5 ♂♂, 3 ♀♀ in coll. Tring Mus.

A. tribes Prout (Nov. Zool. xxvii. 276, Sudest) proves to be another race of *minorata*, the ground-colour intermediate, the markings not noticeably stronger than in *m. minorata*. I should scarcely have described it had I not overlooked its association with *minorata*, which Warren founded on a broken ♂ and placed in *Brachycola*. The separation of other races (China, Formosa, Key Islands, etc.) must await better material. Like several other *Anisodes*, it seems to be distributed over the greater part of the Indo-Australian Region.

18. *Anisodes tricrista* sp. n.

♂, 28–30 mm. Face deep chocolate above, whitish below. Palpus scarcely $1\frac{1}{2}$, terminal joint nearly one-half second; liver-brown above, pale cream beneath. Vertex and antennal shaft pale, collar buff. Thorax and base of abdomen above fawn-colour with a purplish tinge; the rest of abdomen pale brown. Legs pale, the fore and middle femora and tibiae reddened on upper and inner sides. Hind-tibia with three spurs, the proximal well separated from the distal pair.

Forewing with costa straightish, apex rather acute, termen oblique, little curved; areole wanting; an area of fine, closely appressed, transverse hair-scaling in and behind cell; three raised tufts on the veins near apex, that on R^1 very small, that on SC^2 larger, that on SC^{2+4} larger still; fawn-colour, with fine purplish irroration; the sexual patches light brown or (at least the subapical tufts) inclining to clay-yellowish; cell-dot minute, black; principal lines obsolete or (in the type) the antemedian indicated by dots on SC and SM^2 ; a faintly pale subterminal line, marked proximally by a rather inconspicuous series of minute black dots, the first three placed on the crests proximally, the next three nearest to the termen, the last two receding slightly; equally minute interneural dots at termen.—*Hindwing* with termen very feebly subcrenulate, appreciably bent in middle; concolorous with forewing, without sex-patches; markings otherwise as in forewing; a faint median shade outside cell-dot, a second faint shade inside subterminal series.

Underside rather paler; forewing with costal margin ochraceous and with a slight smoky suffusion in and for some distance beyond cell; both wings with minute cell-dot and terminal dots; hindwing with costal edge, etc., tinged with ochraceous.

New Ireland, November 1923, 3 ♂♂ (A. F. Eichhorn), type in coll. Tring Mus.

19. *Anisodes matthias* sp. n.

♂♀, 29 mm. Close to *niveopuncta* Warr. (1897), perhaps a subspecies. Rather smaller, the forewing perhaps slightly broader in proportion. Ground-colour less fleshy, with the dark irroration stronger, on the hindwing tending to condense into a vague, narrow band proximally to the subterminal; median shade, at least on forewing, a little broadened; postmedian dots enlarged. Underside of forewing almost or altogether without the pink suffusion of *niveopuncta*.

St. Matthias Island, June–July 1923 (A. F. Eichhorn), 2 ♂♂, 2 ♀♀, in coll. Tring Mus.

20. *Problepsis appollinaria deparcata* subsp. n.

♂♀, 36–37 mm. Fillet between the antennae less blackened than in the other races. Wings purer white; the silvery ocelli entirely unaccompanied by

dark markings; antemedian line obsolete; median shade very faintly greyish; postmedian rather thinner and weaker than in typical *appollinaria* Guen. (1858); subterminal spots and line indistinct.

St. Matthias Island, July 1923, type ♂ and 1 ♀; June 1923, 4 ♀♀ (A. F. Eichhorn). All in coll. Tring Mus.

21. *Somatina maeandrata* sp. n.

♀, 31 mm. Face black. Palpus rather slender, little over 1; blackish, pale beneath. Head and body pale fleshy grey, here and there with deeper admixture; abdomen dorsally with some blackish irroration.

Forewing with SC^2 connate with SC^{3+5} (type) or from cell (paratype); pale fleshy grey, irrorated and clouded with deeper fleshy brownish, the ground-colour remaining clearer costally and in the region of the two lines; very sparse black irroration; a black cell-dot; lines brown, the postmedian blackened on the veins; antemedian slender, weak, slightly sinuous; postmedian at least as distally placed as in *anthophilata* Guen., waved, angled outward at R^1 , deeply incurved at both folds; subterminal almost obsolete, with faint dark shading proximally and—except at apex—distally; terminal dark line fine and weak; fringe dark red-grey.—*Hindwing* similar, but with the cell-dot weaker, the antemedian line obsolete.

Underside paler; postmedian line faintly indicated; costal margin of forewing tinged with ochreous; fringes reddish.

Malay Peninsula: Kedah Peak, 3,200 ft., December 1915. Type in coll. Brit. Mus., kindly presented by the Raffles Museum; paratype in coll. Raffles Mus.

Except in *rosacea* Swinh., in which, as in the new species, its point of origin varies, SC^2 of the forewing seems always to be stalked in the typical group of *Somatina*; *maeandrata* is evidently nearer to *plynusaria* Walk. than to *rosacea*; at first glance it rather suggests a small washed-out *urnaria* Guen.

22. *Sterrha indepressa* sp. n.

♂♀, 21–22 mm. Face black. Palpus black on upper and outer sides. Vertex whitish. Antennal joints not projecting; ciliation in ♂ about 1, in ♀ vestigial. Collar light brown. Hindtibia of ♂ dilated, with strong pale hair-pencils, the tarsus minute.

Forewing of average breadth, apex moderately sharp, termen straightish; areole moderate, SC^1 stalked just beyond; whitish bone-colour, mostly with rather darker, greyer suffusion, leaving clear a band between median and postmedian, as well as the subterminal line; lines darker brown-grey; antemedian fine, excurved in anterior half, minutely incurved in submedian area; median shade just beyond the black cell-dot, not sharply defined proximally, distally scarcely sinuous; postmedian nearly parallel with termen, at 2 or 2.5 mm. therefrom, minutely crenulate, the outward points on the veins very slightly darkened; distal area, by contrast to the pale band, suggesting a rather definite dark border, as in *palniensis* Prout or weakly marked *diffluata* H.-Sch., the subterminal formed as in the latter or slightly thinner; termen without dark marks; fringe rather long, with minute dark dots at vein-ends.—*Hindwing* with termen strongly convex, slightly waved, rather prominent about R^3-M^1 ; SC^2-R^1 stalked

to rather more than one-half ; proximal part hardly suffused, median line (shade) just proximal to the minute black cell-dot, little sinuous ; band beyond clear, as on forewing ; postmedian gently incurved between radials and at fold ; distal area as on forewing.

Forewing beneath with heavy smoky suffusion as far as the median line, thence nearly as above but with the postmedian darker. Hindwing slightly paler than above, the median shade slender, the terminal shades tending to obsolescence. Both wings with minute black cell-dot.

Darjiling, apparently not uncommon, the type ♂ (August 1904) in coll. Tring Mus.

Mr. Warren and the British Museum had this determined as "*indeterminata* Warr." (Nov. Zool. viii. 25, Simla), which is a quite *weakly* marked species—notably beneath. The new species has more in common with *palniensis* Prout (Nov. Zool. xxvii. 311, Palnis), which is a greyer, rougher-looking insect.

SUBFAM. LARENTIINAE.

23. *Xanthorhoë hampsoni* sp. n.

"*Cidaria curcumata* Moore" (part.) Hmps., *Favn. Ind. Moths*, iii. 365 (1895) (ex err.).

♂. 33 mm. Head and body dirty greenish, mixed with brown-black. Palpus 1 $\frac{3}{4}$. Antennal pectinations 1 $\frac{1}{2}$ (surmounted with fascicles $\frac{1}{3}$ as long as the pectinations), with short intermediate fascicle-bearing processes (i.e. much as in *griseiviridis* Hmps., but with the pectinations longer).

Forewing glossy green ; veins in places pale ; basal and median areas dark brown, mixed with black and very slightly in places with vinous and edged by fine whitish lines ; edge of basal area almost straight ; succeeding green area with lines and blotches of black ; antemedian line bent or bluntly angled in cell and weakly toothed outward on fold (not "vein 2" as in Hampson) ; cell-spot black, generally large ; an irregular row of blackish blotches beyond it ; postmedian sinuate inward between the radials, bilobed behind (not "on") R³, the projections not quite so long as in *griseiviridis* ; the green area beyond traversed by interrupted lines and shading off into brown terminally ; subterminal line scarcely lunulate, in places interrupted, crossed by an oblique dash from apex ; proximally to it a dark costal patch (crossing SC⁵) and a pair of broad black wedge-marks between the radials, distally to it some dark maculation between apical dash and R³ ; terminal line rather thick but not intense, slightly interrupted at and midway between the veins ; fringe weakly chequered, with a fine pale line at base. —*Hindwing* glossy white ; smoky posterior suffusion, slightly interrupted by white postmedian and subterminal lines ; a small weak cell-dot ; a dusky terminal line, strongest posteriorly ; fringe weakly mottled or chequered.

Underside whitish, with slightly elongate cell-marks and sinuous dark-grey postmedian line ; forewing suffused with light grey as far as postmedian and again terminally, with indications of a white subterminal ; hindwing with faint grey shading proximally to the subterminal.

India : Simla, June 1896, type in coll. Tring Mus. Also Simla (1 ♂, 1 ♀) and Dalhousie (1 ♂, 1 ♀) in coll. Brit. Mus., forming the major part of Hampson's conception of *curcumata* (cf. Prout, *Ent. Mitt. Deutsch. Ent. Mus.* iii. 246), though he had also 2 ♀♀ of true *curcumata*.

24. *Xanthorhoe placida* sp. n.

♂♀, 32-38 mm. Very near the preceding, perhaps representing it in N.E. India. Structure about the same, the secondary processes of the ♂ antenna apparently more developed.

Forewing green, with black-brown markings, the latter more or less mixed in places with red, particularly at base of costa, on the end of M and on the bases of R², M¹ and M²; all the areas except terminal with indistinct wavy lines, but without the spots and blotches of *hampsoni* (except in some specimens behind the proximal part of M²); median band rather narrower than in that species; postmedian much more direct, the radial sinus scarcely noticeable, the double lobe behind it quite small; markings of distal area about as in *hampsoni* or with the suffusion of posterior part rather darker and more extended.

Underside distinguished at a glance from that of *hampsoni* by the much less sinuous postmedian line on both wings.

Bhután: Buxa, 3 ♂♂, 2 ♀♀ (including the type ♂); Sikkim, 1 ♂, 6 ♀♀; Naga Hills, 2 ♀♀; all in coll. Tring Mus. N.E. Burma: Htawgaw, 6,000 ft., October 14, 1923 (Capt. A. E. Swann), 1 ♀ in coll. L. B. Prout.

Except for the whiter hindwing and underside, the ♀ would be difficult to distinguish from some forms of *curcumata* Moore.

25. *Lasiophanes scotobathra* sp. n.

♂, 25-26 mm. Face mixed blackish and white-grey. Palpus above predominantly blackish, beneath white-grey. Vertex blackish. Thorax and abdomen above blackish, beneath with a tinge of brown, the extremity of abdomen remaining black.

Forewing moderately elongate, termen relatively short, less oblique than in *rufisticta* Warr. (Nov. Zool. xii. 333); areole undivided; M² slightly more distal at its origin than in *rufisticta*, a little curved; glossy light brown, slightly mottled with fuscous; proximal area (about to origin of M²) blackish, slightly pale-mixed towards base, bounded distally by a broad whitish line, which is rather strongly excurved in cell and moderately in submedian area, bluntly angled inward at M and SM²; a faint dark thread indicated at distal edge of the white, absorbing the obsolescent, crescentic cell-mark; postmedian in anterior half well-developed and strongly excurved, in posterior obsolescent, lunulate-dentate, the strongest tooth inward on M²; faint wavy lines indicated on the area between the antemedian and postmedian and faint subterminal "twin spots" between the radials; terminal line interrupted with pale dot, at the veins; fringe pale, with faint grey bisecting lines and with dark-grey spots opposite the veins.—*Hindwing* slightly ampler than in *rufisticta*; DC not biangulate, posteriorly strongly oblique, R² central; black-grey, the posterior hair black, deeper than in *rufisticta*, much more extended than in *nigranalis* Prout (1910).

Forewing beneath greyer than above, the markings weakly indicated. *Hindwing* pale grey, with fuscous lines, the antemedian curved, the postmedian strongly outbent in middle, two or three fine wavy lines weakly indicated in the median area.

Peru: Huancabamba, Cerro de Paseo (E. Boettger), 2 ♂♂ in coll. Tring Mus.

On revision this species and the following will probably have to be removed from *Lasiophanes*, the venational differences being by no means insignificant.

26. *Lasiophanes aoroptila* sp. n.

♂, 28 mm. Structure (except as noted) and general coloration much as in the preceding species. Antenna minutely ciliated (ciliation less than $\frac{1}{2}$). Anal extremity not blackened.

Forewing with termen extremely oblique posteriorly, tornus not defined, hindmargin a little prominent in middle; underside with an oval patch of androconial scaling behind posterior part of M and base of R^1 , and just crossing into the cell; more uniformly irrorated with fuscous than *scotobathra* Prout (supra), leaving a clear brown subapical patch, reminiscent of *Anthalma*, *Phlebosphales*, etc.; proximal area not blackened, only separated from median area by a normally placed, vaguely double, whitish antemedian; discal crescentic mark rather thick; a slaty patch behind it, indicating position of androconial patch. — *Hindwing* rather roundly produced about SC^2-R^1 , thence little rounded to tornus; DC strongly curved, becoming oblique posteriorly; glossy grey, with a darker grey androconial patch between the radials from DC outward (obviously meeting that of forewing when the latter is folded back); tuft at anal angle more brownish, restricted about as in *nigranalis* Prout.

Forewing beneath drab-grey, paler at apex and termen, slightly darker and browner on the androconial patch. Hindwing pale grey, weakly irrorated; a dark mark on DC^2 ; a lunulate-dentate postmedian line, not very strong and not reaching costa; very faint indications of a few other lines.

Peru: Huancabamba, Cerro de Pasco (E. Boettger). Type in coll. Tring Mus.

27. *Collix haploscelis* sp. n.

♂, 33–34 mm. Face with loose cone; blackish. Palpus fully 2; first joint white, with loose black hair at end; second ochreous, with projecting hair above and strong black tuft beneath, projecting along the third joint; third long and slender, black, above whitish. Antenna nearly simple. Vertex blackish, with a pale spot in front. Thorax and abdomen concolorous with wings, the patagia and tegulae marked with ochreous, the abdomen (to about the fifth somite) with an ochreous (almost orange-rufous) lateral stripe; lateral tufts well developed, pale greyish. Midtibia not (as in all other ♂♂ of true *Collix*) dilated.

Wings coloured and marked much as in dark *hypospilata* Guen., or a little more uniform; forewing with the vein-dashes on the lines short and inconspicuous, subterminal line broken into small white dots, the one behind M^2 slightly larger; hindwing with the termen not very deeply dentate, the cell-dot fairly large.

Underside less tinged with brown than in *hypospilata*, but with some fuscous longitudinal streaks between base and postmedian, particularly along M (broadening to fill in the interspace of R^2 and M^1) and M^2 ; postmedian band more irregular than in *hypospilata*, somewhat elbowed at R^1 and R^2 ; a weaker band in place of the subterminal spots of *hypospilata*.

New Hanover, March–April 1923 (A. F. Eichhorn), 2 ♂♂ in coll. Tring Mus.

28. *Collix purpurilita* sp. n.

♀, 32 mm. General coloration (except as noted) as in the preceding species. Frontal cone scarcely developed. Palpus in ♀ not quite 2, in ♂ rather

shorter; second joint with moderately appressed scaling, black beneath, ochreous above; third joint rather short and blunt, ochreous. Patagia and tegulae less brightly marked than in *haploscelis*. Midtibia of ♂ dilated. Lateral stripe of abdomen bright.

Forewing with stronger purple-grey gloss than in *hypospilata*; cell-spot nearly twice as broad posteriorly as anteriorly; lines well marked, especially the subbasal, the antemedian and the postmedian; the first two angled outward on C, M and SM², thickened at the angles, the antemedian touching the base of M²; postmedian denticulate, much as in *stellata* Warr. (Nov. Zool. i. 679); subterminal broken into white dots.—*Hindwing* with termen strongly convex, the teeth rather strong; markings much as in *stellata*, the cell-dot a little larger, the postmedian more excurved.

Underside much as in *stellata*, the postmedian submacular band rather more bent in middle, the subterminal band weak.

Solomons: Rendova, February 1904 (A. S. Meek). Type in coll. Tring Mus.

29. *Rhinoprora oribates* sp. n.

♂♀, 26 mm. Close to *palpata* Walk. (1862). Larger. Head and palpus darker, predominantly black-brown.

Forewing darker and more glossy than in *palpata*, the green shades almost suppressed except in the lines which bound the basal patch and the broad median band; these lines narrowed, the pair beyond the postmedian inclined to be interrupted behind R¹; cell-spot enlarged, elongate, extending the whole length of DC²⁻³; course of postmedian rather less irregular than in *palpata*; subterminal weak, more or less interrupted or broken into interneural dots, its proximal dark shade forming a pretty continuous band.—*Hindwing* rather more glossy and more smoky than in *palpata*, weakly marked.

Java: Mount Gedeh, June 24, 1910 (type ♂), June 15, 1910, at 8,000 ft. (allotype ♀). In coll. L. B. Prout, collected by Dr. E. A. Cockayne, to whose generosity I am indebted for them.

Still larger specimens, unfortunately wasted, were found by Mr. C. L. Collette on the summit of the same mountain, 9,000 ft., April 21, 1922, perhaps representing a different brood.

30. *Antimimistis subteracta* sp. n.

♀, 22-24 mm. Hindtibia with four spurs. Otherwise extremely like *A. attenuata* Moore (1887), especially on the upperside. Head and palpus slightly more mixed with reddish.

Forewing slightly darker or more uniform, of a slightly more reddish brown, the markings not very sharply expressed; subterminal line obsolescent, excepting the central spot, which is hardly so white as that of *attenuata*.—*Hindwing* concolorous, a pale mark at abdominal margin just beyond the postmedian rather sharply differentiated; the central subterminal spot rather less concise and more yellowish than in *attenuata*.

Underside distinguishable at a glance from that of *attenuata*, being more black-grey (less brown), with much more sharply defined whitish lines, the postmedian broadened into a narrow band and more regularly curved than in *attenuata*.

N. India : Khasia Hills, March 1894, type and another ♀; Darjiling, August 1904, 1 ♀; all in coll. Tring Mus.

A ♂ from the Khasia Hills, May 1897, in good condition but unfortunately without hindlegs (therefore not made the type), is smaller (19 mm.), but otherwise like the ♀♀; it will be very interesting to ascertain whether this sex agrees in hindtibial armature with its ♀ or with the other *Antimimistis* species. As regards the genus, recently erected by Turner (*Tr. Roy. Soc. S. Austral.* xlv. 233) for a closely allied Australian species, it is curious that no author noticed its salient feature in the well-known *attenuata*, the remarkable long-stalking of R^3 of the forewing being, of course, observable with a very moderate lens.

31. *Phthonoloba auxostira* sp. n.

♂, 34-41 mm. Hitherto confounded with *decussata* Moore (1867); distinguished as follows:

Palpus smoother above, green almost to end of second joint (without the projecting black-brown scaling of *decussata*). Abdomen of ♂ with the "keel"¹ larger, reaching fully to the middle of the third abdominal segment (in *decussata* only just reaching this segment); tergites 1, 7 and 8 green, some green also on tergite 6 (in *decussata* only 1 and 8 green, or the green admixture on [6 and] 7 almost negligible). Femoro-tibial pencil denser than in *decussata*. Forewing slightly less vivid green. Hindwing slightly darker or more uniform (not becoming pale at costal margin).

South and Central India: Madura dist., March-June 1906, 3 ♂♂ (type), 1 ♀ (H. Campbell); Peermaad, Travancore; Nilgiris; Shevaroy Hills; Cud-dapah; Gooty. Type in coll. Tring Mus.

32. *Phthonoloba titanis* sp. n.

♀, 53 mm. Far larger than the type species and indeed every hitherto known species of the group except *praeëminens* Prout (1916). Palpus almost 3, second joint somewhat rough-scaled above, third joint elongate. Head and thorax almost certainly of a paler, less bright green than in *decussata* and *auxostira* (rather faded). Abdomen dorsally tinged with green at the base, otherwise pale greyish or brownish.

Forewing with apex slightly more acute than in *decussata*, termen not quite so regularly curved, being a little straighter anteriorly; apparently of a paler, more olivaceous green, but discoloured; markings similarly brown (rather more spotted with black); cell-spot large, black; subbasal line more black-mixed than in *decussata*, thinner; succeeding group of lines angled subcostally; median band (group of lines) broader anteriorly than posteriorly, the lines immediately beyond cell-spot more strongly excurved, the second and third spotted on the veins; subterminal group somewhat as in *decussata*, the true (pale) subterminal rather better expressed; marked distally with black vein-spots, that on SC^1 enlarged, subtriangular; termen with paired dots at the veins.—*Hindwing* paler, greyish, becoming more brownish distally; cell-spot rather large; a

¹ Noticed by Warren in the allied genus *Steirophora*, with its offshoots (? subgenera) *Synneurodes* and *Episteira*, but apparently altogether overlooked in *Phthonoloba* and (? subgenus) *Hypocometa*. It should be stated that "long second segment" in Warren's original diagnosis of *Steirophora* is a lapse for "third segment." In *Phthonoloba* the process is shorter, but always developed.

sinuous, distally pale-bordered postmedian line much as in *benguetana* Schultze (1910); a pale, lunulate-dentate subterminal line, accompanied proximally by two almost confluent dark lines, distally by an ill-defined line or shade.

N. Borneo: Kina Balu, type in coll. Tring Mus.

The strongly marked hindwing, extremely rare in the group, points to an affinity with *benguetana*, though even there the character is scarcely so extreme: cell-spots larger, markings on forewing more black, aspect more fasciate, hindwing with the outer band broken into lines.

33. *Sauris aspricosta* sp. n.

♂, 36–38 mm. Close to *brunnescens* Warr. (Nov. Zool. iii. 295, Fergusson Island; also from Upper Aroa River and Hydrographer Mountains, British New Guinea), certainly a representative species but hardly to be treated as a race.

Forewing with costal margin still more strongly arched, the edge black, clothed in middle and (more strongly) distally with rough, suberect sex-scaling; dark-green bands broadened, especially the presubmarginal, this and the pale lines on either side of it rather oblique inward anteriorly; some reddish-grey irroration or "fluting" on the bands in places, notably on the distal median posteriorly and the proximal subterminal near costa.—*Hindwing* more black-grey than in *brunnescens* (with less tinge of red-brown).

New Ireland, December 1923–January 1924 (A. F. Eichhorn), 3 ♂♂ in coll. Tring Mus.

Warren's type of *brunnescens* is slightly faded; the ground-colour of the forewing in fresh specimens of both species is pale olive-green, not "silvery grey."

34. *Sauris lucens fortunata* subsp. n.

♂♀, 35–36 mm. Larger than *l. lucens* Warr. (Nov. Zool. vi. 35, Woodlark; also known from Sudest and Rossel Islands). Forewing perhaps of a deeper oil-green (but the tendency of these greens to fade with years must be taken into account in making the comparison), becoming grey-shaded at termen, the blackish submedian marks not very strong. Underside darker and colder grey-brown than in *l. lucens* (nearly "hair-brown").

New Ireland, November–December 1923, 4 ♂♂, 4 ♀♀ (loc. typ.); New Hanover, March–April 1923, 2 ♂♂, 5 ♀♀; all collected by A. F. Eichhorn.

Warren (perhaps describing by artificial light) calls the underside of *lucens* "greenish grey." This is quite misleading; I should describe it as drab, the gloss which gives it a distinctive hue being in the direction of ecru-drab or fawn, thus with no suspicion whatever of green.

35. *Sauris (Helminthoceras) erigens* sp. n.

♀, 28 mm. Face narrowly green above, dark purple-brown beneath. Palpus long (3½); base whitish; second joint green, beneath and at base black; third mostly green. Vertex green; occiput dark purple-brown. Thorax green above, whitish beneath. (Abdomen discoloured.) Legs greyish, the hindleg nearly white.

Forewing with apex not acute, termen less oblique than in most *Sauris* (nearly as in *abnormis* Moore or scarcely so curved); pale green with a tinge of

olive, very faintly rippled with less pale green; lines blackish, with a suggestion of purple; a deeper black dash at base in front of SC; subbasal line well out, extremely fine, slightly sinuous, obsolete anteriorly; a weak spot just beyond it on costa; antemedian very weak, slightly interrupted, zigzag, quite near the end of cell, darkened between cell and fold; a costal dash beyond; postmedian double, little beyond cell, perpendicular from costa, nearly direct, slightly incurved at fold, a little oblique outward to termen (especially the proximal one), connected by a dark mark as SM²; the proximal with a small triangular projection proximally at R², its apex touching DC (suggesting a cell-spot); subterminals much as in *abnormis*, the proximal finely blackened to costa, the distal narrower than in *abnormis*, more macular, less band-like, the connective markings at radials and between medians strong, others indicated; termen with black vein-dots.—*Hindwing* and underside uniform glossy grey, only the hindmargin of the forewing beneath whiter (i.e. as in *abnormis*, etc.).

Woodlark Island, March–April 1897 (type); Snow Mountains, Upper Oetakwa River, up to 3,500 ft., October–December 1910, a rather smaller, more faded example; both in coll. Tring Mus.

Determined by Mr. Warren as *serraticornis* Warr., to which it bears little resemblance except in the peculiar antennal structure. Only the second species to be recorded with this structure, which, however, is closely approached by *contorta* Warr. (Nov. Zool. iv. 232) and *infirmis* Swinh. (*Tr. Ent. Soc. Lond.* 1902, p. 654—♂, not “♀”); the latter is a smaller and broader-winged insect than *erigens*, with the median area broader, the postmedian line much less direct, the underside paler. The differences can hardly be merely sexual, and the localities are widely removed.

SUBFAM. GEOMETRINAE.

36. *Obeidia lucifera* Swinh.

Obeidia lucifera Swinh., *Ann. Mag. Nat. Hist.* (6) xii. (68) 153 (August 1, 1893) (Darjiling).

Obeidia libellulalis Warr., *Proc. Zool. Soc. Lond.* 1893, p. 389 (August 1, 1893) (male condita) [Darjiling].

“*Obeidia tigrata* Guen.” (part) Hmps., *Faun. Ind. Moths*, iii. 309 (1895) (ex err.).

The essential difference of this species from the Chinese *tigrata* Guen. (1858) was already recognised by Elwes in working out his Indian collection, and he labelled a good Darjiling ♂ “*A. tigrina*” [laps. cal. pro *tigrata*] “var. of Moore not of Guenée.” To this specimen Warren added the name “*Obeidia libellulalis* Warr.,” but neglected to publish it definitely. As, however, his description of *fumosa* Warr. on p. 389 (loc. cit.) gives an intelligible description resp. differentiation of the two, it seems that *libellulalis* is somewhat more than a *nomen nudum* and might be available for the second of the species which are perversely merged by Hampson with *tigrata*, and I have labelled the Elwes example (“Darjeeling 20.6.86. H. J. E.”) as “type.” But inasmuch as *lucifera* Swinh. was published, and published properly, on the same day it should undoubtedly be given precedence, notwithstanding that in other conflicts between the same two papers “first revisers” have chosen Warren’s names—probably because his work was the more systematic and comprehensive.

O. 1. *semifumosa* subsp. n. ♂♀. Black-grey markings of forewing heavier, in particular eliminating entirely the orange maculation of the distal border,

cell-spot more or less completely fused with postmedian macular band. Hindwing as in *I. lucifera*.

Assam: Naga Hills, 5,000–8,000 ft., July–August 1889 (W. Doherty), a short series in coll. Tring Mus.

37. *Abraxas aesia* sp. n.

♂, 47–48 mm.; ♀, 53 mm. Head black. Palpus orange at base. Antenna of ♂ with the fascicles of cilia strong, slightly over 1. Thorax orange, slightly mixed with black and with a few white scales. Abdomen orange, with the customary rows of black spots. Legs predominantly black; hindtibial pencil of ♂ moderate.

Forewing not very broad; white, very slightly creamy, the markings heavy but leaving the apex clear; basal patch mixed with orange proximally, the black fairly heavy, the orange band near outer edge generally slender, well removed from the basal orange; a small grey, black-mixed midcostal spot, variable in size and shape, accompanied proximally and distally and sometimes posteriorly by inconstant grey dots or small spots; median band further represented by a small grey spot, dot or dash at base of M^2 , a more proximal transverse spot between M and SM^1 , and a small erect mark on hindmargin; postmedian band nearly always complete, consisting of two or three rows of more or less entirely confluent black or black-grey spots, anteriorly as a rule separated by a thread of the ground-colour, posteriorly enlarged (especially the outer), the orange suffusion strong, at least from radials to SM^2 , more oblique than the band, showing on its distal part anteriorly, projecting proximally to it posteriorly; light plumbeous vein-dots or dashes on its proximal part, interneural strokes or crescents (interrupted line) on its distal from R^3 to hindmargin; a longitudinal grey costa mark, projecting a little beyond the postmedian, tapering to a point; white distal band approximately 3–4 mm. wide, generally containing only a few grey dots, the terminal row of elongate spots and one or two small projections therefrom at R^3 or R^3-M^1 .—*Hindwing* with costa in ♂ very strongly convex proximally, rather elongate, apex rounded, termen waved; no cell-spot; some small spots close to base; median series represented by small spots on costa, SC^2 and abdominal margin; postmedian by a large spot at costa, generally a more distal, oblique mark between C and SC^2 ; vein-spots on SC^2 (single) and on R^1 and R^2 (double) and a posterior blotch formed much as on forewing, wide at tornus; distal white band generally clear. 4–5 mm. wide; terminal marks somewhat crescentic.

Underside similar but less variegated, the orange and plumbeous shades wanting, the postmedian bands solid posteriorly.

Loo Choo Islands: 1 ♂, 1 ♀, ex coll. Pryer, in coll. Brit. Mus.; Okinawa March 1891, 3 ♂♂, including the type (Dr. Fritze), March 16 and 20, 1892, 1 ♂, 1 ♀ (N. C. Rothschild), February 1891, 2 ♂♂ (Dr. Fritze), in coll. Tring Mus.

The February specimens are smaller (41 mm.), perhaps representing a separate brood.

38. *Abraxas lugubris* sp. n.

♂, 41–50 mm.; ♀, 54 mm. Head orange. Antennal fascicles in ♂ moderately strong, fully 1. Thorax and abdomen nearly as in the preceding species. Legs largely blackish; mid- and hindfemora in part pale orange; hindtibia

pencil of ♂ rather strong. Wings shaped somewhat as in that species, the forewing slightly more rounded costally, the hindwing relatively rather less elongate, its costal margin in the ♂ scarcely swollen.

Forewing white, heavily marked; basal patch much as in *aesia*, rather more suffused with orange, the distal black strong between costa and fold; median band black-grey, 4 or 5 mm. wide at costa, slightly oblique outward, absorbing the deeper black cell-spot, roundly bent about R^1 , becoming only about half as broad, parallel with termen, more macular, but only interrupted at fold, preceded proximally by a large spot between M and SM^2 and confluent with a smaller proximal one at hindmargin; postmedian band approximately parallel with median, broadening at costa, consisting of round vein-spots in middle, only from fold to hindmargin expanded into the characteristic blotch of the group, which is rather dark and dull; a black band of 2–3 mm. width round apex from postmedian band to midterminal blotch, enclosing a small, somewhat lunular mark of the ground-colour between SC^s and R^2 ; midterminal blotch large, generally confluent with postmedian band; the narrow terminal band generally confluent with posterior blotch of postmedian.—*Hindwing* with median band consisting of anterior half-band (costal spot + large cell-spot) and more or less confluent spots at fold and hindmargin (in the single known ♀ an almost complete median band formed by the partial coalescence of the two parts); postmedian series double, the proximal series large, roundish, placed on the veins, the distal rather smaller, more transversely elongate, interneural, that in cellule 6 often wanting; terminal spots rather heavy, somewhat crescentic.

Underside similar.

Malay Peninsula: Mount Tahan (J. Waterstradt), 4 ♂♂, 1 ♀, in coll. Tring Mus.

39. *Abraxas prosthetocneca* sp. n.

♂♀, 42–45 mm. Nearest *ditritaria* Walk. (1862). Antennal ciliation in ♂ 1 (in *ditritaria* minute). Face with narrow orange bar below. Fillet without orange scaling in front.

Forewing still more highly glossy and bluish than in *ditritaria*; costal edge ochre-yellow, succeeded by some irregular whitish-buff maculation across middle of wing and a more definite band at above 3–4 mm. from termen, attenuated anteriorly. Both wings with the cell-spot and postmedian dashes obsolete.

Underside similar, costal margin more brightly orange.

S. India: Madura district, March–June 1906 (H. Campbell), type in coll. Tring Mus. Also from the Palni Hills in other collections and a ♀ from Peermad, Travancore in coll. Tring Mus.

Has been inexcusably mixed with *ditritaria*.

40. *Drymoea hesperoides* Walk.

Dioplis (Drymoea) hesperoides Walk., *List Lep. Ins. Br. Mus.* ii. 323 (1854) (New Granada).

Little attention seems to have been paid to the interesting geographical variation of this species. With an excellent series before me I work it out as follows:

(a) *D. h. hesperoides* Walk. Forewing with elongate white spot behind cell rather large and clear, but not crossing fold; discal spot generally rather

large, especially in cellule 4, nearly always entering cellule 5. Colombia to E. and S. Ecuador.

In the rare aberrations in which the discal spot is reduced, the proximal spot shares this tendency; thus no single individual could be mistaken for the following race.

(b) *D. h. parambensis* subsp. n. Forewing with elongate white spot broadened so as to cross fold; discal spot much reduced, generally consisting merely of a large dot in cellule 4, sometimes with a minute and obscure supplementary one in cellule 5. Paramba, N.W. Ecuador, a very long series in various collections. Type in coll. Tring Mus.

(c) *D. h. unimaculata* Butl. (*Cist. Ent.* ii, 110, 1876). Forewing with elongate white spot obsolete above, rather small beneath; discal spot enlarged. E. Peru.

(d) *D. h. resurgens* subsp. n. Rather smaller than *h. unimaculata*. Forewing above with elongate white spot behind cell faintly reappearing, but narrowed, nearly always more or less irrorated with dark scales; discal spot nearly as large as in *h. unimaculata*. Bolivia, the type from Charaplaya, 65° W., 16° S., 1,300 m., June 1901 (Simons). Also from Carabaya, S.E. Peru.

The ♀ of this species still awaits discovery.

41. *Milionia polytropa* sp. n.

♂, 52–60 mm. Eye not hairy. Head and thorax black, shot with blue (brightest on face, patagia and tegulae). Abdomen black, the first and seventh-tenth segments entirely so, the intervening segments with more or less developed orange anterior bands dorsally and laterally, but very variable; those on the second and third nearly always complete (though constricted in middle), the rest often interrupted in middle or more or less obsolete. Legs dark-grey, the foretibia and tarsus black. Hindtibia not dilated.

Forewing elongate, narrow, costal margin faintly sinuous (much as in *websteri* Rothsch. ♂, or with the convexity beyond middle rather more pronounced), apex rounded, termen long and very oblique, rounded anteriorly, straighter posteriorly; black; a variable oblique band from SC near end of cell towards distal end of hindmargin, but terminating about SM²; this band typically white, more or less suffused (at least at its edges) with bluish grey or plumbeous, its width at vein M varying from 2 to 4 mm.; in a second form orange-chrome or vermilion, on an average broader (especially in the orange-banded forms), but again varying; in 2 ♂♂ wanting, the wing unicolorous black.—*Hindwing* with termen weakly sinuous (about as in *websteri*); black.

Underside similar, the forewing posteriorly greyer, the hindwing with an elongate patch of greyish (in one ab. yellowish, in form 2 orange, in form 3 obsolescent) sealing on SM² near tornus; the band of forewing in form 2 more orange than above.

♀, 60–65 mm. Abdomen with the orange always restricted, sometimes with one belt complete, often with only broken lateral remnants. Wings less narrow, the margins not sinuous.

Forewing in forms 1 and 2 with the band broad (on M 4–5 mm.), in addition with a small, oblique, generally pear-shaped subapical band (between SC¹ or SC² and R¹) of the same colour and sometimes with a dot close to tornus.—*Hindwing* in form 2 with a concolorous (orange-chrome) radial patch well outside

cell; in form 1 either with a similar (but clear orange) patch, or with a larger one of the same colour, tapering proximally so as to embrace, near its pointed end, a large black cell-spot, or with a large or smaller creamy or maize-yellow patch similarly exhibiting the black cell-spot.

Underside corresponding to upper, the discolorous patches at abdominal margin of hindwing variable.

New Ireland, November 1923–February 1924 (A. F. Eichhorn), a good series in coll. Tring Mus.

A very distinct species, though clearly belonging to the same structure group as *websteri* Rothsch. (1897), *meforana* Rothsch. (1897), etc., which will probably, on revision, be removed from true *Milionia*. Further minor variation occurs in the hindwing of a few ♂♂ of form 2, either in the reproduction above of the abdominal patch of underside or in the presence, on both surfaces, of an orange dash on radial fold.

42. *Milionia plesiobapta* sp. n.

♂, 49–64 mm. Eye slightly hairy. Hindtibia dilated, with rather strong hair-pencil; abdominal spine rather long, moderately slender. Head predominantly metallic blue, tip of palpus blue-black. Thorax blue-black, the patagia and tegulae metallic blue. Abdomen above broadly belted with metallic blue, which in some lights appears bronzy green; posterior segments blue-black, and tuft above light buff.

Forewing black, with deep blue reflections, which become strongest distally; base shot with metallic blue; an orange band, often mixed with scarlet, or even predominantly scarlet, near base, somewhat variable in shape and width, its proximal edge at costa usually 2 or 3 mm. from base, sometimes less, at SM usually 4 or 5 mm. out, thence usually retracted to hindmargin, but in one example continuing oblique outward; its distal edge oblique outward from about one third costa (or less), crossing M at, or proximally to, the origin of M², about SM² a little recurved, its course otherwise fairly direct except for a small tooth or outward bend just behind M. — *Hindwing* with the bar continued, but always orange (slightly paler), never mixed with scarlet, its distal edge usually with a pronounced tooth at radial fold just outside cell; extreme abdominal margin and fringe remaining black at end of band.

Underside similar, the band on both wings orange; an apical patch of modified scaling on hindwing slightly greyer than the rest.

New Ireland, December 1923–March 1924 (A. F. Eichhorn), a short series in coll. Tring Mus.

In a few examples the costal edge of the forewing remains more or less blackened in front of the band. In one, a black cell-spot on the hindwing is almost entirely free from the black border.

43. *Craspedosis ernestina gyroleuca* subsp. n.

♂♀. Abdomen in both sexes black to the end of the third tergite, herein reverting to the coloration of *e. sobria* Walk. (Ceram), whereas the other eastern races have only two somites blackened, at least in the ♂♂, and the two colours not always so sharply defined. Both wings with the white spot relatively broader, its proximal edge more convex; that of forewing 4 or 5 mm. wide at R³ and M¹, that of hindwing always ample, but *not reaching the abdominal margin*.

New Ireland, January–February 1924 (A. F. Eichhorn), 3 ♂♂, 2 ♀♀, in coll. Tring Mus.

In occasional aberrations of *e. schistacina* Warr. (1896, New Guinea)—which is not certainly separable from *e. aruensis* Pagenst. (1886)—the white patches approach the form of those of *e. gyroleuca*, and the abdomen shows a little dark suffusion on the third somite, but I have before me, in a very ample series, no specimen which could be confused.

44. *Hylemera rebuti* (Pouj.).

Liparis (?) *rebuti* Pouj., *Bull. Soc. Ent. Fr.* (6) ix. p. lxiii (1889) (Madagascar).

The type of this species, which is still catalogued among the *Liparidae* by Swinhoe in 1923 (*Ann. Mag. Nat. Hist.* (9), xi. 425), but obviously without first-hand knowledge, is in the Tring Museum, through what channel received is not now traceable. Although not labelled as "type," it bears the label in Poujade's handwriting exactly as published, and on the reverse side of the label a note "genre voisin des *Hylemera*," also as published (p. lxiv). The description is very exact, though it was surely not necessary to say that it "appears from an inspection of the frenulum" to be a ♀, seeing that the sex is confirmed (if any confirmation were needed!) by an appreciable extrusion of the ovipositor. The tongue, however, was probably overlooked and the significance of the venation ignored; this is altogether that of *Hylemera* (with R^2 of forewing arising much before middle of DC), to which genus, as at present understood, it clearly belongs.

45. *Hypochrosis recensata* sp. n.

♂, 41–50 mm.; ♀, 48–56 mm. Closely similar to *incensata* Walk. (*List Lep. Ins.* xxvi. 1520, Aru) = *discoloraria* Walk. (op. cit. xxxv. 1566, New Guinea) = *poecila* Pagenst. (*J.B. Nass. Ver. Nat.* xxxix. 152, t. x. f. 3, Aru and New Guinea); nearly always larger.

Forewing relatively longer and narrower, the costa being rather less arched distally, apex more acute, termen more oblique, generally straighter, at least in the ♂; coloration on an average rather deeper purple, suffused with greenish between central band and apex (approaching the colouring of *permeata* Prout, *infra*); midcostal black spot nearly always large and strong; the green band nearly always narrow anteriorly, without the "heel" on the base of M^1 which so commonly gives to that of *incensata* a foot-and-leg-shape, on the other hand almost always with a small central prong at its distal side (on M^2), foreshadowing the special development of typical *bifurcata* Warr. (Nov. Zool. x. 408); post-median line olive-brown, more uniformly developed throughout than that of *incensata*, its angulation at SC^5 rather acute, its course thence rather straight, the blackening where it meets the green band very slight.—Hindwing with apex more acute than in *incensata*, termen almost straight; the green band nearly always narrow, its distal black edging fine.

Forewing beneath brightly coloured and sharply marked, generally with a more banded appearance than that of *incensata*, the orange-yellow ground more markedly preponderating over the red suffusions, especially in proximal area, the median band rather dark purple-grey, a purple-grey line generally well developed just proximal to the grey marginal shade; marginal shade never (as in some *incensata*) continuous, but always interrupted in middle (generally

very sharply) by a reddish patch. Hindwing with the terminal dark patches on an average smaller than those of *incensata*, the tornal receding from termen anteriorly (between the median veins).

British New Guinea: Biagi (loc. typ.), Upper Aroa River, Kumusi River, Hydrographer Mountains, Milne Bay; Dutch New Guinea: Kapaur, Arfak Mountains, Mount Goliath, Humboldt Bay; north-east New Guinea: Stephansort, Sattelberg; D'Entrecasteaux Islands; Louisiades; Vulcan Island.

Where this species and *incensata* occur together, the shape is generally the best distinction, but the Louisiade forms of *recensata* (race?) are confusingly full-winged and small. The species has passed as *incensata*, but the true *incensata* Walk. is the ♀ of *discoloraria*. Lord Rothschild (*Lep. Br. Orn. Un. Exped.*, p. 85) is quite correct in merging the Wollaston series, but unfortunately a gross mis-determination had until recently been left uncorrected in coll. Brit. Mus., *discoloraria* being labelled "*cryptopyrrhata* Walk."; for the true *cryptopyrrhata* see Swinh., *Cat. Lep. Het. Oxf. Mus.* ii, 242.

46. *Hypochrosis permeata* sp. n.

♂, 40-42 mm.; ♀, 45-50 mm. Close to *recensata* Prout (*supra*). Ground-colour slightly darker and more slate-grey (less purple). Forewing with an extended apical suffusion of pale olive-green or olive-buff, only separated from the green band by a fine dark thread on DC, tapering to a point at apex and marked by the rather well-developed postmedian costal spot and the faintly traceable postmedian line; beneath sharply bicoloured, the orange ground occupying most of proximal area (except behind submedian fold) and a large costal triangle between discal band and apex, its apex resting on M¹. Hindwing with termen scarcely so straight as in *recensata*; dark marginal markings beneath ample.

Dutch New Guinea: Upper Setekwa River, 2,000-3,000 feet, August-September 1910, 7 ♂♂, 2 ♀♀, very constant.

47. *Hypochrosis viridifascia* (Warr.).

Capasa viridifascia Warr., *Nov. Zool.* iii, 415 (1896) (Humboldt Bay, Dutch New Guinea).

Swinhoe (*Cat. Lep. Het. Oxf. Mus.* ii, 343) sinks this to *discoloraria* Walk. I cannot agree. The very different ground-colour, narrower and slightly incurved green band of hindwing, intensification and different arrangement of the black markings, suppression of all the subordinate markings of upperside and presence of a central band on hindwing beneath mark it off abundantly. The seven examples which I have seen from Humboldt Bay scarcely vary at all. There are also in the Tring Museum two subspecies which Mr. Warren did not differentiate, one of which has been subsequently described as a species, while the other is still unpublished.

H. v. prouti B.-Bak., *Ann. Mag. Nat. Hist.* (8) xvi, 196 (1915). Ground-colour much less pure drab-grey, more mixed with isabella-colour (at least in the low-altitude specimens at Tring); costal edge of forewing proximally bright orange; first costal black spot more vertical (less oblique outward); black band of hindwing often thickened; forewing beneath with the costal yellow colour more strongly suffusing also the cell.

British New Guinea: Ekeikei and Mount Kebea, 4,000 and 6,000 ft. (coll. B.-Baker); Lower Aroa River, Kumusi River (low elevation) (coll. Tring Mus.).

H. v. latentifascia subsp. n. ♂. Similar to the preceding, but still more variegated, the postmedian line and some proximal shading on the forewing showing in dark purple-grey; green band of forewing widened, but very pale and vague; band of hindwing beneath weak, slender or almost entirely obsolete.

Sudest Island (Meek and Eichhorn), a good series in coll. Tring Mus.

I suspect that *H. chlorosticha* Turn. (*Proc. Linn. Soc. N. Sth. Wales*, xlii, 381) may prove another subspecies; the "fuscous median fascia" of hindwing beneath would suggest it, but the description of the upperside leaves one in doubt. I saw Dr. Turner's type several years ago, but unfortunately had not then studied the group in any detail and accepted a mischievous "lumping" in the British Museum collection. Moreover, I owe my correspondent an apology for a further lapsus, having, I gather, written *cryptorhoda* for *cryptopyrrhata* (loc. cit. 382). On the misidentification of Walker's species, see under *recensata* Prout (*supra*).

48. *Fascellina meligerys* sp. n.

♂, 40 mm. Antenna slightly serrate; tufts of cilia slightly over 1. Head and body concolorous with wings; pectus yellow, venter rosy.

Forewing with apex less acute than typical, tornus not excised; coloration a soft blend of olive-green and violet, the former apparently the ground-colour but almost entirely supplanted by the violet shading in the proximal area, except for a longitudinal streak in cell, and in the distal, except for some slight shading near apex and vague central maculation in posterior half; lines vaguely darker olivaceous, slightly more brownish, the antemedian very indistinct, formed much as in *chromataria* Walk., the median weak, meeting the postmedian at hindmargin (the space between these two very slightly darkened), the postmedian rather nearer the termen than in *chromataria* (more as in *inornata* Warr.), rendered distinct by a fine, somewhat interrupted whitish line which accompanies it distally, its course nearly as in *inornata*; some whitish admixture at end of costa and in posterior half of distal area; fringe rufescent.—*Hindwing* not excised apically; predominantly olive as far as the postmedian line, but mixed with violet at abdominal margin; antemedian line wanting; median chiefly indicated as boundary of the narrow darkened space proximally to postmedian; postmedian at least as sinuous as in *chromataria*, accompanied distally by a fine whitish line; distal area predominantly violet, somewhat mottled; fringe rufescent.

Forewing beneath bright orange, becoming more reddish in posterior part of distal area and with strong violet suffusion along hindmargin and some slighter suffusions distally; a violet-whitish apical spot; the three lines dark, subobsolete costally, the median marked with a rather conspicuous white dot in cellule 4. Hindwing bright orange, with highly sinuous purple-red postmedian line and a characteristic series of vein-dots in place of the subterminal line which is normal in the genus.

Selangor: Kuala Lumpur, Gombak Valley, at light, October 23, 1921, type in coll. Brit. Mus., presented by the Federated Malay States Museum; Peninsular Siam: Nakon Sri Tamarat, Khao Ram, at light, 750 ft., March 2, 1922, paratype in coll. Fed. Malay States Mus.; both collected by Mr. H. M. Pendlebury.

49. *Fascellina cydra* sp. n.

♂, 45 mm. Head dull dark purple. Palpus beneath and at base orange, partly tinged with red. Antennal shaft purplish; fascicles of cilia about 1. Thorax and abdomen above dull purple; beneath bright orange, parts of the pectus a little yellower. Femora and tibiae orange, tarsi mostly darkened.

Forewing with termen slightly more oblique than in *chromataria* Walk.; gently curved, not excised behind M^2 , hindmargin smooth; colour nearly as in that species or a little lighter and more variegated, the purplish tone more pronounced, the olive and russet wash between median and postmedian lines anteriorly to R^1 cleaner, the pale midcostal patch considerably larger; no white cell-marks; antemedian line distinct, blackish, very acutely angled outward just behind SC , slightly dentate outward behind SM^2 ; an elongate olive patch in end of cell anteriorly; median line vague, straightish, thickened to a shade in anterior half; postmedian much as in *chromataria*, the anterior projection longer, the two behind R^1 slighter; subterminal line indicated in posterior half, with some irregular shading proximally.---*Hindwing* with termen straight or extremely slightly concave between C and SC^2 (not excised); paler than forewing (especially in an ill-defined central band) with the olive shadings predominant, the purple chiefly confined to basal and tornal regions, and paler suffusions in other parts of distal area; postmedian double line (dark proximally, white distally) sharply expressed, very much more sinuous than in *chromataria*, the inward curve at radials being deep, the outward double lobe at M^1 pronounced; fringe and part of termen darkened as in *chromataria*.

Forewing beneath with the light violet postmedian line far more produced than in *chromataria* (even more than in *rectimarginata* Warr.), the posterior side of the projection running straight along R^1 for 5 mm., its end (in cellule 6) about 1 mm. from termen, its anterior side strongly oblique and slightly curved; costal region very broadly yellow except at apex, cut (at about three-fifths costa) by a tawny band which terminates in a dark blotch between DC and postmedian; posterior part of wing variegated with yellow, ochreous, tawny and violaceous; apical region with the pale violet more prevalent. Hindwing orange-ochreous, with more rufous, highly sinuous postmedian line (much as in *aurifera* Warr., Nov. Zool. iv. 118, and *meligerys* Prout, *supra*) and subterminal row of large dots as in the preceding species; fringe dark.

Celebes: Tawaya, N. of Palos Bay, August–September 1896 (W. Doherty), 2 ♂♂ (type); Kalewara, Central Celebes, August 18, 1912 (Dr. Martin), 1 ♂. All in coll. Tring Mus.

Most like a giant *aurifera* Warr. (Borneo and Malay Peninsula), but very different on forewing beneath.

50. *Epifdonia absona pyrsa* subsp. n.

♂. Forewing more red-brown (less darkened) than in *a. absona* Swinh. (*Proc. Zool. Soc. Lond.* 1889, p. 427). Hindwing with the fiery red costal area less irrorated, much more extended, entering the cell and reaching or crossing R^1 except apically, where it ends about at SC^2 . Underside, less strongly dark-clouded than in *a. absona*, the green patch behind end of cell of hindwing greatly reduced.

Assam: Naga Hills, 5,000–8,000 ft., July–August 1889 (W. Doherty), 3 ♂♂ in coll. Tring Mus. (type). Burma: Kabru (Manipur), 2 ♂♂ in coll. Brit. Mus.

51. *Elphos nimia* sp. n.

"*Elphos hymenaria*" Warr., Nov. Zool. i. (1894) (nec Guen.).

"*Elphos pardicelata* race *megaspilata* Warr.," Hmps., Faun. Ind. Moths, iii. 250 (1895) (in err.).

♂♀. 99–110 mm.

♂. Larger and darker than *pardicelata* Walk. (with more of the "purplish fuscous" shading); antennal pectinations less long; abdomen beneath buff, not whitish; cell-spots much smaller; lines more deeply lunulate-dentate; the whitish line which distally accompanies the postmedian more expanded at costa of forewing; hindwing with termen more deeply dentate. Underside much less white than in *pardicelata*, the forewing almost wholly occupied by the confluent dark maculation and with an almost solid dark terminal band, the hindwing also with a good deal of dark maculation and with a terminal dark band enclosing distal-marginal interneural white spots (those between the radials small).

♀. Much more mixed with white than the ♂, but retaining much more brown than *pardicelata* ♀, notably a broader and brighter median shade, a shade proximally to the postmedian and a less interrupted terminal band; further differing from *pardicelata* in the thicker black postmedian teeth, broader white costal mark beyond, smaller cell-spots, more irrorated underside, more dentate hindwing, etc.

N. India: Sikkim, Bhután, Khasis, the type from Rikisum, British Bhután, 7,000 ft. (H. J. Elwes) in coll. Tring Mus.

Through what mental aberrations Hampson made this "the eastern race" of the very distinct *pardicelata* (which has a similar but wider range) or confounded it with *megaspilata* Warr. (*pardicelata* ab.). I am at a loss to imagine, except that these are the only two Indian *Elphos* with "vein 10 from the cell."¹ Warren's misidentification of *hymenaria* (Nov. Zool. i. 431) is much more excusable, but by Guenée's size indication and his figure of the ♀ I take it to be certainly *procellosa* Warr., as determined by Hampson.

52. *Elphos cavimargo* sp. n.

♂. 83–94 mm. Size of average *pardicelata* Walk., coloration more as in *nimia* Prout (*supra*) or with a little more of the buff or ochreous admixture (closely as in *hymenaria* vera). Antennal pectinations about as in *nimia*. Abdomen beneath grey, with hardly any tinge of buff.

Forewing with termen almost smooth, slightly less oblique than in *nimia*, with a very faint (sometimes scarcely appreciable) sinuosity between R³ and M¹; SC² from cell (16 examples examined); markings closely as in *nimia* and *hymenaria*, but with a characteristic white or whitish spot between R¹ and M¹ outside the subterminal line; fringe chequered with white.—*Hindwing* appreciably narrower than in the allies, termen much less dentate than in *nimia*, notably at SC² and posteriorly to R¹, with a very characteristic, though not very deep, excavation between R¹ and R³; markings about as in *nimia*.

Forewing beneath much as in *nimia*, but with the dark border rather broader,

¹ This venation is not absolutely constant, though an excellent general guide. In examining a large number of both species I have found a very occasional example of each in which SC² is connate to just stalked. In *E. insueta* Butl., from Japan and W. China, it is still more unstable.

about as in *hymenaria* and similarly with white spots at apex, in cellule 3 and at tornus, their respective development, however, different—in *hymenaria* larger at apex, small in cellule 3, in *cavimargo* vice versa. Hindwing much as in *nimia* or a little darker—transitional towards *hymenaria*.

North Borneo: Kina Balu (J. Waterstradt), 24 ♂♂ in coll. Tring Mus.

53. *Medasina oblivia* sp. n.

♂, 48 mm. Head dark brown, mixed—especially on vertex—with white. Palpus shortish-moderate, the projecting hair beneath first joint whitish, second joint stout, densely scaled, externally dark, around the minute third joint whitish. Antenna with pectinations long and rather lax, apical one-fourth merely subserrate with short bristles. Body above dark brown, somewhat mixed with white, a narrow white belt across base of abdomen; beneath lighter brown. Foreleg partly blackened, the dark tarsus light-ringed; hindleg pale, the hair of the femur almost white, the tibia much dilated, with a strong light-brown, white-mixed hair-pencil, the terminal spurs short.

Forewing with SC^{1+2} coincident, connected by a short bar (running backward from about opposite base of SC^3 , ? remnant of the true SC^1) with C; fovea not strong; white, mostly obscured by coarse brown irroration and brown clouds; proximal area almost entirely clouded: antemedian line dark fuscous, from costa at 6 mm. to hindmargin at 4 mm., slightly excurved anteriorly, then oblique inward, with a slight indentation at fold; median shade arising just proximal to the dark cell-spot, thick anteriorly, fusing with some dark shading around the cell-spot, inbent between this and fold (almost reaching base of M^2), indented on SM^1 ; postmedian slight, chiefly expressed by outward teeth or dashes on the veins, the lunules between being sometimes scarcely noticeable; stronger anteriorly (where it forms a deep inward bend in cellule 6 and is accompanied distally by dark clouding) and posteriorly (where it closely approaches the median and is accompanied distally by a large but not sharply defined dark spot); terminal area broadly clouded except between R^3 and M^2 , the subterminal visible on the cloud as whitish dots with dark ones touching their distal side; termen with weak interneural spots; fringe brown, somewhat mixed with white.—*Hindwing* as far as the postmedian white, with fine brown irroration, a rather large black cell-spot and a thin, faint wavy line well proximal thereto; postmedian little beyond middle, lunulate-dentate (the teeth rather long and sharp), thick anteriorly, strongly outbent between the radials; distal area much as on forewing, but with broader, more continuous, wavy subterminal, which is dark-shaded proximally and only interrupted by the central pale patch.

Underside white, with black-brown markings, strongly recalling *obliterata* Moore (1867); distinguishable at once from that—apart from individual variability in the size of the terminal (on hindwing subterminal) patches—by the presence of an interrupted postmedian band on forewing, consisting of thick subconfluent vein-streaks from costa to R^3 and slighter well-separated ones on M^1 , M^2 and SM^1 , and of antemedian and (larger) postmedian costal spots on hindwing.

Assam: Shillong, a few examples in coll. Tring Mus., coll. L. B. Prout et coll. Agric. Res. Inst. Pusa, the type in the first-named, dated May 1893.

Apparently not common and strangely overlooked by Warren as an ab. of *obliterata*. That species has "11 out of 12 free," this "11 out of 12 running

quickly into 10," each constant in every example examined. "*Lassaba*" *subdecorata* Warr. (1897) shows the venation of *oblivia*, which may possibly be a shorter-winged race of it, generally with more white, subterminal bands of hindwing beneath broader, etc.

A race (?) from Sikkim, rather larger and much less densely irrorated, is represented by a single ♂ ex coll. Elwes and presumably 2 ♂♂ (without locality label) ex coll. Felder, the latter quite erroneously labelled *contaminata* Moore.

54. *Hemerophila subterminalis* sp. n.

♂♀. 36–40 mm. Superficially nearest *humeralia* Moore (1867), except in its much smaller size. Hindtibia much less heavily dilated, the hair-pencil without the blackish admixture. Face with the dark upper part less extended.

Forewing with termen slightly less crenulate, slightly less oblique posteriorly; tone a little less reddish brown; median line stronger; subterminal rather more discernible on the dark subternal cloud.—*Hindwing* with termen less deeply dentate, especially at the medians; subterminal area more marked, the brown line which succeeds the postmedian being followed by a pale line, this again by a narrow blackish shade which bounds the subterminal proximally; the subterminal itself fine, defined distally by a brown line.

N. India: Khasis, 2 ♂♂, 1 ♀, including the type, all in coll. Tring Mus.; Darjiling (F. Möller), ♂ in coll. Tring Mus., 1 ♂ in coll. L. B. Prout.

55. *Cleora hemiphanes* sp. n.

♂, 40 mm. Related to *variegata* Moore (*Lep. Coll. Atk.* p. 240), though considerably larger. Palpus rather longer (almost 2), with relatively longer terminal joint. Antennal pectinations slightly longer and continued a little further (to the 40th joint, including the rudimentary ones). Hindleg about as in *variegata* (tibial hair-pencil strong, tarsus scarcely one-half tibia).

Forewing with the fovea not quite as extreme as in *variegata*; SC¹ very shortly stalked with SC², anastomosing with C; predominantly reddish brown with black irroration and markings, more recalling the tone of *megaspilaria* Moore (*Proc. Zool. Soc.* 1867, p. 629) than of *variegata*; antemedian line regularly double, excurved anteriorly, angled inward at M and slightly at SM²; median rather thick, curved rather than angled round the cell-mark, with which it is made confluent by black shading; the pale band between median and postmedian more ochreous than in *variegata*, brightest between the radials, obsolescent at both ends; subterminal slight.—*Hindwing* with costal margin arched proximally, but less highly than in *variegata*; more buff than in that species, becoming ochreous posteriorly, recalling *megaspilaria* Moore or *semiclarata* Walk.; abdominal margin marked much as in *variegata*; proximal area slightly suffused with grey; postmedian line reduced to vein-dots from R¹ hindwards, not very oblique at abdominal margin; subterminal and its dark shade only developed in posterior part.

Underside more ochreous than in *variegata*, proximally more clouded, the band beyond median shade cleaner, the dark border less solid on forewing, obsolete on hindwing.

Java: Mount Gedeh, 8,000 ft., June 25, 1910 (E. A. Cockayne). Type in coll. L. B. Prout.

56. *Cleora semipullata* sp. n.

♂, 35 mm. In build, texture and general coloration closely akin to *semialba* Moore (*Lep. Coll. Atk.* p. 241). Antennal pectinations slightly longer.

Forewing (as in *semialba*) with SC^1 and SC^2 both free; more strongly clouded with blackish than in *semialba*, leaving pale a very narrow, ill-defined, curved band between median and postmedian lines, recalling *imbecilis* Moore (l.c.); cell-mark, antemedian and median lines little differentiated on the darkened wing, the antemedian apparently as in *semialba*, the median rather thick, more regularly curved round the cell-mark (less oblique anteriorly, less angled behind R^1); postmedian dots fairly large; midterminal pale spot rather small and ill-defined.—*Hindwing* distinguishable at a glance from that of *semialba* by having the elongate cell-spot larger, a smoky median shade from SC , broadening to abdominal margin, and a broader, blacker terminal band, anteriorly reaching the postmedian, posteriorly tapering gradually, enclosing close to tornus a pale subterminal mark; the space between postmedian and subterminal suffused with pale ochreous.

Underside distinguished by the broader blackish borders, reduced mid-terminal spot of hindwing, increased markings on hindwing (much as above) and suffused forewing from base to median shade anteriorly to M and M^2 .

Pahang, F.M.S.: Fraser's Hill, 4,000 ft., at light, August 29, 1923 (M. R. Henderson). Type in coll. Brit. Mus., presented by the Federated Malay States Museum.

A broad-banded race (?) of *semialba* from Tonkin (one example in coll. Tring Mus.) is in some measure intermediate. From dark forms in the *variegata* group, the present species differs in its longer and slenderer abdomen, rather longer abdominal margin of hindwing, rather smoother scaling and more sharply defined dark borders.

57. *Cleora pammicra* sp. n.

♂, 18 mm. Face smooth, white-grey. Palpus scarcely over 1, rough-scaled; dark-mixed on outer side, the small terminal joint white-grey. Vertex whitish, mixed with brown. Antennal pectinations short (about 2), relatively rather widely spaced, reaching to about the 25th joint, the apical two-fifths (approximately) merely shortly ciliated. Thorax and abdomen whitish, mixed with brown; abdomen with ill-defined paired blackish dorsal spots. Legs dark-mixed, with whitish rings at ends of joints; hindtibia with hair-pencil.

Forewing with termen smooth, little curved, moderately oblique; SC^1 weak, running into C ; fovea large; white, with coarse black-brown irroration, in places (especially in basal and distal areas) confluent into dark shades; cell-dot large, black; lines blackish; antemedian excurved in cell, then oblique inward; median thickened at costa, more or less confluent with cell-spot, then rather slight, gently incurved between cell-spot and fold (or SM^2); postmedian accentuated by black dots or minute dashes on the veins, about parallel with median nearer to this than to termen, a little excurved before the gentle inward curve (i.e. about R^1 – R^2); distal area with an ill-defined pale patch about R^3 and M^1 (caused by weakening of irroration) and an irregularly crenulate, posteriorly broad white subterminal line; terminal line black, thickened into interneural dots; fringe mottled.—*Hindwing* with termen little crenulate, a very shallow concavity between the radials; coloured as forewing; slightly less irrorated

proximally and costally; cell-dot rather large; an ill-defined line proximal to it; postmedian formed much as on forewing, weak costally; distal area rather more weakly marked than on forewing.

Underside similar; forewing rather more blurred; hindwing with cell-dot strengthened.

Pahang, F.M.S.: Cameron's Highlands, at light, No. 4 camp, 4,800 ft. October 12, 1923 (H. M. Pendlebury), type in coll. Brit. Mus., paratype in coll. Fed. Malay States Mus.

Possibly related to *polysticta* Hmps. (*Journ. Bomb. Nat. Hist. Soc.* xiv, 507, but still smaller, shorter-winged, with shorter pectinations, etc. etc. Closer to *concinna* Warr. (*Nov. Zool.* xiii, 139).

58. *Boarmia glochinophora* sp. n.

"*Boarmia reparata* Walk." ♂, Hmps., *Faun. Ind. Moths*, iii, 269 (1895) (in err.).

♂, 42-48 mm. Face and palpus black-brown; vertex and a slight fringe of scales over upper part of face pale. Antennal pectinations long, inclined to curve. Thorax and abdomen concolorous with wings. Hindtibia dilated, with pale brown hair-pencil.

Forewing less elongate than in *cineracea* Moore (*Lep. Coll. Atk.* p. 244); SC¹ and SC² long-stalked, their stalk connected by backward bar with C; fovea not very strong; brown, with brighter brown and sparse black irroration, a shade of the brighter brown outside the postmedian; cell-spot rather large, sharply black; lines much as in *cineracea* but slightly less oblique posteriorly, postmedian with its lunules brownish, not very distinct, its outward teeth on the other hand sharp, black-tipped; proximal filling-in of subterminal blacker-mixed than in *cineracea*; subterminal itself often whiter, commonly with some black interneural dots on its outer edge; terminal black dots rather large. — *Hindwing* with extreme base whitish, then concolorous with forewing; much black irroration between base and cell-spot; cell-spot minutely pale-pupilled; postmedian line blacker than in *cineracea*, slightly more proximal, more incurved between R³ and SM²; markings beyond much as on forewing.

Underside rather lighter, browner and more sharply marked than in *cineracea*, rather recalling a brownish *separata* Walk. (*List Lep. Ins.* xxi, 381); cell-spot of forewing very large and black; postmedian of hindwing sharply bent in the middle almost as in *lioptilaria* Swinh. (*Fasc. Malay. Zool.* i, 91).

Khasis, fairly common, January, February, March, April, November; type March 1894, in coll. Tring Mus.

Walker's type of *reparata* is a ♀ of a scarcer, narrower-winged species with the markings much more like those of *costaria* Guen. (*Spec. Gén. Lép.* ix, 242).

59. *Boarmia (Catoria) affinis* sp. n.

Catoria affinis Warr., MS. in coll. Tring Mus.

♂, 36 mm. Face with a black band above middle, whitish below. Palpus less than 1½; white, mixed with brown-grey, outside blackened. Vertex whitish. Antennal pectinations about 6, moderately stout, mostly only cleft at the extreme tips (two or three of the proximal ones cleft to base). Thorax and abdomen whitish brown-grey, the abdomen dorsally with ill-defined pairs of spots on the first segments. Legs pale, the foreleg somewhat darkened above. Hindtibia with hair-pencil.

Forewing rather narrow, apex pointed, termen strongly oblique; SC^{1-2} coincident, anastomosing slightly with C (type) or connected by minute bar, afterwards connected by weak bar with SC^{3-4} ; white, irrorated and suffused with olive-brownish, a vague whitish band remaining proximally to the postmedian and some ill-defined spots in distal area; markings as in the allies (*sublavaria* Guen., *olivescens* Moore, etc.).—*Hindwing* with the cell-spot annular, as in *olivescens*, the dentate median line proximal thereto rather strongly darkened and succeeded by a characteristic dark shade between this and abdominal margin; the area between these and the postmedian almost clear; postmedian and markings beyond as in the allies, the postmedian not much bent in middle.

Underside suffused and marked nearly as in the allies, the darker distal area not very broad, not sharply defined, the apical and midterminal patches of forewing sharply white; cell-spot of hindwing obsolescent.

♀ rather whiter, distinguishable from *sublavaria* by its smaller size and the annular cell-mark of hindwing.

Malay Peninsula: Penang, 1896 (Curtis), type in coll. Tring Mus.; Singapore, November 15, 1922, coll. Raffles Mus., etc.; also from Engano, in coll. Tring Mus.

In spite of slight differences in the antenna (irregular in the whole group), slightly acuter apex and other small distinctions, this may prove a race of *hemiprosopa* Turn. (1904); material is needed from the Sunda Islands, etc.

60. *Ectropis cuneisparsa* sp. n.

♂, 48 mm. Face with small projecting cone of scales; brown. Palpus blackish on outer side. Vertex brown. Thorax and abdomen above concolorous with forewing, beneath paler, with some dark admixture in front of pectus; abdomen rather slender. Hindtibia not dilated.

Forewing with SC^{1-2} long-stalked, from cell; pale brown with an olivaceous tinge and with coarse black-brown irroration; costal edge with dark dots or minute strigulae; lines black-brown, marked with blacker wedge-shaped dashes on the veins; antemedian and postmedian formed much as in the *bistortata* group, but with the duplicating shades on the proximal and distal side respectively strengthened, that of the postmedian of a nearly uniform intensity throughout, throwing into stronger relief the dentate pale line which separates it from the postmedian; median line less strong, arising well proximally to the cell-spot and at first oblique inward, but making a very characteristic outward bend in cell, then becoming again slightly oblique inward (but perhaps as variable as in *bistortata* Goeze); cell-mark blackish, elongate; subterminal line much as in the *bistortata* group, the proximal dark mark at costa reduced, isolated from the subcostal wedge, the radial pair rather large, confluent into a horse-shoe mark, the dark shading behind M^r rather broad; terminal dots very large.—*Hindwing* much more whitish, except along abdominal and to a less degree along distal margin; a large, slightly crescentic dark cell-spot; median line very weak except in a diffuse dark mark at abdominal margin; postmedian and markings beyond much as in *bistortata*, becoming weak towards apex; terminal dots large.

Forewing beneath blurred and suffused, somewhat blotched, only terminally paler; cell-spot and subterminal marks discernible; terminal dots fairly strong. Hindwing pale, very weakly irrorated; cell-dot moderate; no lines; terminal dots obsolescent.

Java : Mount Gedeh, 8,000 ft., June 25, 1910 (E. A. Cockayne). Type in coll. L. B. Prout, kindly presented by the discoverer.

61. *Ectropis everetti* sp. n.

♂, 45 mm. Shape, coloration and facies almost exactly as in well-coloured, well-marked examples of *E. bhurmitra* Walk., distinguished as follows :

Antennal fascicles of cilia placed on *slender pectinations* which exceed in length the diameter of the shaft. Abdominal orifice without spine. Hindtibia without hair-pencil. Forewing with SC^{1+2} long-stalked, Sc^2 connected with SC^{3+4} ; antemedian line slightly more bent, becoming rather more oblique behind ; cell-mark well developed, slightly elongate ; median shade better marked ; post-medial line less incurved posteriorly, throughout marked with larger dots on the veins, but with the costal one not specially prominent ; the shade beyond not markedly strengthened at R^1 and M^1 ; beneath with the markings perhaps even more shadowy than in *bhurmitra* (the hindwing beneath, as in some *bhurmitra*, quite unmarked).

Lombok, 4,000 ft., June 1896 (Everett), type in coll. Tring Mus.

62. *Ectropis* (*Ruttelerona*) *indiligens* sp. n.

♂, 45–48 mm. Almost indistinguishable from *lithina* Warr. (Nov. Zool. x. 398, as *Paraleis*), except that, while the hindtibia retains the hair-pencil (at least in the great majority of examples), the abdominal spine—well developed in *lithina*—is entirely wanting. Rather browner than ordinary *lithina*, almost without whitish admixture in median area ; the white patch of forewing in front of the longitudinal black dash at base of R^1 , conspicuous in *lithina*, is generally ochreous-brownish, almost concolorous with ground-colour, thus not noticeable ; cell-dot of hindwing on an average larger than in *lithina*.

♀ perhaps even darker than that of *lithina*, not definitely distinguishable.

British New Guinea : Biagi, Mambaré River, 5,000 ft., January and February 1906 (A. S. Meek), a series, including the type ; Angabunga River, 6,000 ft. and upwards, November 1904 – February 1905 (A. S. Meek), 2 ♂♂, 2 ♀♀. Type in coll. Tring Mus.

The genitalia of both species have been examined by Dr. K. Jordan and Rev. C. R. N. Barrows, without revealing any difference, but the structural distinction noted above precludes our treating *indiligens* as a mere local form of *lithina* ; moreover, the type locality of the latter (Upper Aroa River) would not be expected to produce a separate race from other spots in the same Range.

63. *Ectropis* (*Ruttelerona*) *lithina kinabalensis*, subsp. n.

♂, 52–54 mm. Larger than the name-typical New Guinea race (Warren, 1903), rather browner (with less olive-grey gloss), some of the dark markings deeper (more mixed with black), anterior subterminal longitudinal black marks of forewing more strongly developed, antemedian line of forewing on an average more acutely angled subcostally, hindwing perhaps with larger cell-spot, under-side with less deep border.

Borneo ; Kina Balu (Waterstradt), 7 ♂♂ in coll. Tring Mus., including the type. Also in coll. Sarawak Mus., coll. L. B. Prout, etc., from the same locality.

64. *Ophthalmodes rufilauta* sp. n.

♂, 60 mm. Head whitish green, with a very faint reddish dot on each side of face. Palpus tinged with rufous. Body above pale green, with a little rufous admixture in places, especially on edges of patagia and tegulae.

Forewing pale green (almost olive-yellow), mixed with white (but much less so than in *cordularia* Swinh.); costa spotted with black at beginnings of lines and with black dots or minute dashes between; markings cinnamon-rufous; discal ocellus elongate, a little bent in middle, tapering behind, slightly blackened just outside the pale centre; antemedian line feeble, almost interrupted, weakly sinuous; median line with a sharp tooth outward on R^1 , then touching distal edge of cell-mark, posteriorly incurved, on SM^2 dentate outward and mixed with black, on hindmargin mixed with black; postmedian marked chiefly by teeth or dashes on the veins, posteriorly oblique inward to approach the median (as in the allies, e.g. *herbidaria* Guen.); the space between median and postmedian from fold to hindmargin cinnamon-rufous; subterminal rather less deeply dentate than in *pertusaria* Feld., its interrupted cloudings similar (or rather stronger posteriorly and at tornus) but rufous, only marked with black interneural teeth at radials and at fold; terminal dots small, the first four (in cellules 7, 6, 5, 4) mixed with black; fringe between the veins with rufous clouding, which becomes more smoky at tips. — *Hindwing* concolorous; cell-mark much smaller; median line dark-mixed, acutely dentate outward on SC, then almost straight (or very faintly incurved); a broad cinnamon-rufous cloud between this and postmedian weakening costally (much as the blackish band of *cordularia*); postmedian much as in the allies; subterminal appreciably angled at radial fold, the black markings on its proximal shade almost confined to posterior part; terminal dots almost obsolete.

Underside very pale pinkish buff; forewing with minute black costal dashes; cell-spots black, elongate, on forewing large, on hindwing much smaller; subterminal band fawn, mixed with black; that of forewing filled in with buff from costa to SC^2 , anteriorly about 5 mm. wide, at R^2 with a blurred distal projection, posteriorly tapering; that of hindwing narrower, almost obsolete between R^2 and M^2 ; terminal dots obsolete, except the black ones of forewing, which are faintly indicated; fringe of forewing dark-spotted at tips.

Sarawak: Poeh Mountains, 3,500 ft., July 1892 (A. Everett), type in coll. Tring Mus.; Bidi (C. J. Brooks), 2 ♀♀ in coll. Joicey. Singapore, 1 ♂ in coll. Brit. Mus. Kuala Lumpur: Gombak Valley, October 18, 1921, 1 ♀ (much torn) in coll. Fed. Malay States Mus.

Probably nearest *cordularia* Swinh. (1893), in spite of the very different colouring.

65. *Xylopteryx doto* sp. n.

♂♀, 32–35 mm. Closely related to *protearia* Guen. and fully as variable. Smaller; both wings with termen appreciably less crenulate. — *Forewing* with discal ocellus small, its black circumscription commonly weak or obsolescent, its pupil bluish white; postmedian line posteriorly rather more markedly oblique outward (intermediate towards the shape of that of *arcuata* Walk. [1862] or *prasinaria* Hmps. [1909]). — *Hindwing* with the median shade in general slightly more oblique than in *protearia*, the postmedian slightly outbent about the middle, the two consequently less nearly parallel. Both wings beneath rather

pale, seldom very heavily irrorated or suffused, the dark borders commonly broad, heavy and sharply defined, very often almost reaching termen except for apical and midterminal spots of the ground-colour.

Madagascar: Diego Suarez (G. Mclou), a very long series in coll. Tring. Mus.

It is impossible within a brief compass to describe the variation. The general tone is on an average distinguishable from that of *protearia*, the paler, more ochreous, or even faintly olivaceous hues prevailing (at least in median area of forewing) rather than the redder brown or deep fuscous which is common in *protearia*—thus more approached by ab. *lucidiscata* Walk. than by other *protearia* forms. The variation on the forewing above is due, however, to the infinite inconstancy in the strength and distribution of the dark cloudings, which may be chiefly subterminal, or basal and subterminal, may produce an intense antemedian band, or may be diffused over a large area of the wing, or conversely be concentrated posteriorly, leaving the basal and median areas anteriorly pale; median area of forewing sometimes narrowed, with the limiting lines connected by a longitudinal line on the fold.

Luxiaria Walk.

Under the name of *Luxiaria contigaria* Walk., Hampson (*Faun. Ind. Moths*, iii, 195) includes an extraordinary medley. It has been to some extent put into order by Swinhoe subsequently (*Cat. Lep. Het. Oxf. Mus.* ii, 264), but some vital points have escaped detection.

Unfortunately the type of Walker's *contigaria* (the oldest name quoted) is not the species which Swinhoe assumed it to be, but is the same as *inexactata* Walk. (= *straminea* Warr. 1896 = *ditrota* Meyr. 1897), for which, however, a still older name has been entirely overlooked, namely *tephrosiata* Guen. (*Spec. Gén. Lép.* x, 18), very well described from a Borneo ♀. As this very widely distributed insect—apparently scarcely varying from N. India and the Greater Sunda Islands to the D'Entrecasteaux—is always ♀,¹ it is practically certain that it must be the other sex of the superficially very different *Eutoea heteroneurata* Guen. (always ♂, with similar range). Guenée's two names were published simultaneously; I therefore avail myself of Art. 28 of the "International Code of Nomenclature" and retain the one which has been in general use and refers to the more distinctive sex, the more so as there is a "*tephrosaria*" (Moore) in the immediate vicinity. If *Eutoea* is more than a subgenus, the species will stand as *Eutoea heteroneurata* Guen. (♂), with synonyms *tephrosiata* Guen. (♀), *personaria* Walk. (♂), *contigaria* Walk. (♀), *inexactata* Walk. (♀), *straminea* Warr. (♀) and *ditrota* Meyr. (♀).

This leaves without a well-assured name the species to which Hampson's description seems primarily to apply, and which he figures on p. 196, fig. 109—antennal ciliation minute, abdominal spine short, tibial pencil white, forewing not narrowed, median line touching cell-spot, underside banded, hindwing fairly strongly crenate; for *turpisaria* Walk. is really the ♀ to *subrasata* Walk. (see *infra*), which is a narrower-winged, more suffused insect with longer antennal ciliation, *submonstrata* Walk. the ♀ to *nigripalparia* Walk. (which must sink

¹ The Amboina *Nadagarodes* mentioned by Warren (*Nov. Zool.* iii, 411) as ♂ to his *straminea* is an impossible claimant, but is a race or very close ally of *sordida* Warr. (*Nov. Zool.* iii, 303, as *Callectaera*). I forbear to name it, as I have not yet made out whether it may be the "*Psamatodes*" *acutaria* of Pagenstecher (*J.B. Nass. Ver. Nat.* xli, 177).

thereto), a greyer species with differently shaped termen, etc., *tephrosaria* Moore another good species (discussed below) and *fasciosa* Moore and *hypaphanes* Hmps. belong to the group of *amasa* Butl., with the forewing more falcate, its termen not waved. There remains only *intensata* Moore unplaced (type in coll. Staudinger) and this is very imperfectly described, though probably a dark aberration of the species in question; but for the present I can see nothing against—and some points (e.g. the “filiform” ♂ antenna) definitely in favour of—Swinhoe’s determination (*Tr. Ent. Soc. Lond.* 1902, p. 614) of the older *acutaria* Snell, as the Malayan form of his “*contigaria*” (i.e. the present species), and I therefore accept it provisionally, perhaps with *intensata* Moore for its Indian race. A few other overlooked or misidentified species in the group must now be described.

66. *Luxiaria emphatica* sp. n.

♂♀, 38–43 mm. Very close to *tephrosaria* Moore (1867). Abdominal spots of ♂ oftener weakly developed.

Forewing with the same pale ground-colour and black costal spots (the antemedian, however, oftener reduced); median shade rather stronger, rather variable, but generally arising somewhat more distally, less excurved near costa and more oblique inward to behind middle; postmedian not more oblique than termen (in *tephrosaria* appreciably more oblique), reaching hindmargin about 1 mm. farther from tornus, the black hindmarginal spot nearly always present but never (so far as yet known) enlarged as in a common aberration of *tephrosaria*; an irregular grey (shadowy) band beyond, much as in *subrasata* Walk. and *acutaria* Snell, (strongest in the ♀♀).—*Hindwing* chiefly distinguishable by the last-named character.

Underside much more strongly marked than that of *tephrosaria*, the postmedian line of hindwing always strong, the shades beyond it rufescent, in the ♀ broader and darker.

Assam: Khasis (the ♂ type from Cherrapunji, May 1893, in coll. Tring Mus.); Nagas.

I should have been inclined to regard this as a form (perhaps seasonal, though I have seen few dated specimens) of *tephrosaria*, but for the constant difference in the postmedian line; one weakly marked Khasi ♂ is in coll. Tring Mus. might otherwise be regarded as somewhat transitional. In deciding which of these very close allies represents Moore’s lost type (coll. Russell), I have been guided by the facts that “Bengal” there probably denoted Sikkim (the weakly marked species is known to me from Kulu, Sikkim, Bhutan and Assam), that Elwes has labelled a Sikkim ♂ “*tephrosaria*,” agrees with one of two forms under that name in coll. Moore; which is type? and that Warren in coll. Tring Mus. has also determined that same species as *tephrosaria*. On the other of Moore’s “two forms,” see *L. mitorrhaphes*, *infra*.

67. *Luxiaria versiformis* (præc. subsp.?).

♂. Like the preceding, of which it may probably prove a race, but somewhat narrower winged (transitional towards the shape of *subrasata* Walk. ♂), much less pale, more clay-coloured, the median line of the fore-wing anteriorly excurved more as in *tephrosaria*, the underside more deeply coloured, with broader, darker subterminal bands, as suggestive of certain *subrasata*-forms as of

tephrosaria; underside of forewing behind the cell suffused with dark grey (in *emphatica* white).

Malay Peninsula: Gunong Ijau (loc. typ.); Sumatra: Batang Proepoe (Padang Bovenlanden, 1,500 m.); Borneo: Kina Balu.

68. *Luxiaria mitorrhaphes* sp. n.

Acidalia tephrosaria Moore in coll. (nec *Proc. Zool. Soc. Lond.* 1867, p. 643, coll. Russell).

Luxiaria turpisaria part., Swinh., *Cat. Lep. Het. Oxf. Mus.* ii, 264 (nec Walk.).

♂♀, 40–44 mm. Head and body as in *subrasata* Walk. (1861) or slightly paler. Antenna of ♂ slightly serrate, ciliation almost 1. Hindtibial hair-pencil of ♂ well mixed with dark grey (in *tephrosaria* all pale).

Forewing of normal width (not narrowed as in the ♂ of *subrasata*), apex minutely produced, termen almost smooth (intermediate in shape towards *amasa* Butl.); rather paler than *subrasata* but less pale than *tephrosaria*; scheme of markings as in the allies ("contigaria Walk." of Hampson, *Faun. Ind. Moths*, iii, 195–6 !!); no costal spots; median shade (as in *subrasata* and *tephrosaria*, but not in others of the group) well beyond the not very large cell-mark; black posterior spot to postmedian line developed in frequent aberrations, as in most of the allies.—Hindwing with termen less deeply dentate than in most of the group.

Underside very characteristic, varying little; postmedian line dark, rather thick, well and uniformly developed throughout, on forewing very slightly, on hindwing more strongly crenulate, the band-like rufescent shades just beyond always slight, the irregular dark markings, which in most of the group bound them distally, quite undeveloped.

Sikkim, Bhutan, Assam, Burma, W. China, Formosa, the type ♂ from the Naga Hills, 5,000–6,000 ft. (W. Doherty), in coll. Tring Mus.

This common species has suffered badly from misidentifications. The original description of *tephrosaria* Moore makes it certain that Warren's determination (in coll. Tring Mus.) is approximately correct, and that Moore's claim of a "type" (paratype) in his own collection (belonging to *mitorrhaphes*) is due to a confusion of two allies (cf. under *emphatica*, *supra*). Swinhoe's misidentification of the shorter-winged, banded ♀-form *turpisaria* Walk. (really no doubt the ♀ to the sexually dimorphic *subrasata*) has added to the confusion. The sexes of *mitorrhaphes* are virtually alike, except for the rather broader wings of the ♀.

69. *Nadagara orbipuncta* sp. n.

♂, 34 mm. Head and front of thorax bright brown, but scarcely so ochraceous or tawny as in most of the genus; lower extremity of face mixed with whitish. Thorax and abdomen whitish, the former above more tinged with violaceous, the latter with brown (much as in *vigaia* Walk.). Hindtibia not dilated.

Forewing with apex scarcely produced; termen smooth; very pale brown, tinged with fawn, towards termen a little darkened; sparse blackish irroration; cell-dot larger than in the allies, round; antemedian line extremely slender, strongly excurved, tawny-olive; postmedian from SC¹ about 2 mm. from termen, straightish at first but quickly curving to become strongly oblique inward (a trifle less oblique between R¹ and SM²), reaching hindmargin at 6.5 mm. out, tawny-olive, blackish-mixed distally, edged distally by a fine white line; terminal

line faintly indicated in grey at apex ; fringe tinged with greyish olive.—*Hindwing* not very broad, termen smooth, faintly sinuous ; costal margin whitish, the rest concolorous with forewing ; cell-dot small ; postmedian line little beyond middle, almost straight, reaching from SC^2 to hindmargin.

Forewing beneath warmer (more cinnamon), more irrorated, the hindmarginal area whitish ; cell-mark elongate, not round ; a postmedian blackish-grey line, posteriorly slightly less oblique than above, not quite reaching hindmargin. Hindwing whitish, strongly irrorated ; cell-dot as above ; postmedian more distal, rather strongly curved.

N.W. India : Dalhousie, July 1891, type in coll. Tring Mus.

Probably nearest *vigaia* Walk. (1862), but with smooth margins, larger cell-dot of forewing, etc. etc.

70. *Nadagara dohertyi* sp. n.

♂, 39 mm. Group of *comprehensata* Walk. and *scitilineata* Walk., but considerably larger. Hindtibial pencil and abdominal spine well developed. General coloration as in the species named.

Forewing with apex more produced than even in *scitilineata*, termen rather more crenulate, especially anteriorly ; antemedian rufous line rather distinct, more regularly curved than in the allies ; postmedian less recurved to costa than in *comprehensata* but without the teeth of *scitilineata*.—*Hindwing* with cell-dot less small than in the allies ; postmedian slightly more curved.

Underside rather more uniform than in the allies, more inclining to fleshy or vinaceous, the forewing with less bright admixture of tawny-ochraceous ; the dark irroration about as strong as in *scitilineata* ; black cell-dots distinct ; postmedian indistinct (especially on forewing), slightly crenulate.

Batchian, March 1892 (W. Doherty). Type in coll. Tring Mus.

71. *Nadagara extensipennis* sp. n.

♂, 42-44 mm. Face deep orange-rufous. Palpus not quite 2 ; ochreous mixed with bright ferruginous. Antenna rather long. Vertex, "tegulae" (*in sensu Hampsoniano*), pectus and forecoxa similarly ferruginous—or reddish mixed ; pectus hairy. Foreleg and midfemur tinged with purple ; hindtibia strongly dilated, with hair-pencil. Thorax, abdomen and legs otherwise paler. Abdomen long.

Forewing with termen faintly waved ; stalk of SC^{2+4} anastomosing well with C, SC^2 at a point with SC^{3+4} , R^2 arising near R^1 , M^1 well separate, M^2 rather straight, rather parallel with M^1 ; beneath with a patch of long, specialised scales in the position of the ♀ retinaculum ; ochraceous buff, more or less strongly suffused with vinaceous ; cell-dot black-brown ; lines reddish brown, sometimes weak ; antemedian acutely angled outward in cell ; postmedian wavy or subcrenulate, oblique, posteriorly a little curved, from about five-sixths costa to middle of hindmargin, accompanied distally by a violet-whitish line ; subterminal similar but weaker or nearly obsolete, mostly midway between postmedian and termen, still more oblique inward posteriorly ; terminal line very weak ; fringe more reddish, with whitish line at base and whitish tips.—*Hindwing* with termen gently waved ; cell not quite two-fifths ; M^1 well separate, at base remarkably straight, R^3 curving forward at origin, M^2 at origin rather straight and nearly parallel with M^1 ; cell-dot and lines beyond much as on forewing, the postmedian

almost straight and reaching abdominal margin well behind middle, the sub-terminal bluntly bent at fold, very gently concave in posterior half; fringe as on forewing.

Underside more deeply coloured, in distal area suffused with dull purplish; cell-dots black; a weak dark curved postmedian line, on forewing less oblique than above, on hindwing more distal.

British New Guinea: Kumusi River, low elevation, August 1907 (A. S. Meek), 3 ♂♂ in coll. Tring Mus. Also a more strongly marked form from Rook Island, July 1913, 1 ♂, and Dampier Island, February–March 1914, 1 ♂.

♀♀ from Milne Bay, December 1915 (A. S. Meek), and Eitape, N. Coast of New Guinea, about 90 miles E. of the Dutch border (Mrs. H. Hempsted; kindly presented to the writer by Dr. A. Jefferis Turner) are similar to weakly-marked ♂♂, the abdomen not elongate, the peculiarities of venation less pronounced, the tone more vinaceous.

The unknown ♂ of the smaller and darker, but otherwise similar *argyrosticha* Turn. (1919) will probably show analogous structural peculiarities.

72. *Scardamia seminigra* sp. n.

♂, 27–31 mm. Close to *rectilinea* Warr. (Nov. Zool. iii. 127), possibly a seasonal form,¹ labelled by Warren “var. *seminigra*.” On an average smaller. *Forewing* perhaps slightly more rounded; brighter or more reddish orange; postmedian line generally rather thick, slightly less straight than in *rectilinea*, being perceptibly curved towards costa though less markedly than in *metallaria* Guen.; a purple-grey subterminal line more or less strongly developed; terminal spots stronger than in *rectilinea*.—*Hindwing* with similar distinctions in tone, subterminal line and termen.—Both wings beneath more bicoloured, being clearer or brighter yellow proximally to the postmedian, much more suffused with purple distally, only with some yellower dashes in cellules 3 and 6.

N. India: Sikkim, Bhutan and Khasis, the type from Cherrapunji, October 1893, in coll. Tring Mus.

The same, or a closely similar form occurs also in the Malay Peninsula (Padang Rengas, Perak and Singapore), and is, in fact, the only member of the group yet known to me from that region.

73. *Corymica spatiosa* sp. n.

♂, 34–35 mm.; ♀, 40–45 mm. Larger than *specularia* Moore. Vertex of head white (in *specularia* yellow). Wings rather deeper yellow, more uniform (less clouded with rufescent shades).

Forewing broader than in *specularia*, termen with a more noticeable tooth at R¹; costal margin minutely speckled, but without the spots at origin of lines; these, as in the allies, subobsolete, indicated by dots; blotch at middle of hind-margin rather large and dark; that at tornus thin; terminal cloud greyish, smaller and fainter than in *specularia*, on underside also reduced, though bright reddish.—*Hindwing* considerably broader than in *specularia* and not produced to a sharp point at SC² (shaped more as in *vesicularia* Walk.); markings much as in *specularia*.

¹ The only dated specimens before me are from Cherrapunji in 1893, viz. 1 *rectilinea* (April) and 4 *seminigra* (September, October [2] and November); unless one may add a tiny ♂ from Chungking, Szechuan, September 1913 (B. M. Barry), perhaps representing a differentiable race.

Underside paler than in *specularia*, with less rufous clouding; forewing without the rufous median band; hindwing in posterior half predominantly whitish.

N. India: Darjiling (not uncommon) and Khasis; type ♂ from the former locality (F. Möller), in coll. Tring Mus.

74. *Synegia hormosticta* sp. n.

♂. 25 mm. Face yellowish, slightly mixed with red. Palpus scarcely $1\frac{1}{2}$, with terminal joint small, not distinct; ochreous. Vertex ochreous. Antenna simple. Thorax cream-buff, in front purplish brown. Abdomen cream-buff, suffused as far as the sixth segment with reddish. Legs mostly pale; a dark spot at end of midtibia.

Forewing with costa very gently arched, in middle straight, apex rather blunt, almost rectangular, termen curving to become somewhat oblique; SC^1 free, SC^2 stalked far beyond SC^3 ; retinaculum bar-shaped, slightly broadened with loose scaling; cream-buff, with some cinnamon irroration, here and there beset with minuter blackish irroration; costal margin of the cinnamon shade, irregularly dotted (in costal half spotted) with black; cell-dot black; lines cinnamon; antemedian excurved in cell, then very slightly oblique inward to hindmargin; proximal to it three dark dots on veins; postmedian rather thick, a little diffused distally, commencing at SC^4 , at first scarcely oblique, between M^1 and hindmargin shallowly incurved; a row of dark vein-dots beyond it, that at C confluent with that on SC^4 , those on R^2 , M^1 and SM^2 slightly enlarged, the last-named connected by an incurved line with that on M^2 ; a slight dark dash (or pair of dots obliquely placed) at apex; a blackish subterminal spot between SC^5 and R^1 ; a larger one between R^2 and M^1 ; a weaker suffusion at hindmargin, nearly reaching M^2 ; fringe pale, with blackish dots at vein-ends. — *Hindwing* with termen rather strongly convex, faintly crenulate between SC^2 and R^1 , then almost smooth; concolorous with forewing; a similar cell-dot; postmedian commencing at abdominal margin about as in *eumeleata* Walk. (= *secunda* Swinh.) but directed more towards apex, about R^1 curving so as to run to costa at least 1 mm. from apex; dots beyond all small; distal area little marked, but with a terminal dash just behind SC^2 ; fringe as on forewing.

Underside similarly marked, but in grey.

Hainan: Wuteryang, May 1903, type in coll. Tring Mus.

75. *Synegia imitaria malayana* subsp. n.

Forewing with termen on an average even more oblique than in *i. imitaria* Walk. (Ceylon); the band-like suffusions rather broader, more orange-buff, not or hardly mixed with grey scaling, the blackish element in the postmedian almost entirely wanting; cell-dot similarly less black-mixed and terminal dots less sharp. — *Hindwing* with corresponding distinctions.

Underside slightly more rufescent than in *i. imitaria*, the dark cloudings about equally heavy.

Penang (type and others), Singapore, Borneo, Pulo Laut. Type in coll. Tring Mus.

Slightly intermediate forms from the Khasis and Hainan may provisionally be left with *i. malayana*. All seem to have been confused with *camptogrammaria*

Guen., but the pectinations are slightly longer, costal margin less black, markings more blotchy, postmedian of forewing with lunule at fold deeper.

76. *Synegia medionubis* sp. n.

♂♀, 27–30 mm. Closely similar to *suffusa* Warr. (1893). Palpus more or less dark-mixed. Antenna in ♂ with the pectinations still longer; in ♀ also strongly pectinate (in that of *suffusa* simple).

Forewing rather stumper; cell on an average slightly longer; SC^{1+2} long-stalked, their stalk anastomosing strongly with C, SC^2 afterwards with SC^{3+4} ; more variegated (the reddish irroration less regularly distributed); median shade much less oblique, passing much nearer to the cell-dot, accompanied distally in middle of wing by an extended, though ill-defined, dark cloud; a rather conspicuous clear yellow spot between M^2 and SM^2 just beyond the postmedian.—*Hindwing* with only the subbasal and subterminal bands much mixed with dark violet-grey (in *suffusa* often also an ante- and a postmedian); otherwise much like a variegated *suffusa*.

Assam: Naga Hills, 1,500 ft., September–October 1889 (W. Doherty), 2 ♂♂, 1 ♀ (including type); Cherrapunji, November–December 1893; Digboi. Type in coll. Tring Mus.

77. *Nothomiza rectangula* sp. n.

♂♀, 35–40 mm. Near *costalis* Moore (1867) in structure and coloration. Face orange-yellow, above and below mixed with red.

Forewing relatively much shorter than in *costalis*, broader, the termen nearly straight and scarcely oblique; ground-colour as in the more greyish-suffused forms of that species; yellow costal projections rather shorter and flatter (less triangular); antemedian line obsolete; a yellow spot or dot in cell just in front of M^2 ; postmedian represented by a larger yellow spot between R^3 and M^1 and occasionally a small one behind it (on M^2); termen without anterior yellow streak; a purple terminal line, in places very slightly encroaching on fringe; fringe yellow.—*Hindwing* broader than in *costalis*, with termen rather more convex, in the ♀ appreciably bent in the middle; costal area less white; the diffuse grey line rather more proximal than in *costalis*; terminal line and fringe as on forewing.

Underside buff to ochreous, with short purplish strigulae and distal suffusion.

South China: Hong-Kong 1 ♂ (type), 3 ♀♀; North River, 1 ♂, 1 ♀. All in coll. Tring Mus., collected by E. Wahr.

Both the ♂♂ have unfortunately lost their antennae, but the stumps are simply ciliated.

78. *Nothomiza flaviordinata* sp. n.

♂, 28 mm. Face reddish. Vertex yellow. Collar mixed with reddish. (Antennae lost.) Thorax and abdomen concolorous with wings.

Forewing not broad, costa a little arched distally, apex not produced, termen not oblique anteriorly, bent (curved) in middle, becoming markedly oblique; vinaceous, very pale except anteriorly and distally; costal margin broadly chrome yellow, with bluntly triangular projections (about equal in size) before and beyond middle; base with slaty suffusion; a straight, strongly oblique line from distal edge of first costal projection to hindmargin at 2.5 mm.; a small

terminal yellow mark between apex and R^3 , attenuated at both ends (larger than that of *costalis* Moore).—*Hindwing* paler, rather broadly white anteriorly; abdominal margin with beginnings of two lines, near base and about 3 mm. from termen.

Underside pale, almost unmarked, except for the yellow (likewise pale) areas of forewing.

Hainan: Mount Wuchi, May 1903. Type in coll. Tring Mus.

Near *xanthocolona* Meyr. (1897), paler—especially the hindwing—hindwing more rounded (as in *formosa* Butl., 1878), the line of forewing arising from the first costal tooth. Perhaps nearer *flavicosta* Prout (1914), though narrower and much paler and with the costal yellow reduced.

79. *Ingena chrotodon* sp. n.

♂, 32 mm. Face dark brown. Palpus brown, slightly varied. Antennal ciliation nearly 1 proximally, gradually becoming shorter, minute distally. Vertex, thorax and abdomen concolorous with wings.

Forewing violet-grey, much as in the allies, with scattered red-brown speckling; costal margin red-brown, with dark spots; a small black cell-dot; lines dark red-brown; antemedian slight, anteriorly obsolete, forming a dot on M and a sinuous mark behind; median placed far beyond the cell-dot, very near the postmedian, sinuous, slightly edged with ochreous; postmedian edged with ochreous, especially proximally, acutely dentate outward on the veins, deeply incurved between, the sinus between R^1 and R^3 deep, with only a very short tooth at R^3 , the tooth on M^3 reaching nearest to the termen, the submedian sinus again deep; subterminal very thin, slightly interrupted, sinuous; a fine dark terminal line; fringe somewhat leaden at base, then paler and browner.—*Hindwing* somewhat lighter in distal area anteriorly; no cell-dot or antemedian line; the rest much as on forewing.

Underside pale grey, with an ill-defined, gently sinuous whitish subterminal band, accompanied proximally by a faintly darkened shade.

Selangor: Kuala Kubu, Bukit Kutu, 3,400 ft., August 1915, 3 ♂♂. Type in coll. Brit. Mus., paratypes in coll. Fed. Malay States Mus. et coll. L. B. Prout.

Near *I. undilineata* Butl. (*Proc. Zool. Soc. Lond.* 1892, p. 132, pl. vi, fig. 10), but with a cell-dot, less white-mixed, lines more variegated, first and third more proximal (in *undilineata* nearly evenly spaced), first more broken, median zigzag, subterminal interrupted, underside less brownish, more weakly marked.

THE SPECIES USUALLY REFERRED TO THE GENUS
CIGARITIS BOISD. [LEPIDOPTERA: LYCAENIDAE].

By N. D. RILEY.

(With text-figs. 1-13.)

WHILST re-arranging the Oriental species of the genus *Spindasis* in the British Museum Collection a number of species allied to them, and generally placed in the genus *Cigaritis* Boisd., were also examined. The results in some cases were of sufficient interest to warrant the publication of the following notes. The Museum material was very extensively supplemented by the series in the Tring, Oxford and Witley Museums, for the generous loan of which I have sincerely to thank Lord Rothschild, Professor E. B. Poulton and Mr. J. J. Joicey respectively. Especially to Lord Rothschild my thanks are due, for without the long series of *Cigaritis* he so kindly entrusted to me I had never come to the conclusions here reached with regard to that genus.

The species dealt with are virtually confined to the desert Palaearctic regions extending from Morocco and the Sahara to Central Asia and India. One species at least has established a foothold in the northern limits of the Aethiopian region (*A. nilus*), and one other is found in Somaliland. In India, however, only *A. lilacinus* occurs beyond the north-western desert regions, being found in Central India and the north-east Himalayas.

In *Cigaritis* Boisd., the genotype of which is *zohra* Lucas, the anal lobe to the hindwing is lacking, and the tails at veins 1 and 2 are decidedly short and almost equal in length. In *Aphnaeus* (genotype *orcas*), to which genus most of the species here dealt with have been referred at one time or another, the forewing has twelve veins. In *Spindasis* (genotype *natalensis*), a genus also involved, the forewing, like that of *Cigaritis*, has only eleven veins, but the anal lobe of the hindwing is well developed and both filamentous tails are comparatively long. The majority of the species now under consideration, although more closely related to *Spindasis* than to *Cigaritis*, do not agree with either in the characters mentioned above, and consequently it becomes necessary to apply to them a new generic name.

The generic differences may be summarised in a key:

1. (2) Forewing with twelve veins *Aphnaeus*¹
2. (1) Forewing with eleven veins 3
3. (4) No lobe to hindwing; filamentous tails at
veins 1 and 2 subequal in length, about 1 mm.
long, the margin considerably excavate
between them *Cigaritis*
4. (5) Lobe not very marked; filamentous tail at vein
2 less than half as long as tail at vein 1, gener-
ally 1 to 2 mm. long *Apharitis*, gen. nov.
5. (4) Lobe well developed; tails both long *Spindasis*¹

¹ Not dealt with in this paper.

As restricted above, *Cigaritis* applies to two species confined to N.W. Africa, i.e. Morocco, Algeria and Tunis; no true *Cigaritis* is known to me outside this area. *Apharitis* on the other hand ranges from the S.W. Sahara to the N.E. Himalayas, and has quite recently been discovered to be represented by a single species in Tunis.¹

Venation affords no differences between these two genera, and the genitalia are very similar throughout, as can be seen from the figures. These latter have been drawn to indicate only the differences which can be appreciated with the least amount of dissection. The penis has been omitted throughout, although it often furnishes excellent specific and even racial characters, for the reason that the shape of the clasps is sufficiently characteristic to indicate the species. As much variation has been found in the genitalia as is to be seen in the wing-pattern. In *A. acamas* a steady transition from the clasp of the Western *acamas* *divisa* to the Indian *a. hypargyros* is traceable through the intervening Palestinian and Persian forms. And it would appear that in *hypargyros* seasonal variation also exists, for the uncus in the dry-season form, viewed from the side, is remarkably dome-shaped as compared with that in the wet-season form. But the material available is insufficient to warrant definite conclusions on this point.

The uncus is deeply divided to form two widely separated, subtriangular, laterally compressed lobes, each of which bears a strong, hinged, sickle-shaped process on its lower edge about midway (the falces of Bethune-Baker). The clasps are stout, generally rather blunt distally and not capable of very much movement.² The aedeagus, in comparison with the rest of the genitalia, is decidedly large (see Fig. 3a), cylindrical for the first half of its length, funnel-shaped for the next quarter, the dorsal surface in particular departing from the general direction of the remainder, and the last quarter consists of a long tapering lip formed of the lower wall only; frequently it is very spiny. The general solidity of the genitalia, and the size compared with the abdomen, remind one of the *Amblypodinae* rather than of any other group. They are quite unlike those of any other Lycaenid group with which I am acquainted.

GENUS *CIGARITIS* Boisd.

Cigaritis Boisd. in Donzel, *Ann. Soc. Ent. France* (2) v. p. 528 (1847); Lucas, *Expl. Alg., Zool.* iii. p. 362 (1849); id. *Ann. Soc. Ent. France* (2) viii. p. 96 (1850); Staudinger, *Cat. Lep.* p. 9 (1871) (part); id. *Cat. Lep.* p. 76 (1901) (part); Rühl, *Pal. Gr.-Schmett.* p. 220 (1893) (part); Seitz, *Macrolep.* i. p. 278 (1909) (part).

Small species (20 to 30 mm. in expanse at most), reminiscent of some species of *Heodes*. The sexes, as to shape and markings of the wings, very similar. Outer margin of forewing definitely and evenly convex, the costa slightly arched, the apex not produced (or not prominently); hindwing with short subequal tails (about 1 mm.) at the extremities of veins 1 and 2, the margin excised between them; no anal lobe. Antennae about half the actual length of costa of forewing, gradually increasing in size to midway, the club very elongate, cylindrical, about half the length of the entire antenna.

¹ *A. myrmecophila* Dumont, see p. 81.

² In the related genus *Spindasis* they are often quite rigid.

The two species known can be recognised readily by their undersides. They appear to be confined to N.W. Africa.

1. Markings of underside of hindwing arranged in three parallel almost straight bands *allardi*.
2. Markings not so arranged, irregular *zohra*.

1. *Cigaritis allardi* Oberth.

Cigaritis allardi Oberth. *Études Léop. Comp.* iii. p. 401 (1909) ; id. l.c. x. p. 370. pl. 292. figs. 2395, 2396 (1915).

Cigaritis zohra Oberth. *Études. Ent.* ix. p. 35. pl. 3. figs. 8, 9 (1884).

Cigaritis zohra ♂ Seitz, *Macrolep.* i. pl. 75. i. (1908).

(a) *C. allardi allardi* Oberth.

♂♀. *Upperside, both wings*: Very similar to *C. zohra* (q.v.) in size and coloration, but with the margins more narrowly black, and the dark markings more extensive and prominent.—*Underside*. Separable at once from *zohra* by the straightness of the dark, silver-marked bands of the hindwing, which contrast strongly with the white ground-colour.

Hab. ALGERIA: Sebdou (Oran).

Life-history unknown.

Besides the typical subspecies two others exist:

(b) *C. allardi meridionalis* ssp. nov.

♂♀. Readily separable from *allardi allardi* by its very much paler upperside coloration. This is a clear ochreous, in some specimens almost a pale ochreous, whereas *allardi allardi* is decidedly coppery. The black markings of the upperside small, detached or barely contiguous, sharply defined. The ochreous areas of underside, including the ochreous edging of the silver spots, also very much paler, and the ground-colour of the hindwings not such a pure white; the short black lines bounding the spots which form the bands much emphasised, conspicuous, the spots all reduced in size, definitely separated by the veins.

Hab. ALGERIA: Djebel Mekter, May 1913 (*Walter Rothschild* and *Ernst Hartert*), 44 ♂♂, 20 ♀♀.

This is a very distinct race recognisable at once by its pale coloration and the separation of all its markings, above and below. A certain amount of variation is apparent in the series, as in the number and size of the subapical spots on forewing (they are entirely absent in one specimen) and in the relative size of the hindwing markings below, but, on the whole, it seems a remarkably constant race. A single specimen from the Masser Mines, S. of Lalla-Marnia, taken by Faroult in June, and also in the Tring Museum, is intermediate in character between *allardi allardi* and *allardi meridionalis*.

(c) *C. allardi occidentalis* Le Cerf.

Cigaritis allardi Oberth. ssp. *occidentalis* Le Cerf, *Bull. Soc. Ent. France*, p. 197 (1923).

M. Le Cerf describes this race as larger and more brilliant than *allardi allardi* from Sebdou, the black markings broader, the costal, basal and marginal areas

of both wings blackish. Below, the costal and marginal white areas of forewing are reduced, the lines and silver-centred spots are formed of larger components, more completely encircled with black and partly anastomosed, especially on the hindwings. Both wings bordered by a bright yellow marginal line.

The expanse is given as: ♂ 32 mm., ♀ 36 mm., that is to say, very much greater than in either of the other subspecies.

Hab. MOROCCO: Hareha—Upper Bou-Reg-Reg region, near Tedders.

The differences between this form and *allardi allardi* appear to be exactly the opposite of those separating *allardi meridionalis* from *allardi allardi*.

2. *Cigaritis zohra* Donz.

♂♀. *Upperside, both wings*: Rich, bright, almost metallic orange-brown, very variably marked with dark brown or black. On the forewing these dark markings may consist of only a narrow crenate marginal line, a dark apical spot, a similar subapical-costal spot and another discocellular spot, or they may be so large and numerous as to occupy the greater part of the wing surface. In the latter case they typically consist of: a black discocellular bar preceded by a smaller dark spot in cell; three large square subapical spots, in areas 4–6, the middle one much displaced basad; three similar spots below these, in areas 3, 2 and 1a, in line with the spot in area 5, contiguous, smaller towards inner margin; complete series of submarginal and marginal internervular spots, the latter almost always, the former very often also fused with the marginal line and not separable from it; submarginal series when separate rarely complete; costa always darkened; a pale subapical spot often present.—*Hindwing*: At least darkened between vein 6 and costa, and with heavy crenate marginal border; generally with dark discocellular spot. A discal series of spots in areas 1c–5, that in area 4 much displaced outwardly, may or may not be present, the anterior portions (in areas 4 and 5) being the last to disappear. Abdominal area grey to dark grey. Occasional specimens have almost the whole of the wing suffused blackish, with only faint traces of orange centrally. Cilia distally pale grey.

Underside, forewing: Inner margin pale grey, the triangular area enclosed between this, the cell, and the submarginal spots always bright fulvous; costal, apical and marginal areas exceedingly variable in ground-colour, i.e. white, grey, buff, fulvous or purplish or a mixture of some of these colours; the complete markings of upperside always present, with the addition of a basal cell-spot and three costal spots of which the central one is above the discocellulars; the spots in the orange area (the area hidden when the insect is at rest) usually represented only by their black edges; the remainder dark yellow-brown, grey or clay-coloured with black edges, and strongly marked with silver centrally.—*Hindwing*: Ground-colour always the same as that of costal area of forewing; the dark spots, usually large and numerous, including those representing upperside markings, consist of a basal series of four, and a subbasal series also of four (larger), both straight and parallel, and of an irregular discal series (including the spot on discocellulars) broken at vein 4, so that the spot at base of area 3 is much displaced outwardly and unites with the lower end of the irregular subapical bar extending from costa (at about two-thirds from base) to vein 4; beyond this is a well-developed submarginal series; all spots coloured as on forewing costal and apical areas; the marginal series, as on forewing, not silver-marked, the spots crescentic, rather

heavily black-edged inwardly. The underside markings are largest and clearest in forms with a white ground-colour; in the others the marginal and submarginal series especially tend to become lost or indefinite, and the arrangement of the spots is then chiefly indicated by their silver centres.

Length of forewing: 10 mm. (small ♂♂) to 17 mm. (large ♀♀).

Hab. MOROCCO, ALGERIA and TUNIS.

Life-history unknown.

I include under the name *zohra* not only all those forms generally associated with that name, but also *siphax*, which has usually been considered as a distinct species, and its associated forms. The extremes of these two forms, typical *zohra* on the one hand and *erythrea* on the other, are admittedly exceedingly unlike, yet the material in the Tring Museum provides a complete series of gradations from the one to the other in such a manner that it is impossible for me to regard them as belonging to more than one and the same species.

Several subspecies appear to exist, and there are numerous sporadic but frequently occurring forms.

(a) *C. zohra zohra* Donz. (text-fig. 1).

Cigaritis zohra Donzel, *Ann. Soc. Ent. France* (2) v. p. 528, pl. 8, figs. 5, 6 (*Cigarites zohra*) ♂ [♀] (1847); Oberth. *Études. Ent.* xx. p. 14 (1896); id. x. p. 371, pl. 293, figs. 2403-2413 (1915); Seitz, *Macrolep.* i. p. 279 (*nec* pl. 75i) (1909).

Cigaritis massinissa Lucas, *Ann. Soc. Ent. France* (2) v. p. ex. 1847 (nom. nud.); id. *Expl. Alg. Zool.* iii. p. 364 (1849); id. *Ann. Soc. Ent. France* (2) viii. p. 99, pl. 2, figs. 2a, 2b (1850).

Cigaritis? *massinissa* Oberthur, *Études Léop. Comp.* iii. p. 403, pl. 25, figs. 128, 132 (1909).

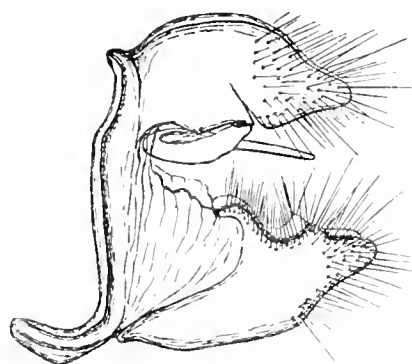
Aphnaeus masinissa Hew. *Ill. Diurn. Lep.* p. 63 (1865).

Aphnaeus zohra Courv. *Iris* xxxv. p. 77 (1921).

As compared with the general description given above *zohra zohra* may be recognised by its large size and its brightness, coupled with its heavy black costal and marginal markings above. The underside, however, shows the most characteristic features: the ground-colour is white, the markings large and prominent, often coalescent. The pale subapical spot on forewing above is usually prominent.

Hab. MOROCCO: Eastern; and ALGERIA: Northern plateau region. Not known from Tunisia.

As was fully explained by Oberthür (*Études Léop. Comp.* x), who recently received specimens from the type locality, Djebel Amour, there can be no doubt now that *massinissa* and *zohra* are sexes of the same species, the original male of *zohra* described by



1 *zohra zohra*

FIG. 1.—*Cigaritis zohra zohra*, ♂.—Genitalia, lateral aspect, penis removed.

Donzel having been mistaken by him for a female. *C. zohra zohra* is decidedly variable, but the following two forms seem fairly well marked.

1. f. **zohra** Donz.

Cigaritis zohra Donzel, l.c.; Oberth. *Études, Lép. Comp.* x. pl. 293, fig. 2403; Seitz, *Macrolep.* i. pl. 75 h and i (*jugurtha*).

Well marked above. Forewing with two prominent cell-spots, transverse discal band reaching vein 2, prominent subapical pale spot, marginal and submarginal bands coalescent from vein 2 to apex. Hindwing mostly suffused with black, the fulvous being confined to a largish divided discal area, and a wavy marginal line from anal angle to vein 4.—*Underside* ground-colour of hindwing, and of costal and marginal areas of forewing, almost pure white.

2. f. **oberthueri** f. nov.

Cigaritis zohra Oberth. l.c. figs. 2404-6.

Like the preceding beneath, but with the black markings of the upperside reduced to only a marginal wavy band on each wing, and a subapical and a discocellular spot on forewing. Costal area of hindwing rather suffused. Pale subapical spot on forewing prominent.

This is a common form, more particularly in the female. Intermediates between it and f. *zohra* occur fairly freely, such as the specimens figured by Oberthür in *Études Lép. Comp.* iii. pl. 25, figs. 128-132. The specimen shown in the original figure of *massinissa* also belongs to this category, the name being therefore available for these intermediate forms should a name for them be considered desirable. Typical *zohra* and its form *oberthueri* seem to be peculiar to the southern side of the plateau of northern Algeria. Oberthür figured "*siphax-funebris*" and "*siphax-immaculatus*" both from Aflou (Djebel Amour), as well as the two forms mentioned above. But I am of opinion that some error must have arisen, for amongst the two hundred specimens I have examined from the Aflou district not a single "*siphax*" is to be found. Oberthür's figures of this "*siphax*," moreover, are not convincingly like typical *siphax*, and I can only conclude that they are intermediate forms between *z. zohra* and *z. siphax*.

(b) **C. zohra littoralis** ssp. nov.

This has a very bright appearance above, with reduced but intensely black markings, and in many specimens the males have the discal band of the hindwing (characteristic of *siphax* as a rule) not merely indicated, but clearly and sharply defined. The marginal and submarginal series of markings on the forewing in most specimens are completely separated. On the underside also the black markings are very sharp and intense, especially on the forewing.

Hab. ALGERIA: Oran, April 1913 (*Walter Rothschild* and *Ernst Hartert*). 9 ♂♂, 9 ♀♀.

(c) **C. zohra jugurtha** Oberth.

Cigaritis var. *jugurtha* Oberth. *Études Ent.* i. p. 21 (1876); id. l.c. ix. p. 35. pl. 3, figs. 6, 7 (1884); id. *Études Lép. Comp.* x. p. 373. pl. 293, figs. 2409, 2410 (1915); [nec *jugurtha* Seitz, *Macrolep.* i. pl. 75 h and i].

Similar to typical *zohra* above, but generally rather smaller, with better defined and deeper black markings above, and with the ground-colour of the underside of the hindwings and of costal area of forewing greyish or brownish, usually the latter, never white.

This race was originally described by Oberthür from Saida. It also occurs

in Sebdou and Tabia, and shows a marked approach to the race described above as *z. littoralis*. Frequently the upperside, especially of the females, presents the characters of the *oberthueri* form of *z. zohra*. Further east, but on the northern side of the plateau of northern Algeria a very interesting little race occurs, showing a decided approach to *siphax*.

(d) *C. zohra orientalis* ssp. nov.

Extremely pale above, the black markings all very small and the marginal and submarginal markings of forewing completely separated. The underside, in the tone of the ground-colour, is more like that of typical *z. siphax* than that of any other form of *zohra*, but the large round markings of the hindwing in form are those of *z. zohra* rather than of *z. siphax*, although they show a tendency to a reduction which, if carried a little further, would readily produce the typical underside of *siphax*.

Hab. ALGERIA: Boghari, May (*Faroult*).

It is largely the existence of this form, morphologically and geographically intermediate between *z. zohra* and *z. siphax*, that convinces me that we have here only one real species to deal with, not two.

(e) *C. zohra siphax* Lucas.

Cigaritis siphax Lucas, *Expl. Alg. Zool.* iii. p. 362. pl. 1. figs. 8, 8a (as *Zerythis siphax*) (1849); Oberth., *Études Ent.* xx. p. 14 (1896); Seitz, *Macrolep.* i. pl. 76a (1908).

Cigaritis siphax Oberth., *Études Léop. Comp.* iii. p. 401 (1909) and x. p. 369 (1915).

♂♀. *Upperside, both wings*: Rich, bright, almost metallic orange-brown. Forewing: With a black transverse bar across cell-end and generally a smaller one preceding it; beyond this three square black spots (one each in areas 4, 5 and 6) arranged in a triangle; a submarginal series of sub quadrate black dots generally not quite separated from the marginal black band; occasionally black spots are also present in areas 1 to 3 in a line perpendicular to the inner margin.—Hindwing: Much suffused with black along the costa and at base as far as the black bar at cell-end; beyond this a transverse black band of which the section in area 4 is much displaced outwardly; indications of a narrow wavy submarginal line; the marginal black band cut into at the veins broadly by the ground-colour.—*Underside, forewing*: Yellowish ochreous, pale ochreous along the costa and hind margin, with numerous darker silver-splashed markings, i.e. a small subbasal spot in cell, followed by a narrow transverse band across cell to costa, and a wider one on discocellulars, three subapical spots and a submarginal series; submarginal series widely separated from the marginal series which, together with a pair of hollow black spots in areas 2 and 3, and one in area 4 much displaced outwardly, are not silver-marked.—Hindwing: Powdery greyish ochreous, the margin broadly darker and bearing on its inner edge indications of the submarginal series of silver-marked spots; the remaining silver-marked spots are formed of the subbasal series of four, the median series of five (including that on the discocellulars) and the apical series of four, of which the lower two are bent out at an angle of about 135 degrees to the other two.

Hab. EASTERN ALGERIA (east of long. 6°E.) and TUNIS.

In addition to the typical form of this subspecies, as described above, one well-marked form exists and occurs commonly in places.

3. f. **erythrea** Staud. (text-fig. 2).

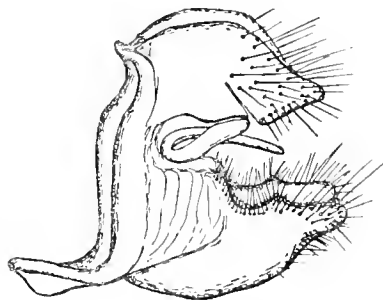
Cigaritis siphax var. *erythrea* Staud. *Iris*, v. p. 280 (1892); Oberth. *Études Léop. Comp.* x. p. 369. figs. 2399, 2400 (1915).

Cigaritis siphax ab. *erythraea* Seitz, *Macrolep.* i. p. 279 (1909).

Characterised by having the ground-colour of the underside, except lower central portion of forewing, strongly purple in tone.

In some places, notably at Bone, where both typical *z. siphax* and its form *erythrea* occur together in June, the latter would appear to be quite as common as the former. But this does not seem to apply generally. Oberthür states that it occurs principally in Tunis and the eastern coast region of Algeria. It has been suggested that it is a seasonal form, an idea which its appearance supports, and which is by no means disproved by its occurrence together with typical *siphax*, as at Bone. The information available at present is hardly sufficient to settle the exact taxonomic value of the name.

In a species as polymorphic as *zohra* it is not easy to analyse the various varietal tendencies, but one phase, which is likely to occur in any race, is well exemplified in the form which has been named by Oberthür:—



2 *zohra f erythrea*

FIG. 2.—*Cigaritis zohra siphax* f. *erythrea*, ♂.—Genitalia, lateral aspect, penis removed.

4. f. **confusa** Oberth.

Cigaritis zohra-confusa Oberth. *Études Léop. Comp.* x. pl. 293. figs. 2407, 2408 (1915).

Cigaritis zohra-jugurtha-confusa Oberth. l.c. figs. 2412, 2413.

It is not described by Oberthür, but to judge by his excellent figures it represents a phase in which all the dark markings of the underside are larger and browner than usual, and largely coalescent.

Variation in another direction is represented by the *oberthueri* form (see above, p. 75), which is more particularly a ♀-form, although occurring fairly frequently in the males as well. It has its parallel in all the races dealt with above.

5. f. **funnebris** Oberth.

Cigaritis siphax-funnebris Oberth. *Études Léop. Comp.* x. p. 293. figs. 2401, 2402 (1915).

This form belongs rather to the *zohra* than to the *siphax* association of forms. There are two females, labelled "Oran," in the Tring Museum, which agree with Oberthür's figures remarkably well, and they are certainly more *zohra* than *siphax*. The form should be characterised by its almost uniformly dark grey-brown underside, with inconspicuous, white-pupilled, slightly darker spots.

Several other names, proposed at various times, denote simply individual aberrations:

(i) ab. **pallescens** Oberth.

Cigaritis syphax ab. *pallescens* Oberth. *Études Ent.* xx. (p. 14) pl. 5. fig. 83 (1896); id, *Études Léop. Comp.* iii. p. 401 (1909).

Cigaritis siphax ab. *pallida* Oberth. *Études Léop. Comp.* x. p. 369 (1915).

Resembles f. *erythrea* beneath, but the rich ground-colour of the upperside is replaced by a dull pale straw-colour, suggesting a pathological form comparable with ab. *schmidtii* of *Heodes phlaeas*. Liable to occur in any subspecies.

(ii) ab. **supra-impunctata** Oberth.

Cigaritis syphax ab. *supra-impunctata* Oberth. *Études Ent.* xx. (p. 14) pl. 5. fig. 84 (1896).

Cigaritis syphax ab. *impunctata* Oberth. *Études Léop. Comp.* iii. p. 401 (1909).

Cigaritis siphax ab. *paucimaculata* Oberth. *Études Léop. Comp.* x. p. 369 (1915).

An upperside aberration, in which all the black markings, except those on the discocellulars, and traces of the submarginal series, have disappeared, and in which the outer margins of the forewings posteriorly are whitish. The nature of the underside is not stated, and only the upperside is figured.

(iii) ab. **immaculatus** Oberth.

Cigaritis siphax-immaculatus Oberth. *Études Léop. Comp.* x. pl. 292. figs. 2397, 2398 (1915).

This is intermediate between normal *siphax* and f. *supra-impunctata*. The ground-colour of the upperside is not altered at all, the black spotting alone being reduced. Not at all an unusual form.

An advanced degree of melanism is represented by a male in the Tring Museum taken by Faroult at Djelfa in June 1913. In this the costal area of forewing, on both surfaces, is entirely and very broadly black, except for a few remnants of the silver markings. It seems unnecessary to name it.

GENUS **APHARITIS** gen. nov.

Similar in general coloration (with few exceptions) to *Cigaritis*; structurally nearer *Spindasis*.

Forewing: Costa straight from just beyond base to just short of apex, apex slightly produced, outer margin (in ♂) almost straight from apex to vein 5, where it is as a rule decidedly angled and, from there to inner angle, slightly concave; in the female more evenly curved throughout, never concave posteriorly. Hindwing with the outer margin evenly rounded to vein 2, slightly excavate just above vein 2, remainder produced to form a rather indefinite lobe bearing at vein 1b a tail which is always at least twice as long as that at vein 2. Venation and other characters as in *Spindasis*.

Genotype: *Apharitis epargyros*.

The species of this genus can be separated readily from those of *Cigaritis* by the shape of the wing; and from *Spindasis* most easily by their coloration.

In this last respect *A. lilacinus* is a little aberrant, and forms a connecting link with *Spindasis*. They are confined to suitable localities throughout the desert regions extending from the Sahara to India.

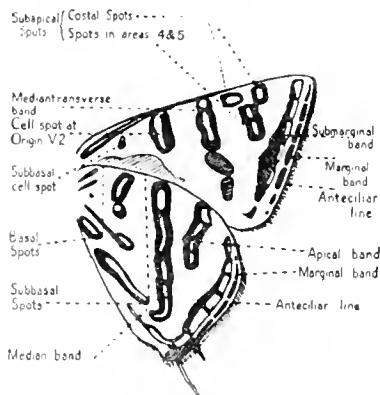


FIG. 13.—*Apharitis acamas*, underside, ♀.—Diagrammatic sketch to show arrangement of spots, $\times 2$ (approx.).

KEY TO THE SPECIES OF *Apharitis*.

1. (15) Upperside ground-colour bright ochreous with dark markings.
2. (5) Dark markings of underside small and widely separated, not forming prominent bands.
3. (4) Base and costa of hindwing, base, costa and hind margin of forewing rather broadly suffused black; length of forewing 14 mm. or less *cilissa*.
4. (3) Wings not so suffused, or only very narrowly; length of forewing at least 15 mm. *maxima*.
5. (2) Dark markings of underside connected together (or nearly so) to form prominent chain-like bands.
6. (9) Curved black lines forming inner edge of submarginal band of underside of forewing with their convex sides towards base.
7. (8) Dark markings of underside (except their black edges) dull ochreous *epargyros*.
8. (7) Same markings (except edges) bright orange *myrmecophila*.
9. (6) Same lines straight, or curved in the opposite sense.
10. (14) Hindwing above devoid of black markings, except for slight costal suffusion and marginal line.
11. (12) (13) Markings of underside mainly orange-ochreous, rather broken up. *acamas divisa*.
12. (11) (13) Markings of underside light dull ochreous, normal in arrangement *acamas bellatrix*.
13. (11) (12) Markings of underside large and heavy, mainly greenish-brown; apical band on underside of hindwing united with submarginal band at each end and with median band in area 5 *gilletti*.
14. (10) Hindwing above with bands of underside clearly represented by diffuse black bands *acamas*.
15. (18) Upperside ground-colour white or pale straw-colour.
16. (17) Subapical dark spots on forewing above, confluent with submarginal band; ground-colour whitish from costa of forewing to about vein 4, ochreous for remainder and on hindwing, much reduced in extent by the heavy black markings *nilus*.
17. (16) Same spots not confluent; ground-colour white throughout, occupying about half the wing surfaces. *buchanani*.
18. (15) Upperside ground-colour uniformly pale grey-brown, shot with pale lilac-blue in male *lilacinus*.

1. *Apharitis cilissa* Led. (text-figs. 3, 3a, 3b).

Cigaritis cilissa Led. *Wien. Ent. Mon.* v. p. 147, figs. (1861); Staud. *Cat.* p. 76 (1901) (part); Seitz, *Macrolep.* i. p. 279, pl. 75i (1909).

♂♀. The figures quoted characterise this species quite well. In size it never exceeds a forewing length of 14 mm. in the ♂, or 16 mm. ♀, judging by the

32 specimens examined; the upperside ground-colour is ochreous, inclined to be rather pale; in both sexes the central cell-spot of forewing is large, and the basal cell-spot, when not enveloped by a black basal suffusion, quite distinct; the costal and marginal black suffusion usually includes the upper of the three subapical spots, and extends as a rule from margin more than half-way to the lower of these spots; a submarginal series of black spots is sometimes indicated. On the hindwing the black basal suffusion extends as far as the end of the cell, and, filling the greater part of areas 6 and 7, joins with the marginal dark border.

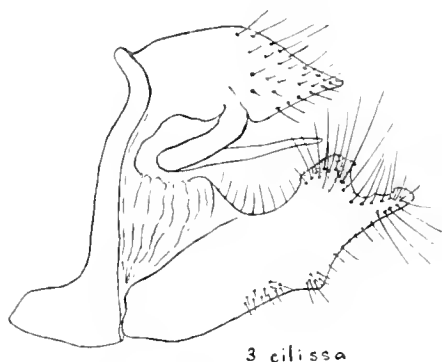


FIG. 3.—*Apharitis cilissa*, ♂.—Genitalia, lateral view.

On the underside the pale creamy-white ground-colour is tinged in places (principally about veins 2 and 3 of both wings) with pinkish ochreous; the marginal and submarginal series of spots are rather closely approximate, the spots of the latter series in areas 4

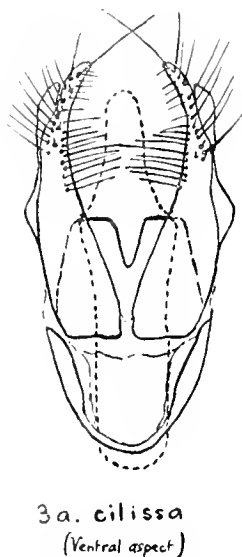


FIG. 3a.—The same, ventral view.

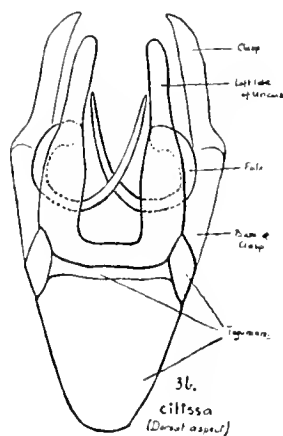


FIG. 3b.—The same, dorsal view.

and 5 of hindwing joined to the spots of the subapical series in the same areas, the six spots thus closely approximated having a disjointed appearance.

Hab. N. SYRIA and KURDISTAN.

Life-history unknown.

Variation is not very considerable, only one form belonging to this species having been described.

A. cilissa f. minima Staud.

Staudinger (l.c.) characterises this form as "duplo minor, obscurior," and gives as locality "S. Taurus." One specimen in the British Museum, unfortunately without locality, appears referable to this form. It is certainly very much smaller than normal examples, has wider black borders, and is generally much duller and more black-suffused above.

Staudinger's var. *maxima* is a distinct species.

2. Apharitis maxima Staud. (text-fig. 4).

Cigaritis cilissa var. *maxima* Staud. *Cat.* p. 76 (1901); Seitz, *Macrolep.* i. p. 279 (1909).

C. maxima Peile, *Journ. Bombay N.H. Soc.* xxviii. p. 264 (1922).

C. cilissa var. *maxima* Rebel, *S.B. Ak. Wiss. Wien.* 126. Ab. i. p. 259 (1917).

♂♀. Very similar to the preceding species, but always larger. The specimens examined (4 ♂, 8 ♀) measure not less than 16 mm. as to the length of the forewing in the ♂, 18 mm. in the ♀. The upperside ground-colour is a rich bright ochreous; the basal cell-spot is absent or barely indicated, the black basal suffusion never of sufficient extent to obscure it; the costal black is confined to the costal edge and the veins, principally, especially in the female; the marginal black band, barely more than 1 mm. wide, runs clear of the subapical spots by a very wide margin; submarginal series absent. The hindwing is almost devoid of black basal suffusion.

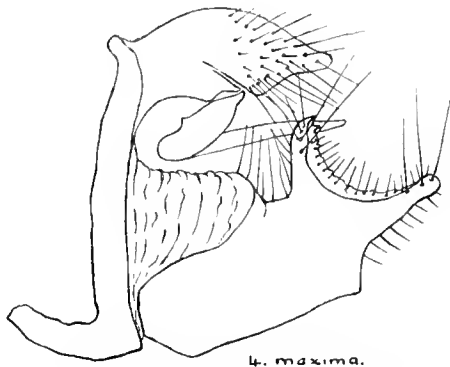


FIG. 4.—*Apharitis maxima*, ♂.—Genitalia, lateral view.

On the underside the ground-colour is a very even pale creamy-white, the darker areas being confined along veins 2 and 3 of the hindwings. The spots of the submarginal series are not noticeably approximated to those of the marginal series; the remainder of the spots only narrowly black-ringed and inconspicuously silver-marked or filled only with the pale yellow ground-colour.

Hab. KURDISTAN: Mardin, Malatia, Suwarra, Harir, etc. N. SYRIA: Amanus Mountains.

Life-history unknown.

3. Apharitis myrmecophila.

Cigaritis myrmecophila Dumont, *Bull. Soc. Ent. France*, p. 217, 1922.

“Expanse 24–32 mm. Wings bright orange fulvous, bordered by a blackish marginal line [and] bearing separated black spots, variable in number, arranged approximately as in *acamas* Klug; on the forewings a quadrangular whitish spot near apex. Cilia creamy white. Underside creamy white, the internal and external margins washed with salmon-colour, and fulvous-orange ocellate

spots, partially confluent, bordered with black and pupilled with silver ; marginal line preceded by a line of black internervular points. Hindwings with the costal area obscured with brownish shading sometimes into black, extending more or less in the form of dots, spots or bands, but never reaching beyond vein 2 ; the strongly festooned terminal line forms an arched spot between the tails and another, rectangular, at anal angle. Tails tricolor ; base fulvous, middle black, tip white. Underside creamy white with five transverse rows of fulvous-orange spots, pupilled with silver, of which the two basal have separated spots ; the others are confluent and form a series of three chains. Marginal line fulvous, intersected by black and preceded by a line of four black spots.

"Types. TUNISIA, dunes of Tozeur-Nefta ; June-July 1919.

"This species approaches *C. acamas* Klug. but is sharply distinguished by the following characters :

"Size generally smaller, appearance more delicate. Forewing with the external margin more convex. The underside of all four wings, pure white with fulvous-orange markings in *myrmecophila*, is dirty yellowish white with the hands and spots ochreous brown in *acamas*.

"Egg.—The egg is a spheroid flattened below, slightly tapering and rounded above ; the surface covered with pentagonal cells arranged in circles perpendicular to the axis, the largest at the widest point.

"Larva.—The full grown larva is 18-25 mm. ; flattened, subparallel, faintly depressed posteriorly in 9-12 ; its covering greyish, densely clothed with short or prominent hairs, which give it a reddish granitic appearance ; head small, shiny black ; chitinous shield transversely grooved, anterior margin curved up, black ; mesothorax reddish brown like the dorsal line ; a latero-dorsal line of suborbicular brown spots on a reddish blackground in 3-10 ; 11th segment is provided with two cylindro-conical chitinous tubes, black, enclosing the erectile organs ; preceding these, on a rectangular vinous patch is to be seen the gland which the ants attend ; anal flap small, shiny brown ; stigmata in relief, yellowish, encircled with black. Thoracic feet black-brown ; abdominal concolorous.

"Chrysalis.—Pale brown, short, stumpy, interiorly arched with a blunt cremaster.

"In June and July all stages can be found at the same time ; egg, larva, pupa, butterfly.

"The larva, nocturnal, feeds exclusively on the shoots of *Caligonum comosum* L'Hérit. ; in the day it remains motionless in the subterranean tunnels dug by the ants at the foot of the plant ; these large spacious tunnels seem set apart especially for the use of the larvae, for the nest proper, enclosing the brood, is situated in the opposite direction. It is in these galleries that the various transformations of the lepidopteron take place, the pupa fastening itself by its cremaster to the vault of the tunnel. These caterpillars are very lazy, and it is by various manœuvres, stroking, biting, etc., that the ants succeed at nightfall in making them climb up to the food plant.

"Dr. Santschi finds two species of ant : the large one, *Catoglyphia bicolor* L., and a small one, *Cremastogaster auberti*. Is the small one the slave of the large one ? "

M. Dumont has most kindly presented to the British Museum three specimens of this delightful little species. Its underside resembles more closely that of *A. acamas divisa* Roths. than that of any other form.

4. *Apharitis epargyros* Evers. (text-fig. 5).

Polyommatus epargyros Evers., *Bull. Mosc.* 27, ii. p. 178. pl. 1. figs. 1, 2 (1854).

Aphnaeus epargyros Riley, *Ann. Mag. N.H.* (9), 8, p. 598 (1921).

Cigaritis acamas Lederer, *Wien. Ent. Mon.* 1, p. 27 (1857) (part).

Cigaritis acamas Bienert, *Lep. Erg. Reis. Pers.* p. 29 (1871) (part); Staud., *Cat.* p. 9 (1871) (part); Christ., *Hor. Soc. Ent. Ros.* 10, p. 22 (1873) (part); Erschoff, *Fedshenko Reise Turk.* 2. p. 10 (1874) (probably); Gr.-Grsh., *Rom. Mem.* 4, p. 366 (1890) (part); Staud., *Cat.* p. 76 (1901) (part); Seitz, *Macrolep.* 1. p. 279 (1909) (part).

Aphnaeus acamas Kirby, *Cat. Diurn. Lep.* p. 404 (1871) (part); Rühl, *Pal. Gr.-Schmett.* p. 220, p. 748 (1892-95) (part); Swinhoe, *Lep. Ind.* 9. pl. 734. figs. 1, 1b (only) (1912); Courvoisier, *Iris.* 35. p. 74 (1921) (part).

This delicate little species bears so close a superficial resemblance to *A. acamas* that, as pointed out on a previous occasion (Riley, l.c.), it has been treated by every author as synonymous with *acamas* till the present.

The differences are very clear, however, and in view of the excellence of Eversmann's original figure and description there is no excuse for the confusion. The species is not excessively rare, though more limited in its distribution than is *acamas*.

The main differences may be summarised:

*acamas.**epargyros.*

Base of forewing to origin of vein 2 and base of hindwing all grey.	Same areas clear yellow, as rest of wing.
Pale apical spot in area 6 very frequently extends to areas 5 and 4, and is quite white.	Pale apical spot in area 6 only, and never pure white.
Forewing below with submarginal band inwardly edged by straight black lines.	Same lines invariably crescentic.
Forewing hind margin very evenly convex.	Same margin much excavate posteriorly.
♂ clasper ends distally almost as a point, preceded on dorsal margin by a short blunt conical projection (see figures).	♂ clasper ends distally as a blunt cone; not preceded by projection on dorsal margin (see figure).

The species ranges from Kurdistan to Baluchistan and northwards to the Kirghis Steppes and Kuldja.

(a) *A. epargyros epargyros.*

Polyommatus epargyros Evers. *Bull. Mosc.* 1854 (ii.) p. 178, pl. 1. figs. 1 and 2.

Aphnaeus acamas Swinhoe (*nec* Klug), *Lep. Ind.* ix. p. 163. pl. 734. figs. 1, 1b. (*nec* 1a) (1912).

Aphnaeus epargyros Riley, *Ann. Mag. Nat. Hist.* (9) viii. p. 598 (1921).

♂♀. *Upperside, both wings*: Bright fulvous with black markings, a black anteciliar line and white cilia. *Forewing*: The dark markings consist typically

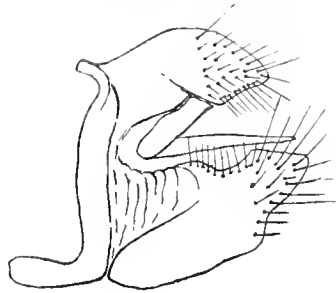
5 *epargyros*

FIG. 5.—*Apharitis epargyros*, ♂.—Genitalia, lateral view.

of a subquadrate spot towards anterior margin of all centrally; a broad bar across discocellulars from costa to vein; a subapical bar of 3 quadrate spots, the middle one considerably displaced towards base of wing; followed by a pale subapical spot in area 6 and preceded by a black spot almost on costa; a submarginal series of 5 black spots just separated by the veins.—Hindwing: a dark diffuse spot towards base of cell, and another on discocellulars, both prolonged as dark bands extending to costa; a similar dark subapical band extending to vein 4; a submarginal band as on forewing reaching to vein 3.

Underside: As described for *acamas*, but with pure-white ground-colour, the dark markings paler, and the following further differences: forewing, an additional small costal spot just above subapical band; the submarginal band less continuous, inwardly edged by a series of crescentic black lines with their convex sides towards base of wing; the middle and lower spots of subapical band never fused to form one large oblong spot.—Hindwing: submarginal band shows same differences as that of forewing; subapical band also more disjointed than in *acamas*.

Length of forewing: ♂ 13–15 mm., ♀ 15–17 mm.

Hab. Kirghis Steppes (type locality), Sir-Darja, Kuldja, Persia N. and E., Baluchistan.

Life-history unknown.

f. *transcaspica* Staud.

Cigaritis acamas var. *transcaspica* Staud., *Cat. Lep. Pal.* p. 76 (1901).

A form is described differing from typical *epargyros* in that it is "above darker brown, with the dark markings broader; underside more obscure."

I have been enabled to satisfy myself that this is a form of *epargyros* and not of *acamas* by means of authentic specimens in the Tring Museum. Apart from this, however, true *acamas* is not known to occur in Transcaspiæ.

The form does not appear to be limited in its geographical distribution to any particular regions. It occurs in Transcaspiæ (Nuchur, the type locality), also in other parts of Persia, and at Kojak Pass, Baluchistan; whilst at Sehahrud in Persia specimens inseparable from typical *epargyros* occur, so that to regard it as a local race would appear to be unjustifiable. It may possibly be a mountain or in some way a climatic form, however.

The black markings of the upperside are not so greatly increased as in the race *marginalis*, but on the other hand the underside is decidedly browner and more heavily marked.

(b) *epargyros marginalis* Riley.

Aphnaeus epargyros marginalis Riley, *Ann. Mag. N.H.* (9) viii. p. 598 (1921); Peile, *J. Bomb. N.H. Soc.* 28. p. 263 (1922).

Differs from typical *epargyros* (as described above), by its much smaller size, darker ground-colour, and the great increase in the size of the black markings above. The submarginal band of the forewing is so wide as to join the marginal line, thus forming a broad black band which, posteriorly, joins the median transverse band. The triangular patch of ground-colour so enclosed is nearly half

filled by four spots between vein 4 and the costa. The black markings of the hindwing are correspondingly larger.

On the underside the ground-colour is greenish grey, and the irregular blotches, which in *epargyros* are pale ochreous, are similarly slightly greenish. The blotches themselves are more rounded, neater, less contrasted with the ground-colour, and the whole underside has a more delicate appearance than in typical *epargyros*.

Hab. N.W. PERSIA: Paitak; KURDISTAN: Suleimanyeh.

5. *Apharitis gilletti* sp. nov. (text-fig. 6).

Most nearly resembles *A. acamas bellatrix* Butler.

♂♀. *Upperside, both wings*: Bright fulvous, a black anteciliar line, cilia paler.—*Forewing*: Ground-colour rather paler towards apex, in areas 4 to costa and distal portion of cell. The usual dark markings of the genus present but faint, absent below vein 2; submarginal series clearly interrupted by the veins.—*Hindwing*: Dark markings absent, or represented by the underside markings showing through.

Underside: As described for *A. a. hypargyros*, but with the following differences: dark blotches mainly greenish-brown; marginal line reduced to a series of dots; ochreous marginal suffusion extending to the submarginal band and filling areas 1-2 of forewing; large spot across area 2 and base of 3 faintly silver-marked, the band of which it forms part not fused with submarginal band posteriorly; dark lines bordering submarginal band each side straight; the costal spot just beyond cell-end joining the spots in areas 4 and 5, thus forming a band, but the middle spot of these three inwardly displaced.—*Hindwing*: Upper basal spots not elongate, but round, the fourth similar; lowest spot of subbasal series similar in size and shape to the third; apical band much angled, joined to submarginal band at both ends, and touching median band in area 5.

Length of forewing: ♂♀ 14 mm.

Hab. SOMALILAND (January 1897, Gillett).

Described from 2♂♂, 1♀ in the British Museum, which were formerly attributed to *bellatrix* Butler (q.v.).

The species is closely allied to *acamas* and *epargyros*, but the differences mentioned above coupled with those in the form of the ♂ genitalia, would seem to justify its separation as a species. It is also geographically very isolated from the other species of the genus. The form of the ♂ clasper, as compared with that of *acamas*, will best be appreciated by reference to the figure.

Life-history unknown.

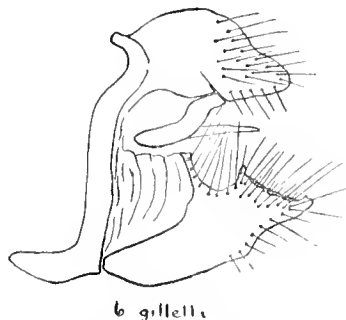


FIG. 6.—*Apharitis gilletti*, ♂.—Genitalia, lateral view.

6. *Apharitis acamas* Klug.

Lycæna acamas Klug, *Symb. Phys.* (1834).

Zeritis acamas Westw., Doubl. & Hew. *Gen. Diurn. Lep.* p. 501 (1852).

Cigaritis acamas Lederer, *Wien. Ent. Mon.* i. p. 27, pl. 1. fig. 1 (1857) (part).

Cigaritis acamas Bienert, *Lep. Erg. Reise Persien*, p. 29 (1871) (part); Staud. *Cat.* p. 9 (1871) (part); Christ., *Hor. Soc. Ent. Ross.* 10. p. 22 (1873) (part); Gr.-Grsh. *Rom. Mem.* 4. p. 366 (1890) (part); Staud. *Cat.* p. 76 (1901) (part); Seitz, *Macrolep.* 1, p. 279. pl. 75 i (1909) (part).

Aphnaeus acamas Hew. *Ill. Diurn. Lep.* p. 62 (1869); Kirby, *Cat. Diurn. Lep.* p. 404 (1871) (part); Rühl, *Pal. Gr.-Schmett.* p. 220 and p. 748 (1892-95) (part); Courvoisier, *Iris*, 35, p. 74 (1921) (part); Riley, *Ann. Mag. N.H.* (9), 8. p. 599 (1921).

♂♀. *Upperside, both wings*: Ground-colour bright ochreous to deep brownish ochreous, base greyish, anteciliar line black, cilia whitish.—Forewing: Costa greyish, ground-colour in neighbourhood of costa and apex usually more or less replaced by white, or whitish; dark markings usually consist of a cell-spot, median band, variable in outline and extent of development, three visible subapical spots of which the lower 2 are joined together, and nearer the cell than the third, a submarginal band, and a broken marginal line usually fused with the anteciliar line. The median band often tends to disappear posteriorly. Submarginal band is rarely broken by the veins, frequently large and fused with anteciliar line. Specimens with dark ground-colour usually have dark markings very large and more or less coalescent.—Hindwing: Costal area usually darkened, greyish, like the basal area; spot at cell-end; median, subapical and submarginal bands present at least anteriorly, rather indefinite, when well developed tending to coalescence, almost the whole wing then being suffused blackish.

Underside, both wings: Ground-colour very pale ochreous or white, marked by numerous dull fulvous, black-edged and (usually) silver-centred bands and spots, as shown in figure (Fig. 13). Inner edge of submarginal band formed of straight lines.—Forewing with only four subapical spots.—Hindwing with subapical band comparatively straight as a rule.

Length of forewing: ♂ 12-18 mm.; ♀ 13-20 mm.

Hab. Sahara (Hoggar Mountains), Lower Egypt, Arabia, Palestine, Syria, Cyprus, Taurus to Persia, Chitral and Sind.

Life-history, see p. 91.

This species is extremely variable, both in the markings and coloration of the wings and in the ♂ genitalia, and it was only after a careful examination of a number of specimens and dissections that the conviction arose that the forms here dealt with under *acamas* really all belong to one species. *A. acamas* is the most widely distributed, the commonest, and the most variable species in the genus. The other species are stable by comparison.

A number of local races have been developed.

(a) *A. acamas divisa* Roths. (text-fig. 7).

Spindasis acamas divisa Roths. *Ann. Mag. N.H.* (8) xvi, p. 248 (1915).

♂. *Upperside*: Very similar to that of *A. gilletti*, but brighter, less dusky. Forewing: Apical area (broadly), cell, and hind margin, whitish, shading off into ground-colour; costa and base of wing grey; the dark markings brownish-black, separated by the veins into series of spots, not bands.—Hindwing: Costal

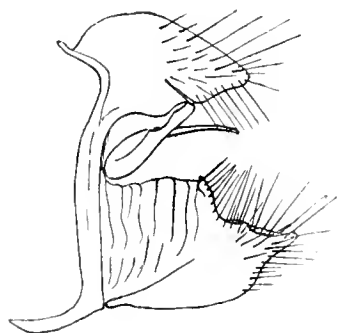
area (broadly), and base, grey; marginal series of short dark lines united with anteciliar line, giving margin a crenate appearance; no other dark markings.

Underside: Ground-colour very pale ochreous, with a faint pink tinge especially on inner marginal area of forewing. Markings arranged as usual for the species, but small, clear-cut, well-separated, filled with bright ochreous, quite unlike anything in any other subspecies, and suggestive of the underside markings of *Cigaritis allardi*.

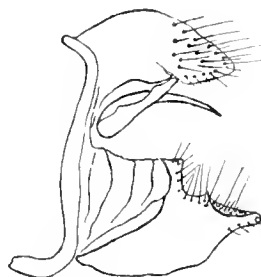
Length of forewing: 15 mm.

Hab. C. SAHARA: Oned Ahmra, N. of Idelès, Hoggar Mountains.

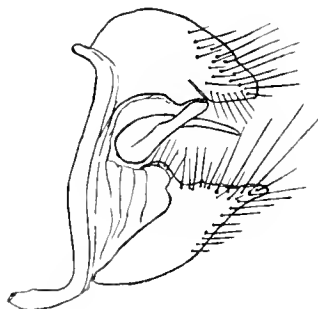
The upperside of this very distinct race is nearest that of *A. gilletti* and *acamas bellatrix*. The underside, however, would suggest almost a distinct species. Yet the genitalia of the unique ♂ type (not ♀), which Lord Rothschild kindly permitted me to examine, show clearly its alliance with *acamas*.



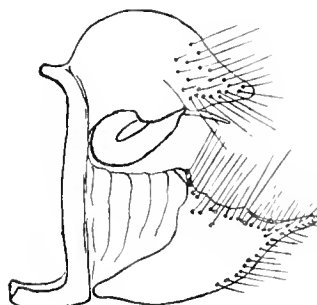
7 *acamas divisa*



8 *acamas acamas*



9 *acamas acamas*
N.W. Persia



10 *acamas hypargyros*

FIG. 7.—*A. acamas divisa*, ♂; Hoggar Mts., Sahara.—Genitalia, lateral view.

FIG. 8.—*A. acamas acamas*, ♂; Palestine.—Genitalia, lateral view.

FIG. 9.—*A. acamas acamas*, ♂; N.W. Persia.—Genitalia, lateral view.

FIG. 10.—*A. acamas hypargyros* ♂; Campbellpur.—Genitalia, lateral view.

(b) *A. acamas bellatrix* Butler.

Spindasis bellatrix Butler, *P.Z.S.* 1886, p. 369 (footnote).

Lycaena acamas Klug, *Symb. Phys.* pl. 40, fig. 7, ♂ (*nec* figs. 8-9, ♀) (1834).

S. acamas var. *bellatrix* Auriv., *Rhop. Aeth.* p. 332 (1898).

Spindasis bellatrix Auriv.; Seitz, *Macrolep.* 13, p. 414 (1923).

♂♀. Smaller than typical (Syrian) *acamas*; ground-colour bright fulvous; the black markings of upperside, except anteciliar line, much reduced or absent. Forewing: The submarginal band narrow, more or less continuous, other black markings restricted to costal half of wing.—Hindwing: Devoid of markings. *Underside* as usual for the species, but the markings rather brighter brown than typical *acamas*.

Hab. ARABIA: "Arabia felix" [Asir] (Klug); SUDAN: Suakin.

Klug figures a ♂ of this form with a Syrian ♀. His description applies to either. It seems best, therefore, to regard the Syrian form as the typical form, as it has been so treated by most authors. Specimens of the race *bellatrix* are decidedly rare in collections. The only specimens I have seen are 1 ♂ from Klug's type material, Butler's type ♀ of *bellatrix* from Suakin in the British Museum, and a cotype of the latter in Mr. Joicey's collection.

(c) *A. acamas egyptiaca* ssp. nov.

Spindasis (Aphnaeus) acamas Manders, *Ent. Rec.* 27, p. 62 (1915).

Cigaritis acamas Graves, *Bul. Soc. Ent. Egypt*, iv, p. 137, p. 141 (1916); Williams, *op. cit.* v, p. 94; Boyd, p. 111 (1918); Graves, *Ent. Rec.* 31, p. 7 (1917); Andres & Seitz, *Senckenbergiana*, 5, p. 38 (1923), and 7, p. 55 (1925).

♂♀. Size and markings as in *acamas acamas*, but the ground-colour a much more vivid ochreous, the dark markings not so large, much more sharply defined and intensely black, contrasting strongly with the ground-colour; marginal and submarginal bands of forewing well separated.

Underside: Differs in the same manner, so that the dark markings look rather small and are very prominent. There is a marked tendency for the anterior portions of the subbasal and median bands of hindwing to unite on the costa into a horseshoe marking.

Hab. EGYPT: Mokattam Hills, April (P. P. Graves); Route de Suez, 7th tower, September (Alferi). PALESTINE: Ludd (A. F. Hemming Coll.).

A very clearly defined race. I have seen only 2 ♂'s and 1 ♀ in Major P. P. Graves' collection, which include the types from Egypt and the single ♀ from Suez in the Tring Museum, but Mr. Hemming possesses a long series of this boldly marked race collected at Ludd in Palestine during June and July. In this last-mentioned specimen the horseshoe-shape mark on costa of hindwing below is completely developed. In the other specimens it is not so complete, but always present—a curious varietal tendency barely apparent (though traceable rarely in occasional specimens) in any other subspecies, but in this instance characteristic, it would seem, of the entire race.

(d) *A. acamas acamas* (text-figs. 8 and 9).

Lycaena acamas Klug, *Symb. Phys.* pl. 40, figs. 8, 9 (♀) (1834).

Cigaritis acamas Lederer, *Verh. z. b. Ges. Wien*, v, p. 188 (1855).

Cigaritis acamas Nicholl, *Trans. Ent. Soc.* 1901, p. 90; Seitz, *Macrolep.* 1, p. 279, pl. 75 i, 1909 (part); Graves, *Ent. Rec.* 23, p. 34 (*et seq.*) (1911).

♂♀. *Upperside*: Ground-colour rather dusky ochreous, the dark markings generally complete, but not intense, dusky greyish rather than black. Forewing with marginal and submarginal bands always separate, the dark markings in areas 1 and 2 inclined to be less definite than the others, apical pale area not prominent. The hindwing and the underside call for little comment, as the form has been well figured several times. The dark markings of the underside are comparatively large and regular, and occupy the greater part of the surface at the expense of the white ground-colour.

Length of forewing: ♂ 14–16 mm.; ♀ 15–19 mm.

Hab. SYRIA: Lebanon, Beyrout. PALESTINE: Jerusalem, Akka, etc. MESOPOTAMIA and N.W. PERSIA.

A very constant race. The only aberration I have seen is a very bright fulvous ♀ from Jerusalem (*P. A. Buxton*), in which the dark markings of the upper-side are confined to the costal and hind-marginal areas of forewing, to the costal area alone on the hindwing. The genitalia of Persian specimens show a slight approach to those of *a. hypargyros*.

(e) *A. acamas cypriaca* ssp. nov.

Cigaritis acamas Turner, *Trans. Ent. Soc. London*, 1920, p. 196.

♂♀. Very similar to *acamas acamas*, especially the form from N.W. Persia and Mesopotamia. Upperside with the ground-colour much obscured by a suffusion of grey extending from the bases of the wings outwards; dark markings well developed; marginal and submarginal bands tending to coalesce. Under-side with the spots more blackish brown than in *acamas acamas*, the ground-colour a much purer white.

Hab. Cyprus: Episkopis, September (Mavromustakis).

The types ♂ and ♀ are from Episkopis and are in the Tring Museum. Another pair (cotypes) is in the Hill Museum.

(f) *A. acamas obscurata* Staud.

Cigaritis acamas var. *obscurata* Staud. *Cat.* p. 76 (1901); Seitz, *Gr.-Schmett* i. p. 279 (1909).

This variety is described as being "almost entirely (or for the greater part) suffused with blackish above." I have not seen it.

Hab. TAURUS: Hadjin.

(g) *A. acamas hypargyros* Butler (text-fig. 10).

Spindasis hypargyros Butler, *P.Z.S.* p. 369 (1886); id. *Ann. Mag. N.H.* (6) 1. p. 151 (1888).

Aphnaeus hypargyros de Nicev.; Butl. *India*, 3. p. 352 (1890); Nurse, *J.B.N.H.S.* p. 512 (1899) and p. 361 (1903); Fraser, *J.B.N.H.S.* p. 528 (1910); Swinhoe, *Lep. Ind.* 9. p. 164, pl. 734. figs. 2c, 2d, 2e (only) (1912); Bell, *J.B.N.H.S.* p. 482 (1919).

Aphnaeus (Cigaritis) acamas hypargyros Evans, *J.B.N.H.S.* 21. p. 989 (1912).

Aphnaeus acamas hypargyros Riley, *Ann. Mag. N.H.* (9) 8. p. 599 (1921).

Aphnaeus acamas Butl. *Ann. Mag. N.H.* (5) 9. p. 208 (1882); Swinhoe, *P.Z.S.* p. 507 (1884); id., *Trans. Ent. Soc.* p. 342 (1885); Swinhoe, *Lep. Ind.* 9, pl. 734. fig. 1a (1912).

♂. *Upperside, both wings*: Ground-colour pale ochreous, heavily marked with dark-brown spots and bands, cilia pure white.—Forewing: Basal third greyish brown, the costa and both margins evenly but rather narrowly bordered with dark brown, the area between vein 5 and costal border whitish, the hind-marginal border bearing throughout a fine interrupted paler dividing-line; from

apex to distal end of area 1a a broad even very dark-brown band, joining there a similar, twice-bent band running from centre of costa; within the area so enclosed are three large quadrate spots in areas 4, 5 and 6, 4 and 5 in line, 6 just touching outer edge of 5.—Hindwing: Within a line from centre of costa to anal angle uniformly dark grey-brown, beyond ochreous, except for area from costa to vein 5, which is dark grey-brown, the very much darker broad submarginal band, and a similar short band from costa to vein 4; margin narrowly black, submarginal band not reaching anal angle, or, if so, only in very much reduced form; anal lobe black with a few scattered silver scales, tails very dark brown, paler at base.

Underside, both wings: White with numerous dull, pale-brown, black-edged and silver-marked bands and spots; a narrow anteciliary black line, preceded by a narrow black interrupted marginal line, the narrow area between the two very pale ochreous; cilia pure white.—Forewing: Costa very pale ochreous, markings arranged as above with the addition of a small subbasal spot, a large transverse spot at origin of vein 2, in cell, a costal spot just beyond cell-end, joining those in areas 4 and 5, that in area 4 outwardly displaced, and a large grey wedge-shaped mark occupying the base of area 1a and not marked with silver. Of the angled band from centre of costa to anal angle only the anterior portion is marked with silver, and posteriorly it is not completely fused with the submarginal band. The black edging of submarginal band is interrupted at each vein, each segment so formed being outwardly convex, the silver markings not central, but on the outer edge only, in areas 2 to apex.—Hindwing: a basal series of 4 spots, the two upper usually streaks rather than spots, the third, in cell, small, the fourth elongate; a subbasal series of 4 much larger spots, the uppermost from costa to cell, elongate, the next, in cell, round and the smallest, the third much the same as the first, but more oval, its long axis parallel to vein 2, the fourth twice as long, but much narrower, parallel to the third spot; beyond this a sinuous transverse band, formed of fused elongate spots, from centre of costa towards anal angle, where it joins submarginal band; a similar, apical band midway between this and submarginal band extending from costa to vein 4; the silver markings of all the spots so far mentioned, central. Submarginal band runs from vein 7 to anal angle, and thence to centre of inner margin, broadest between vein 5 and anal angle, silver markings throughout on its outer edge. Tails black, orange at base; anal lobe black, the area between lobe and submarginal band suffused dull brown.

♀. *Upperside, both wings*: Ground-colour brighter than in ♂, the black markings less prominent, the white costal area not extending below vein 6. *Underside, both wings*: Exactly similar to ♂.

Length of forewing: ♂♀ 16–18 mm.

Hab. N.W. PUNJAB: Campbellpur iv–vii, Khairabad iv. BALUCHISTAN: Quetta and neighbourhood vi, Chaman v–x, Karain ("S. Afghanistan") v. SINDH: KARACHI i–ii, vii–viii, Haiderabad. KUTCH: Bhuj, "beginning of rains."

(h) *A. acamas chitralensis* ssp. nov.

Aphnaeus hypargyros Leslie & Evans, *J.B.N.H.S.* p. 675, 1903.

Aphnaeus hypargyros (part) and *acamas* (part), Swinhoe, *Lep. Ind.* ix, p. 163. pl. 734. figs. 2, 2a and 2b, 1912.

♂♀. *Upperside, both wings*: Ground-colour much deeper ochreous than in *acamas hypargyros*, the black markings more prominent and more diffuse,

the marginal and submarginal black bands of *forewing* coalescent, white costal areas reduced to one small apical white spot.—Hindwing: Very dark, the ochreous areas much reduced in extent. *Underside, both wings*: The dark markings as in *hypargyros*, but darker, more prominent and more heavily black-edged. On the *forewing* the costal spot at cell-end and the next beyond are both usually rather displaced basad; on the hindwing the third spot in the subbasal series is slightly more elongate.

Length of forewing: ♂ 17 mm., ♀ 18 mm.

Location of Types.—British Museum: No. Rh. 207 ♂: Chitral, Nagar viii, 1901, *Leslie and Evans*; No. Rh. 208 ♀: Chitral, Nagar, 4,000 ft., viii, 1903, *A. R. C. Saunders*.

Hab. Only so far recorded from CHITRAL, where it occurs up to about 9,000 ft. during v–viii, e.g. Nagar, Utzen Nullah, Drosh, etc.

The only account of the life-history of this species is that given by Fraser (l.c.), which refers to the *acamas hypargyros* bred by him at Haiderabad, Sind. The following are extracts.

Egg. “The size of the head of a No. 10 entomological pin, and not unlike the spineless shell of *Echinus esculentus*. It is dome-shaped, flattened on the resting surface, and presents a pit at the apex of the dome. The upper surface is mammellated and finely pitted between the mamellar processes. In colour it is a dead white.”

Larva. “The larvae appear first as tiny, hairy, mahogany-red creatures. The head from first to last moult is jet-black. The hair of the first skin is coarse and white, with the exception of eight black hairs which project horizontally back from the rear of the 13th segment.

“In the full-grown larva the prevailing colour is fawn, but the mahogany-red tint persists on the first three segments and on the dorsum of the 11th, 12th and 13th; there is, however, a small patch of fawn on the sides of the first two segments. There are fine double-lines of mahogany-red along the back and the sides and a row of dots of the same colour extending from the 4th to the 10th segments. On the dorsum of the second segment is a black, shiny chitinous plate beneath which the head of the larva is retracted if alarmed. The 12th segment bears dorsally two fleshy pillars, each surmounted by three stiff bristles arranged in an equilateral triangle. These pillars are hollow and from them project fine hairs; when the larva is irritated a fleshy tongue is flickered in and out of these with great rapidity very much in the manner of a snake's tongue. Viewed under the microscope the larva shows a remarkable arrangement of star-like, fleshy processes, which cover the entire skin so closely as to form a complete net-like coat. The colouration is confined to these stellate spots.”

Pupa. “The pupa is dark brown or blackish in colour. The head is rounded and stands out in relief from the body by reason of the very prominent shoulders. The abdomen tapers gradually. It is firmly fixed by the tail to the cocoon, which is usually composed of two leaves loosely woven together and open at both sides.”

The food plant is *Cassia*—Bell suggests probably *C. fistula* or *C. auriculata*—and the eggs are laid on a twig near by or on a bract at the base of a leaf, hatching in about 5 days. “When the larva is at rest it will project the tongue-like processes (on 12th segment) in and out about every 10 seconds, and will continue

to do so for long periods. I was not able to determine whether this action was protective in nature or for the purpose of signalling up ants. It was carried on for a long time preparatory to spinning the cocoon. Like most *Lycaenid* larvae these are always attended by ants."

7. *Apharitis nilus* Hew. (text-figs. 11 and 12).

Aphnaeus nilus Hew. *Ill. Diurn. Lep.* p. 62 (1865).

Aphnaeus subaureus Smith, *Nov. Zool.* v. p. 358 (1898).

Spindasis nilus and *subaurea* Auriv. *Rhop. Aeth.* p. 332 (1898); id. Seitz, *Gr.-Schmett.* 13. p. 415. pl. 69 g (1923).

Spindasis kaduglii B.-Baker, *Ann. Mag. N.H.* (8) 17. p. 379 (1916).

♂♀. *Upperside*: Dark fuscous (blackish brown), the markings of the underside visible from above, the areas between the discal band and submarginal band filled in with whitish, more particularly on the forewing, which in some specimens also occupies the area between the discal and subbasal series.

Underside: Pale ochreous, the spots in each series large but not very heavily silver-marked, black (ochreous and much fainter in dry-season form).—*Forewing*: Basal costal streak prominent; no basal cell-spot; subbasal cell-spot small, dark; central cell-spot large, transverse; discal band very irregular, but the spots connected, except, occasionally, the anterior two, joining the submarginal series in area 1b; subapical spots large, except the proximal anterior spot, the other three connected together, the middle spot of the three much displaced inwardly; the submarginal series prominent, its spots increasing progressively in size towards anal angle, the silver markings confined to the inner

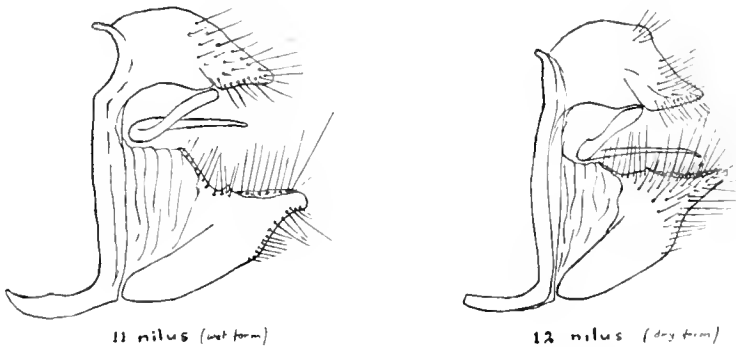


FIG. 11.—*Apharitis nilus*, wet form, ♂.—Genitalia.

FIG. 12.—*Apharitis nilus*, dry form, ♂.—Genitalia.

side of the outer black edges of the spots, these black edges continuous on each side, forming two long black lines, the separate spots being only indicated by the intersection of the veins; spots of marginal series well-defined, well-separated, black.—*Hindwing*: The black rims of the spots not nearly so heavy as on forewing; basal and subbasal series well-defined, the spots all well separated; spots of discal band at least contiguous, forming a practically straight and even band; subapical series of four spots similarly arranged, tapering posteriorly; submarginal spots as on forewing, the band formed by them very wavy proximally

and not always equidistant from the outer edge, widest in areas 2, 3 and 6 especially, the silver confined to the distal black edge as on forewing; marginal spots large, black, well separated.

Hab. S. SUDAN to N. NIGERIA and the northern GOLD COAST.

Life-history unknown.

Hewitson's type of *nilus* represents a normal wet-form ♀, with the black markings of the underside all a very definite black. I have compared it very carefully with Smith's type, also a ♀, and can find nothing by which to separate it specifically. Smith's specimen is, however, an intermediate form in which all the black markings of the underside are beginning to be replaced by reddish-ochreous. In specimens that I take to represent the fully developed *dry* form the only markings in which there remains any black on the underside are those about the base and inner margin of the forewing. The name *subaureus* might therefore be retained for the *dry* form of the species, although it is not based on a typical example of the form. The two extremes were obtained at Gambaga (Gold Coast) by Dr. Bury, and are now in the Tring Museum. I am unable to separate Bethune-Baker's *kaduglii*, described from Kordofan, from this species.

Although marked differences are shown in the accompanying figures of ♂ genitalia, the one of a wet, the other of a dry form, it is not to be inferred that this variation is correlated with external seasonal variation. Only one ♂ of each form was available for dissection; and the differences exhibited are comparable with those found in different individuals of e.g. *Apharitis acamas hypargyros* occurring together.

8. *Apharitis buchanani* Roths.

Spindasis buchanani Roths., *Nov. Zool.* xxviii, p. 155 (1921).

♀. Similar to the preceding species (*A. nilus*), but differs markedly from it by its smaller size and the greater extent and clearness of the white areas of the upperside. Even the forewing cell, right to the base (but not the base of area 1b), is invaded by the white, and the marginal and submarginal bands are divided by a distinct pale-grey strip. The differences in the hindwing also are of a similar nature. The basal areas of both wings have a bluish-grey tinge. The markings of the *underside* are clean-cut, sharply defined, not large and coalescent, those of the hindwing reminding one rather of *Cigaritis allardi*, especially the subspecies *meridionalis*.

Hab. N. NIGERIA: Farniso near Kano; S. SAHARA: Damagarim, Zinder, immediately N. of N. Nigeria.

Life-history unknown.

This species has very much the appearance of being a desert race of *A. nilus* Hew. It is a smaller, paler, more attenuated-looking insect than is *A. nilus*, and it comes from a much more truly desert region. Unfortunately no males were obtained, so it has not been found possible to compare the male genitalia; whilst those of the females have not been examined, as in such instances as reference has been made to them in this group they have not produced any characters of very definite taxonomic value.

With the advent of further material it may be possible to decide the degree of affinity between *A. nilus* and *A. buchanani*, but, in the absence of any very definite evidence, I prefer for the moment to treat them as distinct.

9. *Apharitis lilacinus*.

Aphnaeus lilacinus Moore, *J. As. Soc. Beng.* p. 28 (1884); de Nicéev., *Butt. India*, 3, p. 354 (1890), Watson, *J. Bombay N.H. Soc.* p. 35 (1890); Aitken & Comber, *J. Bombay N.H. Soc.* p. 49 (1903); Swinhoe, *Lep. Ind.* 9, p. 170. pl. 735. figs. 3, 3a, 3b (1912); Evans, *J. Bombay N.H. Soc.* 21, p. 989 (1912).

Aphnaeus aestivus Swinhoe, *P.Z.S.* p. 428. pl. 40. fig. 1 (1886).

WET FORM.

♂. *Upperside, both wings*: Thin, pale grey, the markings of the underside showing through to some extent.—Forewing: Suffused very light blue, except costa, apex and hind-margin, the blue not visible from all angles; a darker marginal line, cilia very pale, almost white.—Hindwing: Similarly suffused blue, except for costal area (above vein 6), abdominal and anal areas; anal area orange with a black, silver-marked anal spot.

Underside, both wings: Pale creamy-ochreous, a black anteciliar line, cilia as above.—Forewing: Some indefinite black streaks at base of cell followed by a darker ochreous, silver-marked and black-ringed spot, circular, and two other similar but oblong beyond, of which the furthest (at cell-end) forms with a small similar, but squarish costal spot above it, and a very large spot below it (this last free of silver markings), an irregular transverse band; between this and the submarginal band of chain-like spots, in which the silver markings are on the outer edge, are four similar roundish spots forming a rough triangle, the outer two the larger and parallel to margin; a marginal series of black lunules.—Hindwing: The markings of the same nature and colour as on forewing. They are arranged as: a very indefinite basal series of four; a well-defined subbasal series, of which the second spot (in cell) is double, and the fourth (in area 1b) very elongate and narrow, the others round; beyond this a band of large oblong spots, conjoined, from costa to near anal angle; a further similar short band of coalescing spots from costa to vein 4; the submarginal series consisting of smaller and less defined spots than on forewing; the marginal area tinged with reddish, especially towards anal angle, which is coloured as above, but more brightly; marginal series as on forewing.

♀. *Upperside, both wings*: As in the ♂, but entirely devoid of any trace of blue, orange anal markings on hindwing rather more extended as a rule. *Underside, both wings*: As in the ♂.

Length of forewing: ♂ 14–15 mm.; ♀ 15–17 mm.

DRY FORM.

♂ (and probably the ♀ also) on the *upperside* as in the “wet” form. On the *underside* both wings are a uniform dull brown, darker than any of the markings in the “wet” form, on which the silver markings alone are conspicuous, and, by comparison, larger than in the wet form; the black rims of the markings, so prominent in the wet form, reduced to minute striae; red anal area barely redder than the ground-colour.

The only specimen seen of this form is much smaller than the “wet” form, the length of the forewing being only 11 mm.

Hab. PUNJAB: Kussowli. BENGAL: Maldah. BOMBAY: Mhow vii. MYSORE: Bangalore. Upper ASSAM: North Lakhimpur vi–ix (*H. Stevens*).

Aestivus was founded on a wet-season form from Mhow; the type was never presented to the British Museum, the specimen Col. Swinhoe mistook (i.e.) for

the type being a ♀ from Kussowli from the Moore Collection. *Lilacinus* appears to have been founded on an intermediate form according to de Niceville's statement (l.c.).

At Maldah the species is said to have two very distinct broods, "a numerous brood during the hot months" (d.s.f.), and "a smaller brood, but of much larger size, prevails during the rains" (w.s.f.) (Irvine, quoted by de Niceville, l.c.).

Life-history unknown.

EXPLANATION OF TEXT-FIGURES.

Drawings throughout (except figures 3a and 3b) represent the left side-view of the genitalia in outline. The entire penis has in every case been removed. Freehand.

Fig. 1. *Cigaritis zohra zohra* Donz. Afloo.

„ 2. *Cigaritis zohra siphax* and *erythrea* Staud. Kenchela.

Typical *zohra* and the f. *erythrea* are externally the two most dissimilar forms of *zohra* at present known. Their genitalia, however, appear to be exactly alike.

„ 3. *Apharitis cilissa* Led. (Locality uncertain.)

„ 3a. The same, ventral aspect. Position of *penis* indicated by dotted line.

„ 3b. The same, dorsal aspect, showing the divided *uncus* and the *falces*.

„ 4. *Apharitis maxima* Staud. Harir, N.W. Persia.

„ 5. *A. epargyros* Evers. "Turkestan."

„ 6. *A. gilletti* sp. nov. Somaliland.

„ 7. *A. acamas divisa* Roths. Hoggar Mountains, C. Sahara.

„ 8. *A. acamas acamas* Klug. Palestine.

„ 9. *A. acamas acamas* Klug. N.W. Persia.

„ 10. *A. acamas hypargyros* Butl. Campbellpur.

„ 11. *A. nilus* Hew., wet-season form. Gambaga, Gold Coast.

„ 12. *A. nilus* Hew., dry-season form. Gambaga, Gold Coast.

„ 13. *A. acamas* Klug. Diagram to show wing markings of underside.

NEW SIPHONAPTERA

By DR. KARL JORDAN.

(With text-figs. 1-46.)

THE descriptions here published must be regarded as preliminary, being restricted to some of the principal characteristics by which the various new genera, species, and subspecies are distinguished. A fuller account is reserved for a *Monograph of the Siphonaptera*, which is in course of preparation.

In order to render that Monograph more complete, and therefore more useful for the students of tropical diseases, it is most desirable that we receive further material of fleas from all countries, but most particularly from the tropics and subtropics. The collection of the late Hon. N. Charles Rothschild, which now belongs to the British Museum, will still remain for some time in its old quarters at the Zoological Museum, Tring, and any specimens sent to us, either as a gift or on the terms which the late Hon. N. C. Rothschild used to offer, will be incorporated in that collection.

1. *Hectopsylla stomis* spec. nov.

♀. Frons without angle between oral angle and occiput. Genal process long and narrow. Hindmargin of occiput without lateral lobe. Maxilla as short as in *H. psittaci*. Metepimerum sinuate below posterior dorsal angle (text-fig. 1), which projects as an obtuse triangular lobe and is not curved downwards. Segment V of all tarsi with 4 lateral spiniform bristles on each side, but usually (type) the fourth bristle missing on one side. Anal tergite plus pygidium larger than in the other known species, the patch of 8 sensory pits being laterally placed beyond middle of this segment.

Length: ♀ 1.8-2.3 mm.

Hab. Argentina: Canada Mariano, Buenos Aires, xii. 1912 (Miss Runnacles), on birds, and Bahia Blanca, i. 1911 (E. Weiske), on *Mephitis*; a small series.

2. *Echidnophaga tarda* spec. nov.

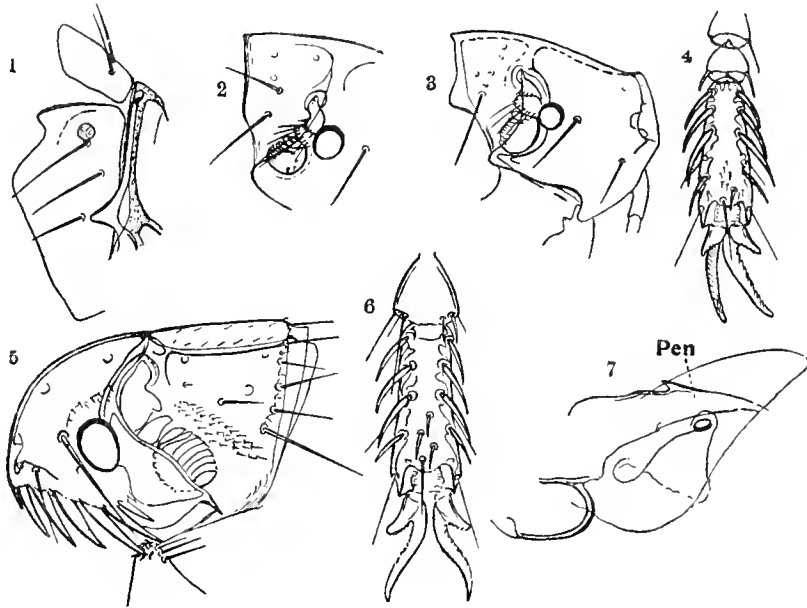
♀. Between *E. gallinaceus* Westw. 1875 and *E. bradyta* J. & R. 1906. As large as *E. bradyta*. Occiput as in *E. gallinaceus* with 2 strong bristles above antennal groove, 1 median, 1 subapical; hindmargin slightly widened below middle, but without a distinct lobe. Genal lobe triangular, directed backwards; apex of genal process broad, rounded off (text-fig. 2). Segment I of maxillary palpus longer than II and IV. Pronotum with 5 bristles on each side. On metepimerum a row of 5 bristles. Abdominal tergite I with 2 bristles on each side, II to VII with 1. Stigmata larger than in ♀ of *E. gallinaceus*; vertical diameter of stigma-cavity of VIII longer than hindtarsal segment II. Bristles on tergite VIII more numerous than in *E. gallinaceus*, 20 or more on each side. On inner side of hindcoxa near middle of posterior margin 1 or 2 long thin bristles. On inner side of hindfemur a row of 5 to 8. Hindtarsal segment IV longer than broad.

Hab. Abyssinia: Addis Abeba (Baron M. de Rothschild), on *Hyaena* and *Felis manicata*; 2 ♀♀

3. *Echidnophaga perilis* spec. nov.

♀. Head longer than in *E. gallinaceus* (text-fig. 3); occiput with 1 long bristle. Metepimerum with 3 or 4 bristles. Tarsal segment V larger than in *E. gallinaceus*, in hindtarsus at least as long as I to IV, V with 2 ventral apical bristles as in *E. gallinaceus*. Abdominal stigmata as in *E. gallinaceus* much smaller than in *E. myrmecobii* J. & R. 1909.

Hab. West Australia: Cranbrook, iii. 1900 (C. J. Tunney), on *Myrmecobius fasciatus*; a small series.



4. *Ctenocephalus arabicus* spec. nov.

♂♀. Near *Ct. rosmarus* Roths. 1907. Genal margin with 1 to 3 spines, which vary very much in size, the spines of the left side of head usually different in size and number from those of the right side. Labial palpi reaching to apex of coxa, being longer than the maxillary palpi. Pronotal comb in ♂ with 9, in ♀ with 11 or 12 spines. On abdominal tergites II to VI a row of 5 bristles on each side; sternites III to VI of ♂ with 2 bristles each side, VII with 3, in ♀ III to VII with 4, one or the other sternite with 3 or 5; VII sometimes with 5; stigmata of II to VII small; tergite VIII of ♀ on outer surface with an apical row of 7 or 8 bristles, preceded by 4 to 6 bristles, at apical margin 2, rarely 1, on inside 4 to 6. Fifth segment of foretarsus with 5 ventral spiniform bristles, in ♂ and one of the ♀♀ this segment in mid- and hindtarsus with 4 such spines (text-fig. 6), in the other ♀♀ with 5.

Hab. Yemen, Arabia: Wasil, on *Procapra syriaca jayakari*, ii. 1913 (G. W. Bury); 1 ♂, 4 ♀♀.

5. *Ctenocephalus crataepus* spec. nov.

♂♀. Near *Ct. craterus* Jord. & Roths. 1913. Frons broader, more evenly convex. Spines of genal comb shorter, the first spine quite small. Labial palpus reaching to or near apex of forecoxa. Second segment of maxillary palpus half as long again as first (in *Ct. craterus* about as long as first). Comb of pronotum with 14 spines, rarely 15, inclusive of the small ventral spine each side. Stigmata of abdominal tergites II to VII small; on each side of these tergites a row of 5 bristles; sternites III to VII with 2 bristles on each side, tergite VIII of ♀ with an apical row of 7 to 11, preceded by 2 or 3 bristles, at apex 2, on inner side a row of 5 or 6. Fifth segment of all tarsi larger than in any other known species of this genus, in foretarsus as long as or longer than II to IV together, in midtarsus about as long as I and II together, in hindtarsus about twice as long as III; IV in all tarsi broader than long; on ventral surface of V in all tarsi 2 spiniform bristles and some very small hairs, third lateral bristle placed at one-third (text-fig. 4).

Hab. Kenya Colony: Rumruti, from *Xerus erythropus* and *Epimys jacksoni*, x.-xi. 1910 (R. Kemp); a small series of both sexes.

6. *Ctenocephalus connatus* spec. nov.

♂♀. Head (text-fig. 5, ♂) as strongly rounded as in *Ct. canis*. Above antennal groove the median bristle smaller than in *Ct. canis* and *Ct. felis*, the anterior one minute or absent. Labial palpus reaching beyond two-thirds of forecoxa, usually to three-fourths. Praeoral tuber reduced, at least in ♂, sometimes also in ♀, often obsolescent in ♂. Above antennal groove in ♂ the small hairs arranged in three or even four irregular rows, these hairs being more numerous than in any other known species of this genus.

Thorax and abdomen with fewer bristles than in *Ct. canis*, the new species more or less agreeing therein with *Ct. felis*. Stigmata of abdominal tergites II to VI small, much smaller than in either *Ct. canis* or *Ct. felis* (the stigmata are larger in *Ct. canis* than in any other species of *Ctenocephalus*). On abdominal sternites III to VI of ♀ 3 or 4 bristles on each side (not 2), VII with 2, tergite VIII with an apical row of 9 to 11, preceded by 2 or 3, at apical margin 2, on inside 5 or 6. On outer surface of first hindtarsal segment 1 or 2 or no bristles; in ♂ (not in ♀) on ventral surface of foretarsal segment V 5 thick spiniform bristles, in the other tarsi only 2 as in all tarsi of *Ct. canis* and *Ct. felis*. Manubrium of clasper of ♂ widened at apex as in *Ct. canis*.

Length: ♂ 1.6-2.2 mm.; ♀ 2.1-3.2 mm.

Hab. South Africa: Deelfontein (*type*) from *Zorilla striata*, *Herpestes badius*, *Erinaceus europaeus*, and *Pedetes caffer* (C. H. B. Grant); Bothaville, from *Xerus capensis* and *Cynictes penicillata* (G. A. H. Bedford); Grahamstown, from *Suricata suricata* (R. Graham, submitted to me by Dr. J. Waterston); a series.—Tanganyika Territory: Vishoro, off *Lepus* (A. Loveridge); 1 ♂.

7. *Ctenocephalus felis strongylus* subsp. nov.

♂♀. Like European *Ct. felis*, but the frons more rounded, in typical ♂♂ nearly as short as in *Ct. canis*.

We have a few true *Ct. felis* and *Ct. canis* from South and East Africa, no doubt introduced; all the other specimens from Africa south of the Sahara, so

far as they do not belong to any of the species described above or to *Ct. craterus* and *Ct. rosmarus*, we treat as being *Ct. felis strongylus*. Specimens with strongly rounded head might be mistaken for *Ct. canis*, but they differ from *Ct. canis* like the more long-headed specimens in the smaller number of bristles on body and legs, the metepisternum bearing 2 bristles, the abdominal tergites a row of 5 on each side, and the tibiae having between the large median bristles and the apical ones only one dorsal notch with a stout bristle; moreover, the stigmata of the abdominal segments II to VI are smaller than in *Ct. canis*, and in the ♂ the manubrium of the clasper is apically less widened, and the large flap of the clasper bears fewer bristles on the outer surface and one or two more at the ventral margin. We observe a good deal of variation in these African *Ct. felis*, but the specimens do not fall into definite groups.

Type from Voi, Kenya Colony, off *Canis lateralis* (R. Kemp).

A large number of specimens from many places from French West Africa and the Sudan to South Africa, off many different hosts.

8. *Ctenocephalus felis orientis* subsp. nov.

♂♀. Like round-headed specimens of *Ct. felis strongylus*. In ♂ abdominal tergite VII usually with a row of 5 bristles on each side and sternite VIII with a row of 4, rarely 3, sometimes 5, besides 1 or 2 bristles placed in front of the row. In ♀ above antennal groove from 2 to 8 small hairs (recalling the more numerous small hairs present in ♂), these hairs not found in the ♀♀ of any other species of *Ctenocephalus* except very occasionally in ♀ of *Ct. canis*.

Type from Peradeniya, Ceylon, off *Loris gracilis* (E. E. Green).

Evidently occurs throughout the Oriental Region, excepting Australia; known to us from Ceylon, India, Burma, Malay Peninsula, Sumatra, Pulo Bali (off west coast of Sumatra), Philippines, Rook I., and Admiralty Is.

From Australia and North and South America we have only *Ctenocephalus canis* and *Ct. felis*, which, together with *Pulex irritans*, probably occur in all places where Europeans have settled.

Centetipsylla gen. nov.

♂♀. Near *Archaeopsylla*; two genal spines placed as in *A. erinacei*. Both sexes with a close-set row of thick short supra-antennal spiniform bristles. Labial palpus short, barely reaching to apex of third segment of maxillary palpus, consisting of four segments. Propleurum dorsally truncate-sinuate. Interior vertical rod of mesopleura joining anterior margin at upper angle, not being confluent with anterior margin before reaching upper angle. Metepisternum well separated from metasternum. Oblique (pale) suture of mesocoxa complete, not interrupted in centre; furcation of internal rods of midcoxa in middle, i.e. much lower down than in *Archaeopsylla* and *Ctenocephalus*. Basal abdominal sternite with lateral bristles.

One species, *C. madagascariensis* Roths. 1900 (as *Pulex*).

9. *Xenopsylla hamula* spec. nov.

Close to *X. brasiliensis* Baker 1904. Subbasal ventral tooth of hindfemur obsolete or barely indicated.

♂. Abdominal sternites III to VII with 2 bristles on each side. Sternite

IX not rounded-dilated at apex, but obtusely acuminate. Distal portion of penis-sheath with a prominent tooth on dorsal side (text-fig. 7).

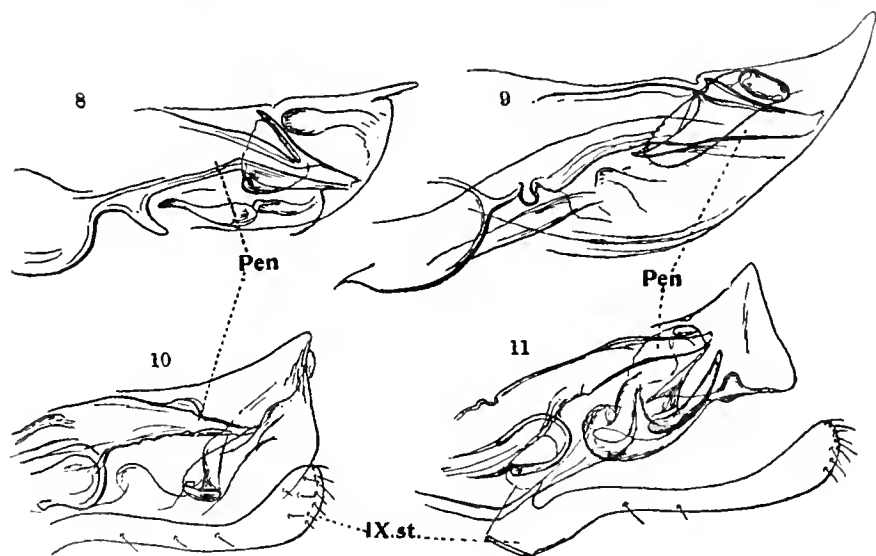
♀. Abdominal sternites III to VI with 3 bristles on each side, on VII 2, occasionally with an additional bristle towards base.

Hab. South Africa: Grahamstown, ix.1913, from *Graphiurus murinus* (R. Graham); a series.

10. *Xenopsylla versuta* spec. nov.

Near *X. nesiotes* Roths. 1908. Bristles less numerous, tail-end of ♂ different.

♂. On sternite VIII 8 to 11 bristles each side. Outer flap P' of clasper much smaller than in *X. nesiotes*, with 5 bristles. Ventral arm of sternite IX as in *X. nesiotes*, narrower. Neck of ejaculatory duct (text-fig. 8) with dorsal and ventral tooth nearer apex, and the dorsal tooth much longer, ventral projection placed near vesicle also longer; paramere of penis nearly as in *X. nubicus*, the dorsal margin being continued distad as a semi-detached thorn-like process.



♀. On the two sides together of sternite VII only 6 bristles, with or without one small bristle in front of the row. On each side of tergite VIII 6 to 10 lateral bristles, an apical row of 11 or 12 on outer side, and one of 9 to 11 on inside. Spermatheca as in *X. cheopis*, but smaller.

Length: ♂ 1.9–2.0 mm., ♀ 2.3 mm.

Hab. Angola: Benguella, on *Funisciurus*, v.1906 (Dr. W. J. Ansorge); a small series.

11. *Xenopsylla vexabilis* spec. nov.

Close to *X. nesiotes* Roths. 1908, recognised by the tail-end.

♂. On sternite VIII 12 or 13 bristles each side, last one nearer apical margin than in *X. versuta*. Processes of clasper smaller than in *X. nesiotes*, P' three times as long as broad, with 5 or 6 bristles; manubrium longer than hindtarsal seg-

ments II to IV together. Dorsal tooth of ejaculatory duct small, ventral one long (text-fig. 9), both as far from apex as in *X. nesiotus*, ventrally near vesicle a short (transverse) tubercle concave on distal side and projecting ventrad; paramere as in *X. nesiotus* gradually narrowed obliquely upward, without the semi-detached dorsal thorn-like process of *X. versuta*, *X. nubicus*, *X. astia*, etc.

♀. Abdominal sternite VII, on the two sides together, with a row of 10 bristles, there being no additional bristles in front of the row. On outer surface of tergite VIII 8 to 10 lateral bristles, and a row of 10, on inside also a row of 10. Spermatheca nearly as in *X. nesiotus*, variable.

Length: ♂ (contracted) 1.4 mm., ♀ 2.2 mm.

Hab. South Australia: Franklin Is., on *Leporillus jonesi* (Prof. Wood Jones), sent to us by Dr. E. Ferguson; one pair.

12. *Xenopsylla humilis* spec. nov.

Very close to *X. niloticus*, which it possibly represents in East Africa.

♂. Outer process of clasper shorter than segment III of hindtarsus; ventral arm of sternite IX apically dilated (text-fig. 10), and medianly narrower than in *X. niloticus*. Lateral lobe of paramere of penis, which lobe is proximally subcylindrical and projects frontad, strongly anguliform.

♀. Basal abdominal sternite without lateral bristles, or at most with a single small one.

Hab. Voi, Kenia Colony, iv. 1910 (R. Kemp), on *Gerbillus (Tatera) mombasae*; 2♂♂, 4♀♀.

13. *Xenopsylla difficilis* spec. nov.

Likewise close to *X. niloticus*.

♂. With fewer bristles than in *X. niloticus* on abdominal tergite VII and sternites III to VIII. Outer process of clasper longer than segment III of hindtarsus, often half the length of segment I. Ventral arm of sternite IX as in *X. humilis* apically dilated. Apical portion of ejaculatory duct without the dorsal tuberculiform swelling found in *X. niloticus*, *X. humilis*, and *X. debilis*; lateral lobe of paramere less curved than in *X. humilis*, on inside of it a well-defined, strongly chitinised, slightly upcurved, thorn-like sclerite (text-fig. 11).

♀. Basal abdominal sternite with 6 to 9 bristles on the two sides together, and in addition on each side 2 to 4 long lateral bristles. Sternite VII on the two sides together with 10 to 13 bristles (in *X. niloticus* 16 to 28, in *X. humilis* 14 to 19); apical row on outer surface of tergite VIII containing 6 or 7, usually 7 bristles, the row of inner side 7, less often 8.

Hab. Kenia Colony: Nyama Nyango, Eusso Nyiro, ii. 1911 (R. Kemp), type, on *Gerbillus (Tatera) nigricaudus nyama*; also from Kilimandjaro, v. 1910, on same host (R. Kemp); a series.

14. *Xenopsylla debilis* spec. nov.

♂. *Xenopsylla niloticus* Rothschild, *Proc. Ent. Soc. Lond.* p. 147. fig. 10 (1917) (error of identifi.).

♂♀. Close to *X. niloticus*, but undoubtedly distinct from it, not an individual aberration. Second segment of maxillary palpus half as long again as first. Eye quite small, narrower than in the figure quoted, which is diagrammatical. Basal abdominal sternite in both sexes with only 2 ventral bristles,

1 each side. Segments III to V of foretarsus broader. In ♂ the eighth abdominal sternite bears on each side fewer than 10 bristles, and the ventral arm of the ninth sternite is more gradually widened and its widened distal end longer. In ♀ the eighth tergite has 10 bristles on the outside, and a marginal row of 6 or 5 on the inside. The head of the spermatheca is practically globular, being one-sixth longer than high; in *X. niloticus* the head of the spermatheca is somewhat oblique, ovate, higher than long.

Length: ♂ 1.3–1.4 mm., ♀ 1.9 mm.

Hab. East Africa: Kilimandjaro, v. 1910, and Nyama Nyango, Eusso Nyiro, ii. 1911 (*type*), on *Gerbillus (Tatera) nigricaudus nyama*; Aberdare Mts., Kenia, iii. 1910, on *Oenomys*; 3 ♂♂, 1 ♀, collected by R. Kemp.

Procaviopsylla gen. nov.

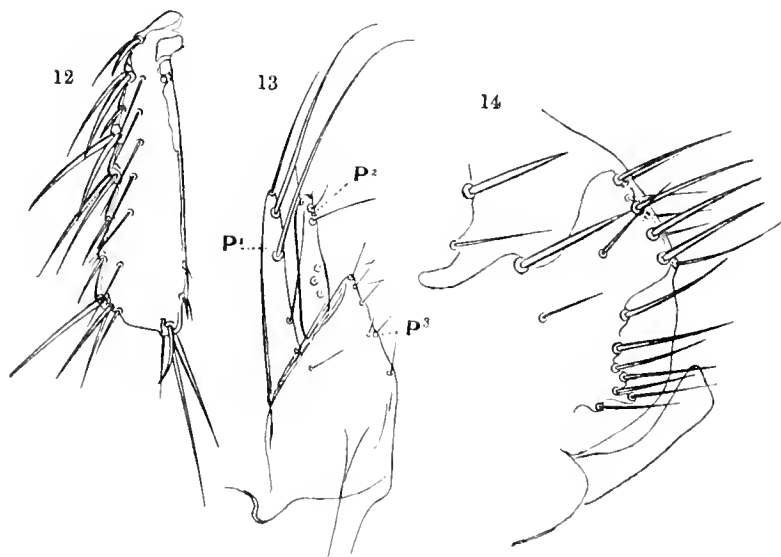
♂♀. Differs from *Xenopsylla* in the hindcoxa being pyriform, with the hindmargin gradually slanting from middle to apex, and the comb on innerside placed much nearer apex than in *Xenopsylla*.

Genotype: *P. isidis* Roths. 1903.

Here also belong *P. creusae* Roths. 1904, *P. convergens* J. & R. 1908, and *P. procaviae* Fox 1914.

15. *Procaviopsylla angolensis* spec. nov.

♂♀. Near *P. creusae* Roths. 1904. Proboscis as long as (♂) or longer than (♀) maxillary palpus. Hindtibia with 8 dorsal notches inclusive of apical one (text-fig. 12). Upper process of clasper of ♂ reaching close to apex of lower process.



Abdominal tergite VII of ♀ less strongly chitinised at dorsal apical angle than in *P. creusae*, this angle not projecting; on side of tergite VIII of ♀ 2 long bristles and (on one side of our only ♀) one short one, the apical row containing 10 or 11 bristles,

Hab. Benguella, Angola, ix. 1905 (received from Messrs. O. E. Janson & Sons), on *Procavia*; 4 ♂♂, 1 ♀.

Synosternus gen. nov.

Differs from *Xenopsylla* in the metepisternum being entirely united with the metasternum.

Genotype: *S. pallidus* Tasch. 1880.

Here also belong *S. somalicus* J. & R. 1908, *S. longispinus* Wagn. 1893, *S. caffer* J. & R. 1923, and *S. cleopatrae* Roths. 1903.

16. Parodontis subjugis spec. nov.

♂♀. Like *P. riggenbachi* Roths. 1904, but end-segment of proboscis little longer than penultimate one, hindtarsal segment I less than twice as long as V, hindfemur ventrally much less evenly convex than in *P. riggenbachi*; ♀ with some small bristles above antennal groove; outer process P' of clasper of ♂ (text-fig. 13) with a row of 3 bristles from two-thirds to apex, first and second long, third smaller; in ♀ the row on tergite VIII ventrally irregular (text-fig. 14), and on the side of this segment 4 or 5 bristles; stylet of ♀ shorter than in *P. riggenbachi*.

Hab. Malay Peninsula: Mbu Gombak, Selangor, on *Hystrix longicaudata* (C. Strickland); 1 ♂, 2 ♀♀.

Cediopsylla gen. nov.

Like *Spilopsyllus*, but the labial palpus consists of four segments instead of two.

Genotype: species identified as *C. simplex* Baker 1895.

17. Cediopsylla inaequalis interrupta subsp. nov.

♂♀. Genal comb usually with 6 or 7 spines, sometimes 5. Row of long bristles at ventral margin of ♂-clasper divided into a proximal group of 4 to 6 and a distal group of 2 or 3.

Hab. California: Palo Alto, on fox (ex coll. Stanford University); San Francisco, on *Lepus bachmanni* (Carroll Fox); Claremont, on *Lepus* (C. Baker); a series.

18. Hoplopsyllus glacialis profugus subsp. nov.

♂. Close to *H. gl. lynx* Baker 1904; finger-like process of flap of clasper somewhat broader; sides of eighth abdominal sternite with 8 or 9 bristles; comb of hindcoxa containing 11 or 12 spines.

Hab. Near Djarkent, Semitchenskoi, Eastern Turkestan (W. Rückbeil). on *Putorius ermineus*; 2 ♂♂.

An interesting discovery, the other known forms of this genus occurring in North and Central America and Greenland.

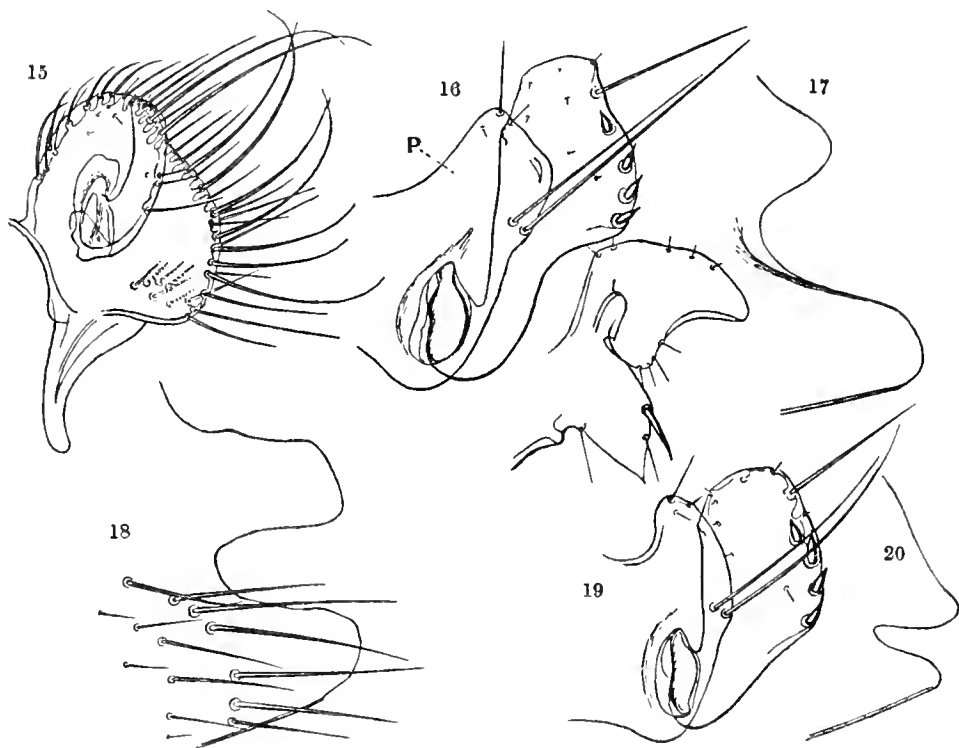
19. Trichopsylla matina spec. nov.

Agrees with *T. rothschildi* Kohaut 1903 in the number of bristles on the inner side of the hindcoxa and on the mid- and hindfemora being reduced,

♂. Clasper (text-fig. 15) nearly as in *T. trichosa* Kohaut 1903, but broader, its posterior margin with more bristles and less incurved below apex : exopodite longer, its base below middle of clasper. Sternite IX with two apical bristles, 1 long, the other somewhat shorter. Paramere with long, conical, lateral process and a large apical lobe which ends with a short dorsal hook.

♀. Sternite VII as in *T. rothschildi* with prominent triangular ventral lateral lobe. Tergite VIII with a vertical row of about 12 bristles from above stigma, and at apical margin on outer side about 12 to 16 bristles, no bristles at and near middle of ventral margin.

Hab. Pyrenees : Caunterets (J. Mousquès), on *Mustela martes* ; a series.



20. *Ceratophyllus waterstoni* nom. nov.

Ceratophyllus rothschildi Waterston, *Proc. Roy. Phys. Soc. Edinb.* xviii. 2. p. 80, text-figs. 1-6 (1910), nec *Ceratophyllus rothschildi* Rainbow, *Rec. Austral. Mus.* vi. 2, p. 103, figs. 27, 28 (1905).

We have much pleasure in renaming this species after its discoverer.

21. *Ceratophyllus caedens* spec. nov.

Similar to *C. sexdentatus* Baker 1904, and *C. nepos* Roths. 1905.

♂. Process P of clasper broad (text-fig. 16), subtruncate ; exopodite F with 4 or 5 short spines, usually 4, first spine above middle, proximal half of F narrow, greatest width at first or second spine ; proximal ventral lobe L of sternite IX

triangular, sharply pointed; apical portion of IX st. dorsally rounded-elbowed, ventrally incurved; membranous apical portion of sternite VIII fringed.

♀. Sternite VII (text-fig. 17) deeply sinuate, upper lobe shorter than lower, but very variable in width and length, on the two sides together 16 to 19 bristles. Length: ♂ 2.0 mm., ♀ 2.3-2.8 mm.

Hab. Alberta: Banff, ix. 1915, on *Mustela americana* (Messrs. Mackay & Dippie); a series.

22. *Ceratophyllus latens* spec. nov.

♂. Like the previous, but process P of clasper (text-figs. 19) narrower, subacuminate, on anterior side deeply incurved, on posterior side rounded; exopodite F more gradually widened.

♀. Sinus of sternite VII (text-fig. 20) narrow, the lobe above the sinus a little longer than the one below it, recalling *C. aeger* Roths. 1905, but in the latter species the frons bears two rows of bristles, the comb consists (in ♀) of 19 or more spines (in the new species only 16), and in *C. aeger* the bristles on the fore-coxa are also more numerous than in *C. latens*.

Length: ♂ 2.0 mm., ♀ 2.7 mm.

Hab. California: Santa Cruz Co., vii. 1900, on Gray Squirrel (Ehrhorn); 1♂, 2♀♀ ex coll. Baker.

23. *Ceratophyllus robustus* spec. nov.

♀. Near *C. enoplus* Roths. 1909, from California. Sternite VII deeply sinuate, the lobes equal in length, upper one broad, truncate (text-fig. 18); on the two sides together 28 to 33 bristles in our four specimens. On tergite VIII 4 or 5 long bristles and 1 to 3 short ones below stigma, and more than 20 bristles on lower half, inclusive of apical bristles, on inside 3 or 4 submarginal ones.

Length: 4.0-4.3 mm.

Hab. Arizona: White R., Cooley, vi. 1920 (H. H. Kimball), type; 2♀♀, host not given.—New Mexico: Riti de los Frigoles, viii. 1910 (Professor J. Henderson), on *Sciurus aberti*; 2♀♀ received from Dr. T. D. A. Cockerell.

The ♂ of this species I expect to have numerous long bristles ventrally on the eighth abdominal tergite, as in the case of *C. pseudarctomys* Baker 1904, *C. acasti* Roths. 1905, and *C. enoplus* Roths. 1909. The ♂♂ of the former two species have a mane of long bristles on the thorax, while *C. enoplus* is without it.

24. *Ceratophyllus piger* spec. nov.

Near *C. infestus* Roths. 1908.

♂. Process P of clasper (text-fig. 21) as short as in *C. infestus*, deeply incurved on distal side, with one long bristle above acetabulum; exopodite F recalling *C. argus* Roths. 1908, almost linear and straight, six times as long as broad, at three-fourths of posterior margin a bristle which is about one-fourth the length of F, at posterior apical angle a much longer bristle, between the two and at apical margin several small ones.

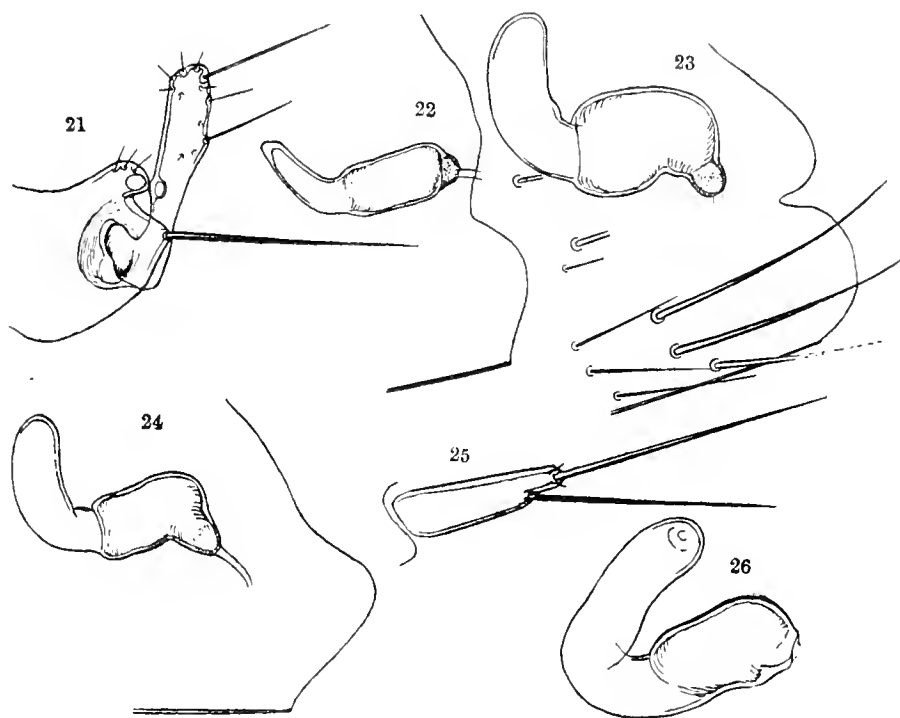
♀. Sternite VII (text-fig. 22) with a shallow sinus in middle of side, the margin less projecting above the sinus than below it; bristles less numerous than in *C. infestus*, also on tergite VIII. Spermatheca of nearly the same shape as in *C. infestus*, but tail shorter.

Length: ♂ 2.8 mm., ♀ 3.1 mm.

Hab. Uganda: Mabira Forest, xi.1919 (R. A. Dummer), on *Funisciurus* spec.; one pair.

25. *Ceratophyllus consobrinus* spec. nov.

♀. Likewise near *C. infestus* Roths. 1908; as in the previous spec. nov. the bristles on the abdominal sternites and on tergites VIII less numerous. Sternite VII with a small narrow sinus above middle of side (text-fig. 23), both lobes rounded, the upper one small; on the two sides together 20 bristles. On each side of body the widened ventral portion of tergite VIII on outer surface 12 or 13 bristles inclusive of apical ones and the 2 below pygidium, and on inside



4. Spermatheca recalling the South American *Rhopalopsyllus subtilis* J. & R. 1923; its head one-half longer (in a straight line) than broad, tail a little longer, orifice on a rounded projection which is directed obliquely downward.

Length: 2.5 mm. (somewhat contracted).

Hab. Gaboon: Abanga R., x.1907 (Dr. W. J. Ansorge), on "*Sciurus*"; one ♀.

26. *Ceratophyllus notabilis* spec. nov.

♀. Similar to the preceding species, bristles more numerous on sternite VII: on the two sides together 38; this sternite with one rounded lobe, the dorsal margin being strongly oblique (text-fig. 24). Spermatheca as in *C. consobrinus*, but narrower.

Length: 3.4 mm.

Hab. Gaboon: Abanga R., x.1907 (Dr. W. J. Ansorge), on "*Sciurus*"; one ♀.

27. *Ceratophyllus melinus* spec. nov.

♀. Near *C. melis* Curtis 1832. Frons with an anterior row of 6 bristles, occiput with an oblique median row of 3. Proboscis shorter, not reaching beyond trochanter. Pronotal comb dorsally longer than pronotum. Stylet (text-fig. 25) cylindrical, four times as long as wide. On outer surface of tergite VIII from the stigma down altogether 16 or 17 bristles. Spermatheca (text-fig. 26) nearly as in *C. melis*.

Hab. A single ♀ in Mus. Brit., without indication of locality and host, probably Asiatic.

28. *Ceratophyllus phillipsi* spec. nov.

Near *C. fimbriatus* J. & R. 1921, from N.W. India, and *C. agathus* J. & R. 1922, from Sumatra.

♂. Manubrium of clasper longer than internal expansion of tergite IX, its base less broad than in *C. fimbriatus* (the ♂ of *C. agathus* not known). Anterior margin of exopodite F twice as long as process P (text-fig. 27), its ventral angle rounded; at this angle two heavy spiniform bristles, a third similar one at some distance above the pair. Sternite VIII much longer than in *C. fimbriatus*, with a row of minute hairs along ventral margin and 1 smallish bristle, which is nearly twice as far distant from extreme base than the bristle of *C. fimbriatus*.

♀. Sinus of sternite VII rather shallow and broad, the upper lobe triangular, shorter than the lower lobe; which is truncate, with the upper angle rounded. Head of spermatheca globular, nearly as in *C. agathus*, but larger (text-fig. 28).

Length: ♂ 2.7 mm., ♀ 2.9 mm. (♂ extended).

Hab. Ceylon: St. George, Matugama, iii.1923 (W. W. Phillips); one pair.

29. *Ceratophyllus fotus* spec. nov.

Near *C. petiolatus* Baker 1905.

♂. Tergite VIII with a vertical row of 3 or 4 bristles ventrally, without the ventral patch of long bristles obtaining in *C. petiolatus*. Sternite VIII triangular, acuminate (text-fig. 30). Both the process P of the clasper (text-fig. 29) and the exopodite shorter, and the manubrium very much narrower and more pointed, its apex not distinctly turned up. Proximal ventral lobe of sternite IX hardly at all projecting ventrad, its distal angle slightly smaller than 90°, apical lobe shorter and broader than in *C. petiolatus*. Lamina of penis bottle-shaped, symmetrical; paramere truncate, with the ventral corner triangular and projecting a short distance downward.

♀. Proboscis reaching well beyond trochanter. With 3 antepygial bristles, of which the dorsal one is less than half the length of the central one. Basal abdominal sternite without lateral bristles. Ventral setose area of anal sternite about one-half longer than the stylet. Hindtarsal segment II with only one bristle which reaches beyond IV. Tail of spermatheca as in *C. proximus* Baker 1904 without appendix.

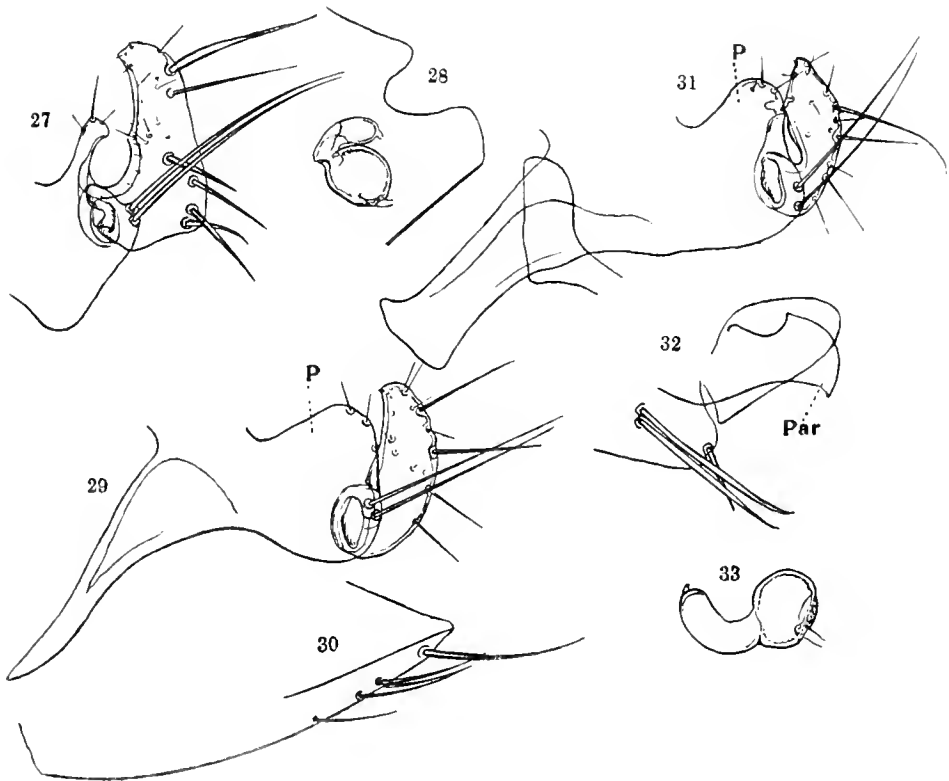
Length: ♂ 2.2 mm., ♀ contracted.

Hab. Colorado Springs, iv.1910 (E. R. Warren), on *Spermophilus 13-lineatus*; one pair.

30. *Ceratophyllus gladiolis* spec. nov.

Near *C. bacchi* Roths. 1905, hindtarsal segment I being as long as II to IV together.

♂. Hindtarsal segment II with 2 slender bristles reaching beyond middle of V, an apical and a subapical bristle of I also long and slender. Process P of clasper (text-fig. 31) evenly rounded; exopodite longer than in *C. bacchi*; manubrium broad, straight, truncate. Proximal ventral lobe of sternite IX (text-fig. 32) broad, round, with a strong apical bristle, and on the side 2 or 3 large flattened ones. Apical margin of paramere (Par) rounded, the dorsal and ventral angles acute.



♀. Longest bristle of hindtarsal segment II reaching beyond or to middle of V, the second longest bristle barely extending to apex of III. Head of spermatheca almost globular, tail short, scarcely at all dilated at end, with a small apical appendix (text-fig. 33).

Length: ♂ 1.7 mm., ♀ 2.4 mm.

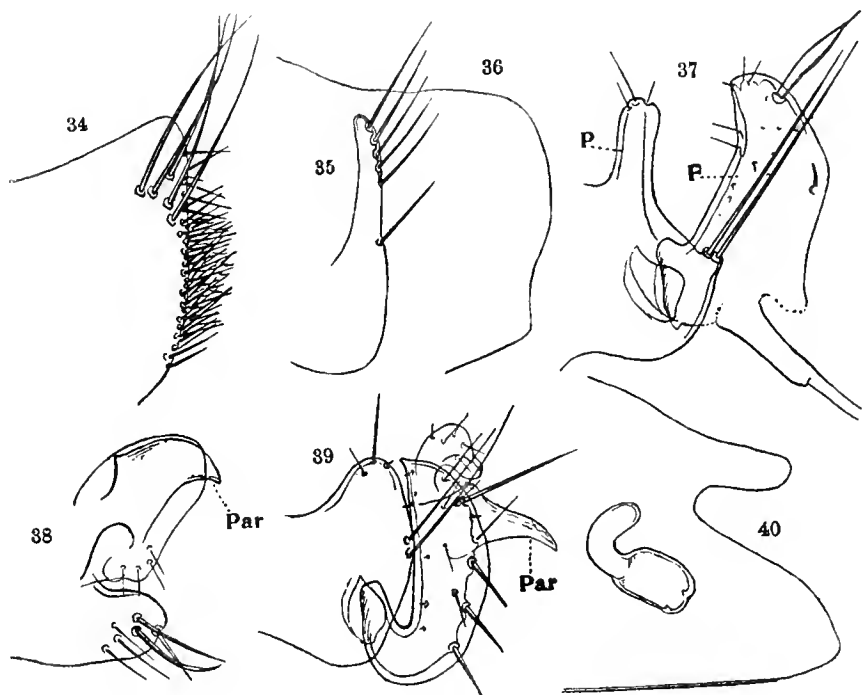
Hab. California: St. Diego, iii. 1914 (F. Stevens), on *Citellus turdicaudatus*, type; San Francisco, iii. 1911 (G. W. McCoy), on *Perognathus* and *Tamias* kept together in a cage.

31. *Ceratophyllus pansus* spec. nov.

Also close to *C. bacchi* Roths. 1905.

♂. Large bristle of exopodite longer and thicker than in the preceding species, placed farther upwards, between it and base 5 marginal bristles, all shorter than the 3 largish ones of *C. gladiolis*. The two flattened bristles on proximal ventral lobe of sternite IX much closer to the apical bristle and shorter, proximally of them several small bristles. Paramere much more asymmetrical, the ventral angle projecting distad (text-fig. 38).

Hab. Arizona: Paradise, xi.1913 (O. C. Duffner), on *Citellus* and *Mephitis*; a series.

32. *Ceratophyllus howelli* spec. nov.

Close to *C. acamantis* Roths. 1905.

♂. Tergite VIII ventrally almost gradually widened, ventral apical corner gradually produced, rather strongly chitinised, and at the tip rounded (text-fig. 34), on each side of this lobe 4 or 5 long bristles at some distance from the apex, and along the ventral margin very numerous shortish but rather strong bristles to beyond the patch of long ones. Sternite VIII (text-fig. 35) much slenderer than in *C. acamantis*.

♀. Apical margin of sternite VII truncate-rounded (text-fig. 35), subventrally slightly incurved; on this sternite, on the two sides together, a row of 16 bristles and in front of the row 12. Spermatheca as in *C. acamantis*.

Hab. California: Pine City, Mono Co., vii.1922 (A. B. Howell); one pair, the ♂ on *Mustela arizonensis* and the ♀ on *Marmota sierrae*.

33. *Ceratophyllus necopinus* spec. nov.

A most interesting discovery, the species being very close to the Asiatic *C. clarus* J. & R. 1922 and *C. runatus* J. & R. 1923, and like these species occurring on *Ochotona*.

♂. Differs from *C. runatus*, to which the species is nearest, in the exopodite of the clasper being much broader (text-fig. 37), particularly in the lower half; anterior margin of process P very little over half the length of the posterior margin (14 : 26), measured from acetabulum.

♀. Like that sex of *C. runatus*, which varies individually in the size of the spermatheca and the number of bristles on tergite VIII.

Hab. California : Pine City, Mono Co., vii. 1922 (A. B. Howell), on *Ochotona muiri*; one pair.—We are greatly indebted to Mr. A. B. Howell for a most interesting collection of fleas from California.

34. *Ceratophyllus isus* spec. nov.

Close to *C. euphorbi* Roths. 1905.

♂. Near ventral margin of tergite VIII only 2 long bristles. Sternite VIII with 3 long bristles on each side, one behind the other. Exopodite of clasper with the third bristle from below as stout as the first and second (text-fig. 39). Proximal ventral lobe of sternite IX longer and less rounded than in *C. euphorbi*; apical lobe strongly excised ventrally before apex, hook-shaped. Paramere (Par) slenderer than in *C. euphorbi*.

♀. Sternite VII deeply sinuate (text-fig. 40), upper lobe narrow, variable, much shorter than lower lobe, which is rounded-subacuminate. Stylet thrice as long as broad, cylindrical to two-thirds or beyond, with one longish lateral bristle. Upper angle of widened portion of tergite VIII a little projecting.

Length : ♂ 2.3–2.9 mm., ♀ 2.8–3.3 mm.

Hab. Canadian Rocky Mts. : Red Deer R. (A. D. Gregson), on “*Mus*”; a small series.

35. *Ceratophyllus sinomus* spec. nov.

Near *C. telchinum* Roths. 1903, hindtarsal segment I of ♂ as in that species with long slender bristles, and sternite VIII vestigial, without bristles. In ♀ stylet with one lateral bristle, and occiput with a small bristle above long median one.

♂. Process P of clasper (text-fig. 41) broad, of nearly even width, not acuminate; exopodite F triangular, reaching only to apex of P, posterior margin rounded, apex pointed, directed capitad, at lower angle, which is rounded off, a long, stout, straight, sharp spine, from this blackish spine upward a row of 4 stiff bristles, all much thinner than the spine, the lower three also shorter, the upper one longer.

Hab. Arizona : Paradise, xii. 1913 (O. C. Duffner), on “*Mus*”; a series.

36. *Ceratophyllus sibynus* spec. nov.

Nearest to *C. dolens* J. & R. 1914 from Costa Rica.

♂. The lowest bristle of the exopodite replaced by a stout, straight, obtuse, long spine (text-fig. 42); sternite IX at some distance proximally of ventral

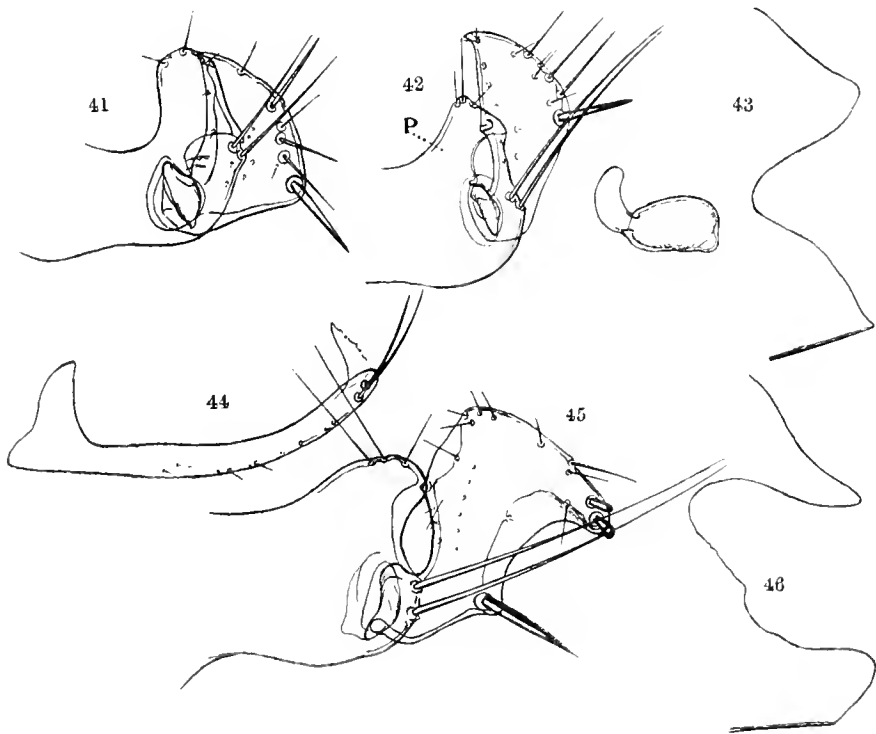
sinus on each side with a cluster of 6 bristles, of which the 3 lateral ones are small, the other 3 ventral, longish, the middle one of them being the longest.

Hab. Arizona: Paradise, xii.1913 (O. C. Duffner), on Skunk; 1 ♂.

37. *Ceratophyllus acerbus* spec. nov.

Near *C. lucifer* Roths. 1905, belonging to a small group of *Ceratophylli* in which the hairy stigma-cavity of tergite VIII is very large.

♀. Above large median bristle of occiput a small one. Three bristles of segment II of antenna extending to near apex of club. Pronotal comb with 19 spines inclusive of the small ventral one of each side. On abdominal tergites three rows of bristles, first row incomplete.



Sternite VII (text-fig. 43) divided by a deep and broad sinus into two triangular lobes of nearly equal size. Stylet with two long lateral bristles. Orifice of spermatheca on a rounded prominence, its head longer than the tail.

Length (abdomen contracted !): ♀ 2.7 mm.

Hab. Canada, on *Tamias striatus*, 1 ♀ received from the late Dr. Gordon Hewitt.

38. *Ceratophyllus diffinis* spec. nov.

A bird-flea, similar to *C. garei* Roths. 1902. As in that species, the denticulated area on the inside of tergite VIII of ♂ narrow, ill-defined, with the teeth not numerous. Also near *C. angulatus* Wahlgr. 1903.

♂. On outer surface of tergite VIII altogether 9 or 10 bristles inclusive of the small ones placed near stigma. Exopodite F of clasper almost as in *C. garei*, its bristles somewhat different (text-fig. 44). Sternite VIII narrow throughout, with 2 long bristles on each side at apex, one behind the other, and a narrow, short, elongate-triangular apical membranous lobe which is directed dorsad (one each side). Paramere broader than in *C. garei*.

Length: 2.6 mm.

Hab. British Columbia: Okanagan Falls, iv. 1913 (C. Garrett), on *Colymbus holboelli*; 1 ♂.

39. *Ceratophyllus atrox* spec. nov.

Comb of pronotum with 26 to 29 spines. Stigma-cavity of tergite VIII very large. On metepisternum 5 or 6 bristles, on metepimerum 10 or more. Bristles on outer surfaces of tibiae and tarsi unusually numerous, the hindtibia bearing more than 25 dorso-lateral ones.

♂. Exopodite F of clasper (text-fig. 45) recalling *C. ciliatus* Baker 1904, but much broader and shorter, broadest at apex, posterior margin angulate near middle and here armed with a long, pointed spine, posterior apical angle produced and bearing two short obtuse spines. Ventral arm of sternite IX narrowed basad and apicad, with a ventral row of small bristles from near base, and on each side one large apical bristle; membranous apical flap broad.

♀. Sternite VII (text-fig. 46) with a very broad and deep sinus, which is deeper above than below, the upper lobe tapering, the lower one broader, truncate-rounded, the margin in middle of sinus angulate, on the two sides together more than 40 bristles. Head of spermatheca half as long again as broad, barrel-shaped, but narrowing towards tail, which is shorter than the head.

Length: ♂♀ 2.8-3.0 mm.

Hab. Canada: Blackfalls, Alberta (A. D. Gregson), on *Mustela*; 2 ♂♂, 4 ♀♀. Presumably a bird-flea.

SIPHONAPTERA COLLECTED BY REAR-ADMIRAL H. LYNES IN DARFUR IN 1920 TO 1922.

By DR. KARL JORDAN.

THE collection being from a new locality as regards Siphonaptera, it is a most welcome addition to our series of specimens, enabling us to clear up a doubtful point in the systematics of the difficult genus *Xenopsylla*, and establishing a new record for a tropical African species of another genus. For a most interesting account of the expedition cf. *Ibis*, 1924, p. 399 ff.

1. *Synosternus pallidus* Tasch. 1880.

For generic name cf. p. 103.

A small series of both sexes from Um Kedada, off *Erinaceus albiventris* March 1920.

2. *Xenopsylla nubicus* Roths. 1903.

A series from : El Fasher, off *Arvicanthis*, Feb. 1921 ; Kurra, off *Rattus macrolepis*, Feb. 1921 ; Jebel Marra, 7,900 ft., off *Dipodillus lowei*, March 1921 ; Kallokitting, Jebel Marra, 4,000 ft., off *Felis ocreata*, April 1921 ; Kulme, Wadi Aribo, off *Rattus ugandae*, Sept. 1921 ; Um Kedada, off *Erinaceus* spec., March 1922 ; Kheira, off *Taterillus butleri*, April 1922.

The individual variation exhibited by this series proves that the differences on which *X. chersinus* Roths. 1906 is based do not hold good. We therefore now regard this name as a synonym of *X. nubicus*.

3. *Xenopsylla cheopis* Roths. 1903.

A series from : Sixty miles W.S.W. of El Fasher, off *Rattus macrolepis*, Feb. 1921 ; Niurnya, Jebel Marra, same host, March 1921 ; Jebel Marra, same host, Feb. and Sept. 1921 ; Kulme, Wadi Aribo, off *Graphiurus orobinus* and *Sorex*, June and Sept. 1921 ; foothills of Jebel Marra, off *Rattus macrolepis*, March and April 1921 ; Duggu, off same host, May 1921.

4. *Ctenocephalus felis strongylus* Jord. 1925.

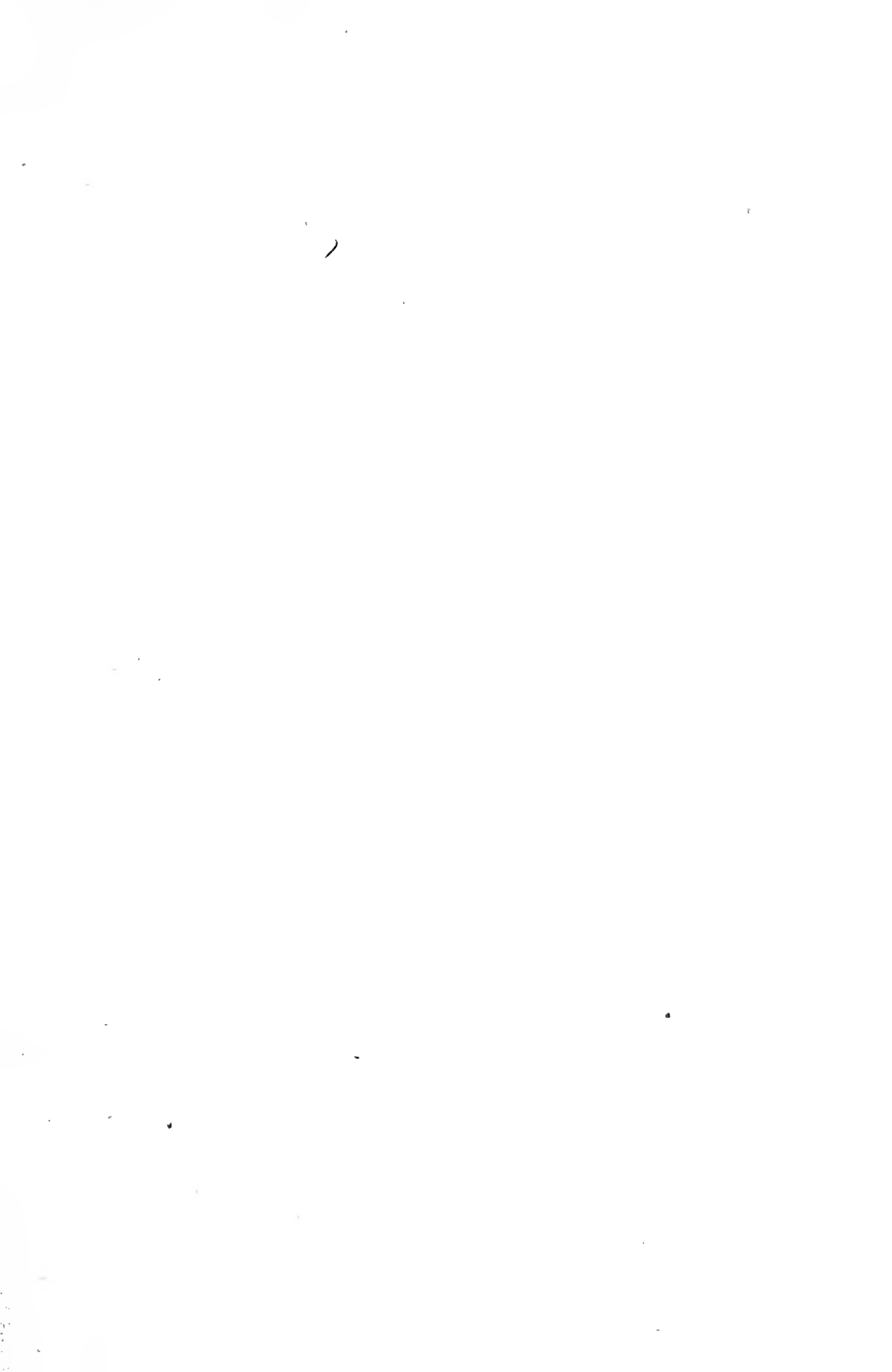
Cf. p. 98. All the specimens collected belong to this African form of *Ct felis*, the frons being as strongly rounded as in *Ct. canis* Curtis, 1826. A series from : N.E. of Jebel Marra, off *Dipodillus lowei*, Feb. 1921 ; Jebel Marra, off *Vulpes pallida* and domestic dog, Sept. and Nov. 1921 ; foothills of Jebel Marra, off *Felis ocreata*, April 1921 ; Kulme, Wadi Aribo, Aug. and Sept. 1921, off *Vulpes pallida*.

5. *Ceratophyllus henleyi henleyi* Roths. 1904.

1 ♂, 11 ♀ from Jebel Marra, off *Dipodillus lowei*, March 1921.

6. *Dinopsyllus lypusus* J. & R. 1913.

Two pairs from S.E. side of Jebel Marra, off *Rattus macrolepis*, Nov. 1921. This is the first record of a *Dinopsyllus* from a country farther north than Uganda.



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DR. ERNST HARTERT, AND DR. K. JORDAN.



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CONTENTS OF NO. II.

	PAGES
1. A COLLECTION OF BIRDS FROM NEW IRELAND (NEU MECKLENBURG)	<i>Ernst Hartert</i> 115-136
2. A NEW FORM OF CHUKAR PARTRIDGE	<i>Ernst Hartert</i> 137
3. TYPES OF BIRDS IN THE TRING MUSEUM	<i>Ernst Hartert</i> 138-157
4. UEBER DIE INDOAUSTRALISCHEN GLANZ- KUCKUCKE (<i>CHALCITES</i>)	<i>Ernst Hartert and Erwin Stresemann</i> 158-163
5. REVIEW OF THE GENUS <i>CACOMANTIS</i> MÜLL.	<i>Ernst Hartert</i> 164-174
6. REVIEW OF THE BIRDS COLLECTED BY ALCIDE D'ORBIGNY IN SOUTH AMERICA (<i>Continuation</i>)	<i>C. E. Hellmayr</i> 175-194
7. CRITICAL LIST OF THE COLLECTION OF ALGERIAN LEPIDOPTERA OF THE LATE CAPTAIN N. J. E. HOLL	<i>Lord Rothschild</i> 195-229
8. NEW ORIENTAL ZYGAENIDÆ	<i>Karl Jordan</i> 230-237
9. A NEW SPECIES OF ANTHRIBIDÆ FROM SUMATRA COLLECTED BY E. JACOBSON	<i>Karl Jordan</i> 238
10. FIVE NEW INDIAN ANTHRIBIDÆ	<i>Karl Jordan</i> 239-241
11. ANTHRIBIDÆ FROM THE EASTERN HEMI- SPHERE	<i>Karl Jordan</i> 242-257

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OCTOBER 1925.

No. 2.

A COLLECTION OF BIRDS FROM NEW IRELAND (NEU MECKLENBURG).

By ERNST HARTERT.

(Plate I.)

THE ornithology of New Ireland is specially interesting for two reasons: A number of birds have first been described from there, and it is of the greatest importance to have topotypical specimens, and it has hitherto been very little known. No good bird collector has been on the island for any length of time, and nearly all specimens were obtained in the south part of the island, especially at Praslin and Carteret Harbour (Lesson 1823, Quoy and Gaimard 1827, Hüsker 1875, and a few others during short visits), and on the utmost north point, near Kaeviang (Heinroth 1901). But New Ireland is a large island, 350 km. long, though nowhere wider than 50 km., and in some places narrowed down to $8\frac{1}{2}$ and even 7 km. Good harbours are found in the south, and utmost north, near Kaeviang. The ground rock consists of older eruptive masses, such as Granite, Diorite, Syenite, and Gabbro. In some places Andesite is wide spread, while in the south chalk and sandstone occur also. There is evidence that the island has risen considerably in comparatively recent geological periods. The island is hilly, the highest mountain being 2,150 m. high, the island is well covered with vegetation, there being tropical forest nearly everywhere, grass land is found here and there.

A. F. Eichhorn collected in S.W. New Ireland, from November 1923 to the beginning of March 1924, his camp being 1,800 feet high, and birds were collected from the coast up to 3,000 feet.

The following is a list of their valuable collection:

Megapodius duperreyi *eremita* Hartl.

A series collected in November and December 1923. This bird is well-known as an inhabitant of New Ireland.

Tringa hypoleucos L.

Common December and February.

***Tringa incana brevipes* (Vieill.).**

Evidently not rare. Several shot end of February, in two of which primaries are moulting, in one moult on chest beginning. A male shot March 3 has already barred chest and sides, and body plumage in moult, wings are beautifully freshly moulted.

***Charadrius dominicus fulvus* Gm.**

Two adults, March 5. Moulting on hind-neck and back.

***Charadrius dubius jerdoni* (Legge).**

Aegialitis jerdoni Legge, *Proc. Zool. Soc. London*, 1880, p. 94 (1854—Ceylon and Central India)

February and March. In full breeding plumage.

***Porzana cinerea leucophrys* Gould.**

8 ♂♀ February 21 to 25, 1 ♀ 4.iii.1924.

I cannot separate this series from Australian *P. c. leucophrys*. The majority are somewhat dark on the upperside, but they are in good plumage, and therefore look very good, and some Australians are equally dark. The bill of at least one specimen is very large, but the majority are not appreciably bigger than in *leucophrys*. Cf. Nov. Zool. 1924, p. 264! The males are as a rule much larger, wings 97–100, females smaller, wings 87–89, but two, sexed as males, are intermediate, having wings of about 92 mm.

These birds are quite different from *P. c. meeki*, cf. Nov. Zool. 1924, pp. 263, 264.

***Ptilinopus rivolii rivolii* (Prévost & Knip).**

Cf. Nov. Zool. 1924, p. 198.

Evidently common on New Ireland, November to January. Moult of body plumage, and in a few cases on tails and wings, from November to January.

I suppose that these specimens are typical *rivolii*. Their wings measure ♂ 129–136, ♀ 126–128.5 mm. The wings of a pair of *P. rivolii rivolii* from Duke of York Island in the British Museum measure, ♂ 128, ♀ 128 mm. On the other hand, the wings of our examples from New Hanover measure only ♂ 122–125, ♀ 118–120 mm. Probably the latter must be named as a smaller subspecies, but I prefer to await more material, which may reach me soon. As we received a specimen from Rook Island, we may expect the occurrence of *rivolii* on New Britain, though it appears not to occur on the Gazelle Peninsula, where all the collecting has been done.

***Ptilinopus superbus superbus* (Temm.).**

Cf. Nov. Zool. 1924, p. 198.

1 ♂ ad., 22.xii.1923. New Ireland is not quoted as a locality for this species by Reichenow, but Rothschild and I quoted it from specimens sent by Curtis.

***Ducula (Glbicera) rubricera* (Bp.).**

Cf. *Nor. Zool.* 1924, p. 196.

A specimen from November 23 moults its body plumage. Two of the four December specimens have some moulting rectrices and remiges, also moult in body plumage. The January birds show mostly a few moulting body feathers.

New Ireland is the typical locality of Bonaparte's *Glbicera rubricera*. The colour of the back varies, being green with metallic red edges to the feathers, and sometimes, at a certain light, quite red.

***Ducula finschii* (Rams.).**

Cf. *Nor. Zool.* 1914, p. 209 (Rook Island).

This rare Pigeon was discovered on New Ireland, and one specimen was obtained on New Britain by Dahl. It seems that only two specimens were known until A. S. Meek and Eichhorn collected a pair on Rook Island. Now the latter sent us seven beautiful skins from S.W. New Ireland. They describe the iris as blood-red, bill slate-black, feet cherry red. The wings measure 203–215 mm. In the two from Rook Island they measure only 185 and 197 mm. Perhaps a bigger series might prove them to be a separable subspecies. There is no difference in colour. The throat varies from light grey to vinous, but the vinous colour seems to be partially due to staining, probably from the juice of some fruit. The white ring round the eyes is very conspicuous, though not altogether sharply defined against the grey. The subterminal tail-bar varies in width.

The specimens were collected from November to January. The November and December birds moult tail-feathers, some wing-feathers, and body plumage.

This species is evidently a species by itself. Some species which resemble it somewhat in coloration (*D. chalconota* and *rufiventris*) show after all great differences; above all, they have a dark-grey terminal, and not a whitish sub-terminal bar to the rectrices.

***Ducula melanochroa* (Sel.).**

Carpophaga melanochroa Selater, *Proc. Zool. Soc. London*, 1878, p. 672, pl. xlii ("Ins. Duke of York").

This fine Pigeon is obviously very rare on the Duke of York Islands and in New Britain, and I believe that only five specimens were hitherto known in European and other museums, the type in the British Museum and two in the Berlin Museum, collected by Dahl in the Gazelle Peninsula, New Britain, as well as two from New Ireland in the Tring collection. Now Eichhorn sent us a fine series of eight from S.W. New Ireland. This island is probably the stronghold of the species, which has no close ally, and stands by itself. Eichhorn's specimens were shot in November, December, and January. The November and December specimens were in moult (wings, tails, body plumage). One of the two January examples is young, as shown by its pointed rectrices and mostly lighter chestnut under tail-coverts. The juvenile plumage does not seem to differ appreciably from that of the adults. Eichhorn found the iris bright red, bill slaty-blue, tip black, feet dark purplish red. Males and females are alike. Wings 253–265, once 273 mm. The under tail-coverts are always dark chestnut, the under wing-coverts are sometimes quite slaty-blue, sometimes strongly washed with chestnut, usually on the inner coverts only.

***Columba vitiensis pallidiceps* (Rams.).**

Ianthoenas pallidiceps Ramsay, *Proc. Linn. Soc. N. S. Wales*, ii. p. 248 (1877—Duke of York Islands),
Columba pallidiceps Salvadori, *Cat. B. Brit. Mus.*, xxi. p. 319 (Duke of York Islands); Reichenow,
Mitt. Mus. Berlin, i. p. 50 (1899—Kabakaul, New Britain).

“♀” ad., S.W. New Ireland, 5.xi.1923. “Iris dark yellowish red. Bill, pale bluish horn. Feet, yellow.” Wing, 240 mm.

There can be no doubt that this bird is Ramsay’s *pallidiceps*, but I could not say how the specimens from Bougainville, Choiseul, and Vella Lavella (Solomon Islands) differ. On the other hand, the description of *Columba philippinae* (Ramsay, *Proc. Linn. Soc. N. S. Wales*, viii, p. 721, 1881) does not agree, as it describes the ground colour as “light slate-blue, and not blackish brown.” Cf. Rothschild and Hartert, *Nov. Zool.* 1905, p. 245; 1908, p. 352. Ramsay described “*philippinae*” from Ugi Island, from where unfortunately no specimens are available for comparison.

I am convinced that *pallidiceps* is a subspecies of *C. vitiensis*. We would, therefore, have:

C. vitiensis vitiensis: Throat white, crown like neck, ground colour of body plumage slate: Fiji Islands.

C. vitiensis leopoldi (Tristr.), similar, but ground colour more black.

C. vitiensis hypoenochroa: Crown chestnut purple: New Caledonia.

C. vitiensis castaneiceps Peale: Crown of adults chestnut; Samoa Islands.

C. vitiensis halmakeira (*albicularis* auct.): White of throat more extended: Moluccas, New Guinea, Key Islands, Sula Islands, etc.

C. vitiensis griseigularis: Throat pale grey: Philippine Islands to N. Borneo.

C. vitiensis metallica Temm.: Throat dark grey: Timor, Moa, etc.

C. vitiensis pallidiceps: Throat and crown grey: New Britain, Duke of York Islands, New Ireland—and perhaps Bougainville, Choiseul, and Vella Lavella Islands.

C. vitiensis philippinae: If different on Ugi and perhaps other southern Solomon Islands.

(Cf. Rothschild and Hartert, *Nov. Zool.* 1911, p. 118 !)

***Gallicolumba beccarii nodifica* subsp. nov.**

Three males and one female, November, January, and February. They are indeed puzzles. They differ from the types of “*Phlogoenas johannae*” in the British Museum by having less white on the chest shield; while in *G. b. johannae* the grey changes into white below the throat, in *nodifica* it extends all over the jugulum and has only a white edge across the breast. This is specially well noticed if viewed sideways. It has also apparently shorter wings: 110, 111, 112, while the wings of the types of *johannae* measure 114, 116 mm. This new subspecies resembles *intermedia* from the Solomon Islands in the grey shield, but the abdomen is paler. The male of *G. b. admiralitatis* lacks the metallic patch on the occiput and has a redder abdomen; the female of *intermedia* is unknown, that of *admiralitatis* differs much from that of *nodifica*, having a much darker abdomen, and throat to chest dark slate-colour, while in *nodifica* the throat is whitish, the foreneck to chest grey with a rusty buff tinge, and in the New Hanover females still more buff.

Type of *G. b. nodifica*: ♂ ad., S.W. New Ireland, 28.xi.1923. A. F. Eichhorn coll., No. 8823.

The greatest puzzle is the fact that two specimens from New Hanover (and one from Dampier Island) are apparently like the types! The latter were probably Duke of York Island (cf. Nov. Zool. 1924, p. 198!), and not from New Ireland, as it seems improbable that three specimens are so much alike and differ so constantly from the types, unless they are a different subspecies. I said last year that *G. b. johannae* was "obviously not an inhabitant of New Britain," but I am now of a different opinion and believe it must and will be found there as well. All collecting on New Britain has hitherto been done on the North Peninsula (Gazelle Halbinsel), and the greater part of the island has remained zoologically unknown. Probably if a good series from New Britain and Duke of York Islands were at hand, differences of the New Hanover (and Dampier) form will be noticeable, and before long I hope to be able to return to the subject of the races of *Gallicolumba beccarii*.

Macropygia nigrirostris Salvad.

3 ♂, 2 ♀, December, January, February.

The iris is described as pinkish yellow and red. In the "Notes from the Leyden Museum," xxix, p. 174 (1908—New Britain). Dr. van Oort described the form inhabiting New Britain and Duke of York Islands as *M. nigrirostris major*, saying that the inner secondaries were not barred with chestnut, and that the wings were longer. These differences, however, are not constant. The barring on the inner secondaries is not always present in specimens from Dutch New Guinea, and the wings not shorter than in those from New Britain and New Ireland. The wings in two males from New Britain and Duke of York Islands measure, according to van Oort, 156 mm., those of Arfak males 145–148. We have males from Dutch New Guinea with wings of 155 (Arfak) and 152 (Kapaur), while most of the males from New Ireland and New Britain have shorter wings, 146–150 mm. I can therefore not separate any subspecies of *nigrirostris*.

Macropygia amboinensis carteretia Bp.

♂ ad., 12.xii.1923; ♂ ad., 11.ii.1924; ♀ 26.i.1924.

These are topotypical *carteretia*.

When writing about the New Hanover birds I omitted that Oscar Neumann had separated the New Hanover form as *M. amboinensis hüscheri*. He created this name because, he said, the new form had the upperside and tail much darker, dark olive-brown, instead of red-brown, only on the wing-coverts there being a tinge of red-brown. Also he said that the jugulum had fine black bars to the feathers. I am sorry to say that I cannot appreciate these differences. The colour of the upperside is exactly the same in our specimens from New Ireland and New Britain, as in those from New Hanover; also the wing-coverts are absolutely similar. The bars on the jugulum are not characteristic to the New Hanover birds, as they are to be seen in one out of 8 adult males from that locality. In comparing the series, however, one can see that the tails of the New Ireland birds are a shade more reddish than in the New Hanover ones, except one. This difference is only perceptible in very good light, and, as the

colour of the tails is somewhat variable, of not too great value. Cf. Hartert, *Nov. Zool.* 1909, p. 124; 1924, p. 198.

Neumann, *Verh. Orn. Ges. Bayern*, xv, 2, p. 234, 1922.

***Chalcophaps stephani stephani* Rehb.**

Cf. *Nov. Zool.* 1924, p. 198.

Except that Rothschild and Hartert mentioned a specimen collected by Curtis on New Ireland (*Nov. Zool.* 1901, p. 130), this species appears not to have been mentioned as occurring on New Ireland, but it cannot be rare there in suitable places, as Eichhorn sent ten specimens, shot in February and March.

***Caloenas nicobarica nicobarica* (L.).**

This widespread island-dweller was found in December and January and February. A young bird from December 30 has still the dark tail and lacks the long nuchal hackles. In another young bird of February 7 many of the hackles are developed, others still growing; the rectrices are still dark, but the white tail-coverts begin to grow.

This species seems not to be recorded from New Ireland!

Columba (Gymnophaps) albertisi (albertisi ?)

Two specimens, both marked "female," shot January 29. One has the chest white with a faint greyish tinge, the other finely but closely vermiculated with dark grey, and the purple chestnut colour of the abdomen extending to the breast. I believe these differences to be sexual, as both are adult, though the statements on our labels do not confirm my theory, but the "sexing" by Eichhorn and many other collectors is not reliable. Both our specimens have rather small bills, and probably a larger series might show that this is a feature of the form inhabiting New Ireland, from where it has not before been recorded! Wings 210 in both specimens. "Iris bright red Bill reddish and light horn-colour (in skin all over red). Feet bright purplish red."

***Reinwardtoena browni* (Sel.).**

Macropygia browni Selater, *Proc. Zool. Soc. London*, 1877, p. 110 (Duke of York Islands); *Nov. Zool.* 1914, p. 208, 1924, p. 199.

This fine big Pigeon, formerly only known from New Britain and Duke of York Islands, was found by Heinroth and Curtis on New Ireland, and recorded by Rothschild and Hartert from Rook Island and New Hanover. My surmise, that the ash-grey edges and bloom to the feathers of the back is due to freshness of plumage, was correct. Eichhorn sent 6 shot November 6 to 20, 1 shot December 5. The November specimens are in good plumage, though 2 show moult in tails, 2 others on the body plumage. The December bird is worn, the rectrices badly used. The iris is marked as golden yellow.

***Dupetor flavicollis nesophilus* (Sharpe).**

Cf. *Nov. Zool.* 1914, p. 286.

♀ ad., 24.ii.1924. "Iris silvery brownish yellowish. Bill light horn colour, upper mandible (except near cutting edge) black. Feet brownish."

♀ juv., 4.iii.1924. "Iris brownish yellow. Bill and feet as in adult."
Not before known from New Ireland.

Accipiter hiogaster dampieri (Gurn.).

Cf. *Nov. Zool.* 1914, p. 288.

♂ juv., 29.ii.1924. "Iris brown. Bill black. Feet lemon yellow." Cere in skin bright yellow!

This specimen is underneath whitish cream with spots, longitudinal, arrow-shaped, and a few cross-marks of rufous. If this differs from our other juv. *dampieri*, which are (except a Manus specimen, which has also hardly any cross-bars and not many other markings on the underside) regularly cross-barred. Unless it is a totally different species it can only be *dampieri* juv.

(*A. brachyurus* from New Britain is a subspecies of *A. rubricollis*!)

Baza suberistata bismarekii Sharpe.

Cf. *Nov. Zool.* 1924, p. 200.

♂ ad., 24.xii.1923. Wing 318 mm.

Haliastur indus girrenera (Vicill.).

♂ med., 4.iii.1924.

Ninox variegata variegata (Quoy et Gaim.).

Cf. *Nov. Zool.* 1924, p. 200.

6 ♂♀ ad., December, February, March.

A male from December 7 has still some juvenile wing-coverts and moulting primaries; some of the others show a little moult on the body plumage.

"*Noctua variegata*" was described from Carteret Harbour in southern New Ireland, and is said to occur on New Britain. In *Nov. Zool.* 1924, p. 200, and in Webster's *New Guinea*, p. 374, I have quoted specimens from New Hanover as *N. variegata*. Having now been able to compare them with almost topotypical New Ireland ones, I find that they differ slightly in being larger. The wings of our 4 New Hanover skins measure 211, 215, 215, and 224 mm., those of our 6 New Ireland ones 192, 199, 206, 208, 210, 210 mm. Bill in New Hanover larger, thicker, in the largest from nostril to tip 18 mm., in the largest billed New Ireland birds 17, but mostly much smaller. I am therefore afraid we must separate the New Hanover bird, and I propose to call it

Ninox variegata superior subsp. nov.

Type: ad., New Hanover, 21.ii.1897. Cayley Webster coll., No. 435.

There seems to be no constant colour difference, though none of our New Ireland birds are as light as two out of the four New Hanover ones. Probably females are larger than males, but the "sexing" of some of our birds is perhaps wrong.

Domicella albidinucha R. & H. (Plate I.)

Domicella albidinucha Rothschild and Hartert, *Bull. B.O. Club*, xlv, p. 7 (1924—"Hillson, S.W. coast of New Ireland").

This fine and interesting new Parrot was apparently not rare on the hills in south-western New Ireland, as Mr. Eichhorn collected ten specimens from

November to February. From a distance on the tall trees it probably looks similar to *Domicella hypoinochroa*, but differs in many striking points. It is considerably smaller, the wing measuring ♂ 156-162, ♀ 152-156 mm., while in New Ireland *D. hypoinochroa devittata* they are 170-175 mm. long, and the bill of the latter is considerably bigger. In *D. albidinucha* the utmost base of culmen and "cere" (surrounding of nostrils) are black, in *D. h. devittata* orange. In the new species there is a more or less triangular whitish patch, behind the black crown, the feathers of this patch being creamy white at tip, brownish yellow in the middle, greyish black at utmost base. The back of *albidinucha* is lighter, more scarlet, not crimson, and there is not the darker band across the inter-scapulum which exists in *devittata*. In *devittata* (and other forms of *hypoinochroa*) the feathers on the sides of the neck are stiffened and narrow, while in *albidinucha* they are in no way modified. Belly, thighs, and under tail-coverts are uniform scarlet with the breast, in *hypoinochroa* these parts are blackish purple; the thighs, as I said, are scarlet in *albidinucha*, but there is a narrow blue frill at the end of the thigh feathering. The bend of the wing is lavender blue in *albidinucha*, and there are wide yellow bases to the feathers of the jugulum and sides of neck, strikingly reminding one of *Domicella chlorocercus* from the Solomons, with its complete yellow chest-band, and of *D. domicella* from Ceram and Amboina with its hidden yellow band. In fact, *D. chlorocercus* is the nearest ally of *D. albidinucha*, differing only from the latter in having a distinct yellow chest-band, a large black patch on the sides of the neck, blue under wing-coverts, red bases to the primaries, no white nuchal patch, and green-blue thighs. *D. chlorocercus* has also the bill coloured as in *D. albidinucha*, and a similarly coloured tail, while the tails of *D. domicella* and *hypoinochroa* are different. *D. chlorocercus* and *albidinucha* might perhaps be looked upon as subspecies! The bases of the primaries are red in *D. chlorocercus*, yellow in *albidinucha*. Though *D. chlorocercus* and *albidinucha* are representative forms from the Solomons and New Ireland, *D. domicella* is very different, lacking the black basal patch to the culmen, having a purplish extension of the black crown over the nape, a red and purplish tail, and is much bigger.

In *D. albidinucha* some tails and wings were moulting, as well as body plumage in December, November, and January.

***Domicella hypoinochroa devittata* (Hart.).**

Cf. *Nov. Zool.* 1924, p. 201.

Common November to January. Moults in November and December.

***Charmosynopsis placentis pallidior* R. & H.**

Cf. *Nov. Zool.* 1924, p. 201.

8 ♂♀, end of February.

4 specimens show moult on wings, tail, body plumage.

***Charmosynopsis rubrigularis rubrigularis* (Sel.).**

Trichoglossus rubrigularis Selater, *Proc. Zool. Soc. London*, 1881, p. 451 (New Britain, type in Godeffroy Museum, Hamburg).

2 ♂, 3 ♀, all adult, December, January, February. "Iris dull yellow, reddish yellow, pinkish red. Bill reddish yellow, yellowish red, utmost tip

and narrow line along tip of cutting edge black. Feet dull yellow, once reddish yellow."

These birds seem to agree absolutely with a specimen from New Britain, collected by Dahl. The occurrence on New Ireland has not been recorded. The differences of *C. rubrigularis krakari* from Dampier Island or Krakar (Nov. Zool. 1915, p. 31) are well born out by this little series. *C. r. krakari* is a larger and more brilliant bird, wings 94-98: in *C. r. rubrigularis*, 87-92 mm., the red chin spot is larger in some of our New Britain specimens than in our one from Dahl, and in the figure before me, but as a rule still larger in *krakari*, and followed by a more distinct and extended yellow patch. The bill in *krakari* is also slightly larger. There is an error in the original description: instead of "outer primary," it should have been "outer tail-feather"! Moreover, the presence or absence of red at the base of the fourth outer rectrix is individual, and *not* more frequent in the birds from New Ireland, which I have no doubt whatever are the same as the New Britain ones.

I am of opinion that the genera *Charmosynopsis* and *Hypocharmosyna* should not be separated!

Loriculus tener Sel.

Cf. *Nov. Zool.* xxxi, p. 201.

♀ 2. ii. 1924. "Iris dark brown. Bill black. Feet yellowish tan." Doubtless the female differs from the adult male in having a bluish face and smaller red throat patch, while the young has a pale brown (not black) bill and no red throat spot. I predicted last year that this little Parrot would be found on New Ireland.

Trichoglossus haematodes aberrans Rehw.

Trichoglossus aberrans Reichenow, *Journl f. Orn.* 1918, p. 439. ("Kaiser Wilhelmsland!") Stresemann informs me that the specimen collected by Hoffmann is apparently from the south-easternmost part of Kaiser Wilhelmsland, near Morobe, just north of Hercules Bay. The type is indeed an aberrant specimen with yellowish upperside (like *flavicans*), but agrees otherwise with the so-called "*massena*" from the eastern part of British Papua, New Britain, and New Ireland. It has the narrow black edges to the red feathers of the underside.)

8 ♂♂, November to January, mostly through the moult, but in some specimens from various months some moult on tails, wings, and body.

These are the birds which inhabit S.E. Papua, south of the Kai Peninsula, and the southern islands of the Bismarek Archipelago which have hitherto been called *massena*. But I have now, through the kindness of Professor Menegaux, examined the type of *T. massena* Bp. It is obviously a bird from the New Hebrides, since one can easily distinguish the New Hebrides birds from those of New Caledonia. In the New Hebrides form, the nape is rich purplish brown, almost as in the S.E. Papuan form: it is a sort of dull greenish brown, with only a purplish tinge, in the New Caledonian form. Both these subspecies, however, differ from those of S.E. Papua in the red colour reaching farther down towards the abdomen, so that there is no conspicuous unspotted green zone, and the ground colour of the abdomen is lighter, more yellowish green. The S.E. Papuan form, on the other hand, has a more or less dark-green abdomen, and there is a wide unspotted area following the red breast. Though the type of *aberrans* is an aberrant specimen with more yellowish upperside, the

latter name must be used for this form. We have therefore the following East Papuan and Eastern Archipelago forms :

Trichoglossus haematodes massena : New Hebrides.

Trichoglossus haematodes deplanchei : New Caledonia.

Trichoglossus haematodes aberrans : S.E. Papua and southern islands of Bismarck Archipelago (New Britain and New Ireland).

Trichoglossus haematodes flavicans : northern islands of Bismarck Archipelago (New Hanover, Squally, St. Matthias, and Manus Islands. *J. schoedei* Rehw. is a synonym).

Trichoglossus haematodes micropteryx : Kai Peninsula (Sattelberg, etc. Exactly like *intermedius*, but generally smaller).

Trichoglossus haematodes intermedius : north coast of Papua from Astrolabe Bay westwards.

The first name of a member of this group is *Psittacus haematodes* Linnaeus. The author, however, abbreviated the name and wrote "*haematod*." It is therefore inconceivable to me how Finsch, in his great work on the Parrots, could emphatically say that Linné wrote *haematodus*, and how Mathews, in the *B. of Australia*, vi, p. 12, could state that Linnaeus wrote *haematodes* and not *haematodus* ! It is probable, of course, that Linné meant *haematodes*, the blood-stained, and not *haematodus* !

***Micropsitta bruijnii necopinata* subsp. nov.**

Micropsitta subsp. *M. bruijnii bruijnii* nominandae leviter similis, sed pileo fusco, in medio pallide brunneo, gastraco medio dilutiore, aurantio-rubro (nec coccineo !), subeaudalibus flavis (nec coccineis !), necnon rostro validiore distinguenda.

♂: This very distinct representative of *M. bruijnii* differs from *M. bruijnii bruijnii* in the colour of the pileum, which is deep brown, in the middle pale yellowish brown, somewhat variable (as in *M. b. bruijnii*) ; the wide band under the ear-coverts from bill to sides of neck and middle of underside orange-red, not scarlet, as in *M. b. bruijnii* ; under tail-coverts yellow, not scarlet ! Bill larger, thicker. " Iris brown. Bill (pale) ashy blue, or slaty blue, sometimes tip black. Feet ashy blue." Wings 68-71 mm. Moults on tails and body plumage in November and December.

Type : ♂ ad., S.W. New Ireland, 19.xii.1923. No. 8885. Albert F. Eichhorn coll.

(I may add that in fine adult males in fresh plumage the side of the head, including the ear-coverts, are scarlet, but (especially the latter) sometimes buffy-red or reddish buff.)

Mr. Eichhorn sent five adult males, shot in November, December, and February, but no females. It is interesting that *M. bruijnii*, hitherto not known to vary geographically, though spread from Buru and Ceram to easternmost New Guinea, has such a strikingly distinct subspecies on New Ireland. Not long ago the only form of *Micropsitta* ("*Nasiterna*") inhabiting the Bismarck Archipelago (cf. Reichenow, *Vög. d. Bismarckinseln*, p. 62) was *M. pusio*, found on New Britain and on Duke of York Islands, while it is now a fact that *M. bruijnii necopinata* and *M. finschii viridifrons* (described from New Hanover) inhabit New Ireland.

***Micropsitta finsehii viridifrons* (R. & H.).**

Cf. *Nor. Zool.* 1924, p. 202.

This Parrot, so far only known from New Hanover, does not seem to be rare on New Ireland, as Eichhorn sent 6 males and 2 females shot in S.W. New Ireland from November to January. They are in finer plumage than any of ours from New Hanover. They agree in every way with the New Hanover birds, except that the forehead is a shade brighter, but this is probably due to the freshness of the plumage. The wings measure, ♂ 63-66, ♀ 61, 63 mm.

***Lorius roratus solomonensis* (> *goodsoni* !).**

Cf. *Nor. Zool.* 1901, p. 82; 1924, pp. 123, 203 !

4 ♂, 2 ♀ from New Ireland are nearest to *L. r. solomonensis*, but show transitions to *goodsoni*. The wings of the males measure 247-257, females 253 mm. The other female is not fully adult. The bills are mostly not bigger than in *solomonensis*, but in one male nearly as large as in *goodsoni*, the culmen measuring 40 mm. from cere to tip with compass (in *goodsoni* 43.5-45 mm.). The green of the head of the males is not as dark grass-green as in *goodsoni*, but is the same as in *solomonensis*.

***Alcyone websteri* Hart.**

Cf. *Nor. Zool.* 1924, p. 204.

2 ♂ ad., S.W. New Ireland, 12.ii., 21.ii.1924.

As I predicted i.e. the species is also found in New Ireland. We have thus a distribution from Rook Island, New Britain, New Ireland to New Hanover. Wings 90, 91 mm. The first specimen moults tail and body plumage.

***Ceyx lepida mulcata* Rothsch. & Hart.**

Ceyx solitaria mulcata Rothschild & Hartert, *Bull. B.O. Club*, xxxv, p. 24 (1914—New Hanover).

We described this little Kingfisher from New Hanover from some spirit specimens collected by Webster, but unfortunately Eichhorn did not obtain specimens. He has, however, sent a pair (at least sexed as a pair) from New Ireland. In the male both mandibles are black (except the utmost tip, which is light brown), in the female the lower mandible has obviously been partially brown, though this is not mentioned on the label. The lores are brownish orange. The back is not entirely purplish blue, but has some light greenish blue feathers along the middle. The throat is light sulphur yellow, the rest of the underside orange. Wings ♂ 89, ♀ 93, bill from end of frontal feathering ♂ 38, ♀ 30 mm. The iris is described as brown, the feet as yellow.

This subspecies is extremely closely allied to *C. l. nigromaxilla*—apparently only known from two females from Guadalcanar—but the bill is slenderer, the under mandible not dirty red, the throat a shade yellower, breast and sides of breast not so chestnut, but more suffused with yellow.

***Halcyon tristrami novaehiberniae* subsp. nov.**

Differs from *H. tristrami*, of New Britain, in having shorter wings and smaller bill, and having the underside, lores, and collar white, with or without a faint buff tinge on lores, collar, and sometimes on the underside; in the New Britain

tristrami the underside from chest to under tail-coverts is usually rich rust colour, in two cases nearly white, in nine (out of 22 in Berlin, London, Tring) intermediate. Upside of *norachiberniae* usually darker. Wing 102–107 (in *tristrami tristrami* 108–117), bill from end of frontal feathering on the side, 35–39 (in *tristr. tristrami* 43–45) mm. Type: ♂ ad., S.W. New Ireland, 24. xii. 1923. A. F. Eichhorn coll. No. 8906.

Eichhorn sent four adults and five younger specimens with dusky edges to the feathers of the chest, and one still with buff edges to the upper wing-coverts. The iris of all is described as dark brown, the feet as blackish. The bills are black, but about the basal half of the lower mandibles are whitish.

On re-examining the Kingfishers of this group in the British Museum and at Tring, I find that the Fauro specimens (Fauro is in the Shortland group, Solomon Islands) are indistinguishable from the New Britain birds, and possibly our *H. tristrami alberti* from the Solomon Islands will be found to be inseparable from *H. t. tristrami* (which varies more than we knew formerly), but the wings of our good series measure only 102–111, mostly 104–108 mm.

Probably *H. t. tristrami* is the representative of *H. chloris*, and the occurrence of the bird called *H. solomonis*¹ together with *tristrami* is probably a myth. The specimens in the British Museum called "*salomonis*" are not well labelled, and partially belong to other forms. There is one labelled by Ramsay as "one of the types," but it has no rust colour on the chest; the bird from Suva, Fiji Islands, collected by Nicoll and called *solomonis*, must belong to *vitiensis*; the specimen labelled "New Ireland" by P. L. Selater is of the same preparation as one labelled "Solomon Islands" by Sharpe, and I have no doubt that both are from the same collection, and probably from the Solomon Islands (? Ugi). Specimens from Api, New Hebrides, and from Tongatabu do not belong to *solomonis*, as they have a large white or rusty nape patch and a superciliary line!

In the *Cat. B. Brit. Mus.* xvii and in the Handlist the forms of the genus *Halcyon* were not well understood and very misleadingly arranged, also the quotations were not always carefully revised.

Of *H. salomonis* the first full description was not quoted in *Cat. B.* xvii, p. 280, and from the fact that one of the specimens in the British Museum was labelled "cotype" by Ramsay, Lord Rothschild and I, when describing *H. perplexa*, fell into the same error as our old friend Sharpe, i.e. that we did not grasp the fact that these Kingfishers varied very much; in fact, they vary from a rufous rust coloured underside, collar, and lores to a form in which these parts are white, and the upperside is often more blue, often more green. Thus it comes out that *H. perplexa* is a synonym of *H. salomonis* in the original sense and in that of Sharpe and ourselves when naming *perplexa*: it is also evident to me that the birds from the Fiji Islands, which have been called (*Cat. B. Brit. Mus.* xvii, pp. 272 and 281—separated by four other species and a number of subspecies!) *cassini* and *surensis*, and which should be called *vitiensis*, are the same; further, *pealii* and *tutuila*, both from Tutuila Island, Samoan group, must be the same!

¹ *H. solomonis* is the original spelling, and the first and very full description is not, as quoted *Cat. B.* xvii, p. 280, 1882, *Proc. Linn. Soc. N.S. Wales*, vii, p. 21, but vol. vi, p. 833. Unfortunately we had apparently not read the first description when describing *H. perplexa*, but there is no doubt that *perplexa* is a synonym of *solomonis* (in 1883, vol. vii, spelt *salomonis*!). Moreover, it seems that this form, which lacks the white nape patch so conspicuous in *chloris* and *tristrami*, varies very much, and the birds without and with rufous rust colour seem to be the same!

There was no reason for Finsch and Hartlaub's rejection of Peale's name *vitiensis* for the Fiji birds, but Sharpe added to the confusion by describing *suvensis* from Fiji—unless, indeed, there are small differences between the birds from the various islands in the Fiji group, in which case it would be necessary to see the type of *cassini*, as only the Fiji group, not a special island, has been stated, but probably these islands have the same form of *Halcyon*. Townsend and Wetmore (*Bull. Mus.* lxiii, p. 199, 1919) quite correctly reinstated Peale's name *vitiensis* and treated it as a subspecies of *sacra*, which is doubtless correct, as they differ only in being smaller, and the black band on the nape is generally (not always!) less developed or absent.

A further study will perhaps prove that *sacra* and all the forms mentioned above are only subspecies of *chloris*! It is evident that on one island only one form of this group is found, though the various islands, even some not very distant ones, have different forms.

***Cacomantis variolosus macrocerus* Stres.**

Cacomantis sepulchralis macrocerus Stresemann, *Anz. Orn. Ges. Bayern*, No. 5, p. 37 (1921—New Britain, probably also Duke of York and New Ireland).

♂♂ ad., New Ireland, 16.ix.1923, 2.ii.1924. The first has the whole abdomen up to the breast cinnamon-rufous, the other has only a rufous wash, being nearly all grey on the abdomen. Wings 118 and ? 116 (moulting); tails 122, 128 mm.

♀ juv., 21.ii.1924. This bird has on the upperside two different kinds of feathers, most of them having pale buff, some darker rufous, almost chestnut bars; the latter are coming in fresh—therefore, the young moults into a (darker) juvenile plumage before acquiring the unbarred adult garb!

***Centropus violaceus* Quoy et Gaim.**

Centropus violaceus Quoy et Gaimard, *Voy. Astrolabe*, Zool. i, p. 299 (1830—South New Ireland); *Atlas Voy. Astrolabe*, Zool. pl. xix.

Of this large rare bird we received an adult male, shot in S.W. New Ireland, 17.xi.1923. "Iris dark red. Bill black. Feet pale slaty horn colour."

We had already a bad and not adult specimen, shot on New Ireland by Curtis.

In the adult the fresh feathers are dark violet and have a glossy violet border, but older, more or less worn feathers of the upperside are dark blue black with a more glossy border. There is moult on tail and body feathers. Wing 290, tail 410 mm.

***Centropus ateralbus* Less.**

Centropus ateralbus Lesson, *Férussac's Bull. Sci. Nat.* viii, p. 113 (1826—New Ireland).

A series of eight, four of which are fully adult. As well-known, there is in this species a great variability of the extent of the black colour, especially on the head. As a rule there is black on the forehead, varying from a few black feathers to a black forehead extending far beyond the eyes, but among our twenty skins is none quite without black on the forehead. As a rule the neck all round is white, but sometimes there are some black feathers along the back of the neck, sometimes the whole upperside of the neck is black, connecting the back forehead and crown

with the back. But this variation is not individual, but due to age, the birds with the greater amount of black being juvenile : this is proved by the fact that they also have the primary coverts (which are white in fully adult specimens) black, that they have some brown or whitish horn colour on the bill (which is entirely black in the adults), that they show some brown juvenile feathers on the wings, or along the breast, or brown shafts to the feathers of the crown, and that, as far as our skins are fully labelled (like all of Meek and Eichhorn's), the iris (which is red in the adults) is brown, or in one case "blue-grey." Possibly the greater amount of the juvenile is exceptionally also found in adults, but we have no such examples.

As stated Nov. Zool. 1914, p. 211, specimens from Rook Island have, as a rule, larger bills, and I will return to this question if a series from New Britain comes to hand.

***Collocalia francica reichenowi* or *eichhorni*.**

Collocalia francica reichenowi Stresemann, *Nor. Zool.* 1912, p. 359 (Solomon Islands, New Ireland, New Britain).

Collocalia francica eichhorni Hartert, *Nor. Zool.* 1924, p. 269 (St. Matthias Island).

1 ♂. 2 ♀ were shot in S.W. New Ireland in January 1924. In Nov. Zool. 1924 I said that they are "perfectly similar" to the St. Matthias specimens, but I cannot help noticing now that the rumps are not quite so white, but more brownish. The underside of one is as brownish as that of the type of *reichenowi* (from Guadalecanar), the other two have it as light as *C. f. eichhorni*. When describing the latter, it seemed to me to be quite distinct, but it may be that *eichhorni* and *reichenowi* will not be separable. I hope to receive specimens from New Britain, which may possibly enable me to decide this question. Wings 104 (not 102) and 107 mm.

***Collocalia esculenta esculenta* (L.).**

I cannot separate the two specimens shot on the S.W. coast of New Ireland in January from other apparently typical *esculenta*. Wings 101 and 105, both marked as females. See remarks Nov. Zool. 1924, p. 206.

***Pitta macklotii novaehibernicae* Rams.**

Pitta novaehibernicae Ramsay, *Proc. Linn. Soc. N.S. Wales*, iii, p. 73 (1878—New Ireland).

Cf. also *Nor. Zool.* 1914, p. 214; 1924, p. 207!

A fine series of eight adult birds, collected January, February, and March. Wings 92–101 mm.—all sexed as males, but probably the small specimens are females. Three specimens have a small white spot of varying size on the lesser upper wing-coverts.

P. m. gazellae Neum. differs at a glance by its black lower throat (which is brownish red in *novaehibernicae*), and its black band separating the blue of the chest from the red of the abdomen, this being very narrow or absent in *novaehibernicae*.

The New Hanover specimens do not differ from those of New Ireland. It is true that in our series from New Hanover the red nape is lighter than in nearly all New Ireland specimens, but this seems to be due to the worn state of the New Hanover birds.

This is another instance of the difference between the New Britain and New Ireland fauna.

Monarcha alecto chalybeocephalus (Garnot).

Muscicapa chalybeocephalus Garnot, *Voy. Coquille* i. 2, p. 589 (1829—Port Praslin, S. New Ireland). *Nov. Zool.* 1924, p. 208.

A series of males and females, December and February. Females with crown metallic blue-black, forehead and lores glossless, back light chestnut, underside white. Wings ♂ 88-91, ♀ 84-86 mm.

Monarcha hebetior eichhorni Hart.

Monarcha hebetior eichhorni Hartert, *Nov. Zool.* 1924, p. 271 (New Hanover).

We received four males and three females, collected November to February. The males agree with the two males from New Hanover, their wings measuring 82-86, the tails 69-71 (in the two New Hanover males 69 and 74) mm. The females differ very much from those of *M. hebetior hebetior*—from New Hanover no females are known. The crown and sides of head are dark ash-grey, rest of upperside brownish chestnut, much less bright than in the female of *M. hebetior hebetior* (Nov. Zool. 1924, p. 270), and very much darker than in that of *M. alecto chalybeocephalus*. Throat and breast ash-grey, becoming gradually whitish on the middle of the abdomen, flanks rusty grey-brown. Iris dark brown, bill black, feet dark slate. Wings 75, 75.5 mm. This form, *eichhorni*, differs from *M. hebetior hebetior* not only in the longer wing and differently coloured female, but specially also in the strikingly longer tail! While the tails of male *M. heb. hebetior* measure 60-62, those of male *eichhorni* are 70-74 mm., ♀ of *hebetior* 57 and 60, of *eichhorni* 66 and 67 mm.—*M. hebetior eichhorni* (or a closely allied subspecies¹) occurs also on New Britain, as there is a female collected by Kubary, 20.v. 1886, in the Tring Museum, and another from New Britain, ex Th. Kleinschmidt, in the British Museum. I never knew what to make of our specimen, and the one in the British Museum I found among the *chalybeocephalus*.

Moulting specimens were shot in January and February.

Monarcha verticalis Sel.

Cf. *Nov. Zool.* 1914, p. 214; 1924, p. 207.

A series of black and white adults and two young. The latter are on the upperside greyish brown, forehead yellowish brown, underside rusty buff, middle of abdomen white. If correctly sexed the adult males and females are alike, and even the more grey rump mentioned as being peculiar to the female is not a sure character to distinguish the latter. The width of the white vertical cross-band and the extent of the black on the hind-neck varies. Reichenow quotes *M. verticalis* only from New Britain and Duke of York Islands, but we have it now from Rook Island, New Hanover, and New Ireland.

Monarcha chrysomela chrysomela (Less.).

Muscicapa chrysomela Lesson, *Voy. Coquille*, Zool. i. 1, p. 344 (1828—name for pl. xviii, fig. 2, shot by Lesson at Praslin Harbour, South New Ireland).

The males are even a shade more deep orange than those from New Hanover (Nov. Zool. 1924, p. 207), but this is probably due to the freshness of specimens and plumage. Two of the females have the bill slaty blue with black tip and are

¹ With paler throat in the female ?

adult, two have the bill blackish with the basal two-thirds dull yellow, the latter being immature, the edges of the secondaries being more rufous.

Eichhorn sent six males and four females. Two (November and December) males are in full moult, the others in quite fresh plumage.

***Rhipidura tricolor melaleuca* (Quoy & Gaimard).**

Muscipapa melaleuca Quoy et Gaimard, *Voy. Astrolabe*, Zool. i, p. 180 (1830—New Ireland). Cf. *Nov. Zool.* 1914, p. 215.

Series December to March.

Wings of adult males 105, 107–110, females 97 and 99 mm.

***Rhipidura rufiventris setosa* (Quoy & Gaim.).**

Muscipeta setosa Quoy et Gaimard, *Voy. Astrolabe*, Zool. i, p. 181, pl. iv, fig. 4 (1830—Carteret Harbour, South New Ireland).

Rhipidura rufiventris albertorum Hartert, *Nov. Zool.* 1924, p. 207 (New Hanover ?).

8 ♂ November and December.

For about half a century ornithologists have been in error about the true *Rh. setosa*! Sharpe, *Cat. B. Brit. Mus.* iv, p. 329, 1879, and Salvadori, *Orn. Pap.* ii, p. 61, 1881, united *Rh. setosa* and *gularis*, and described the abdomen as ochraceous buff or rufescent. The examinations of specimens from the Duke of York Islands and from New Britain led us all to believe that they were the same as those from New Ireland, and the locality “Bismarek Archipel” led to continue the error. There are now, however, four forms, *niveiventris* from Manus, *mussani* from St. Matthias Island, *setosa* from New Ireland and New Hanover, and *finschii* from Duke of York and New Britain! The general impression that *setosa* has a buff abdomen led me to describe the New Hanover form as *albertorum*, while it actually agrees with topotypical *setosa* in having the middle of the abdomen white! Quoy and Gaimard clearly describe the New Ireland bird as “abdomine caudaeque extremitate albidis” and “les sourcils et le ventre sont blancs,” and fig. 4 on plate iv shows the abdomen white. As all our skins from S.W. New Ireland have the abdomen white, it is clear that the New Ireland form must be called *setosa*, and as specimens from New Hanover are exactly like the latter, *albertorum* is a synonym of *setosa*. On the other hand, specimens from New Britain and the Duke of York group must be called *finschii*! Salvadori, *Orn. Pap.* iii, p. 532 (1882), separated the New Britain birds from comparison with specimens of *gularis* from New Guinea, which he called *setosa*. As it often happens, a form described under wrong premises must nevertheless retain the name given to it at the time. *Rh. ruf. finschii* differs from *Rh. ruf. gularis* in the paler colour of the upperside and the wide white outer edges to the inner secondaries. In *setosa* these edges are as pure white as in *finschii*, but less wide!

In November and December several specimens moulting.

***Rhipidura dahl* Rehw.**

Rhipidura dahl Reichenow, *Orn. Monatsber.* 1897, p. 7 (Rahum, New Britain); id. *Mitt. Zool. Samml. Berlin*, i, p. 88, pl. ii, fig. 2 (1899).

Five males and one female of this rare bird (only known from one female in the Berlin Museum, collected by Dr. Dahl) were collected in S.W. New Ireland in November, December, January, and February.

The adult male differs from the female in being larger, in having the top of the head and especially the ear-coverts darker (dark brown), the throat darker, not greyish-brownish-white, but dark brownish-grey; the white short superciliary line and the white line on both sides of the throat are the same. Our female has only the two central rectrices with longitudinal blackish patches before the tip, in two of our males we find the same, the others have these blackish patches on all rectrices, except the outer pair, and in one they are also, though very small, developed on the outermost pair. "Iris brown, dark brown. Bill black, more or less whitish at base. Feet pale slate, pale bluish grey, smoky horn colour." Wings ♂ 67-69, ♀ 63 mm.

Heinroth, when describing his *Rh. matthiae*, said it had much similarity with *Rh. dahli*, but the latter differs strikingly in the large white patch on the forehead, black chest and absence of black on the rectrices. The latter is well developed in *Rh. dedemi* of Ceram, which, however, has a white throat, black and white spotted breast, and stumper bill, while the *rufifrons* group with its numerous subspecies has a rufous forehead, white throat (except *saipanensis*), and whitish tips to the rectrices (except *superflua* and *teysmanni*); though they seem to be their nearest allies, it would be hazardous and perhaps confusing to treat *dedemi*, *dahli*, and *matthiae* as subspecies of the *rufifrons* group.

It is, of course, not impossible that a series of males from New Britain may show slight differences from the New Ireland form.

Lalage karu karu (Less.).

Lanius Karu Lesson, *Voy. Coquille*, Zool. Atlas, pl. xii (1826—Praslin Harbour, S. New Ireland); id., text, i, 1, p. 633 (1828—Praslin).

6 ♂, 2 ♀ December and February. "Iris dark brown. Bill black. Feet dark slate colour." Wings ♂ 99-101 mm.

These birds, like the *Rhipidura rufiventris setosa*, are very valuable, because they are topotypical. Hitherto all authors took specimens from Duke of York Islands and New Britain as typical, but they differ quite obviously! The latter are much more rufous underneath, the whole abdomen of the males being rufous (sometimes paler, usually fairly rich), often quite or mostly unbarred, while in the true *karu* the whole abdomen is distinctly barred, and rufous only in the middle. I therefore separated *Lalage karu albidior* after comparing it with specimens from the Duke of York Islands, New Britain (and Rook Island), which I took—erroneously—for the typical *karu*! As it is, *albidior*, at least in the males, is, on the underside, still lighter than *karu*; the white of the throat extends in all our four males to the jugulum, the barring on the breast and abdomen is less distinct.

The form inhabiting New Britain, the Duke of York Islands, and Rook Island, with its rufescent underside (except throat and jugulum, and even the latter often tinged with rufous), has no name and I call it therefore:

Lalage karu falsa subsp. nov.

Type: ♂ ad., Duke of York Islands, 4.xi.1880. Th. Kleinschmidt coll. (No. 9837 of the Godeffroy Museum, Hamburg). In Tring Museum.

The females of *L. karu falsa* differ from *L. karu karu* and *albidior* in the same way as the males, but are of course heavier barred than the males. While the males of *L. k. karu* and *albidior* are distinct, the females of the latter can hardly be distinguished.

***Edolisoma morio remotum* Sharpe.**

Edolisoma remotum Sharpe, *Mitt. Zool. Mus. Dresden*, i, p. 369 (1878—New Hanover).

1 ♂ ad., 3 ♀ ad., 1 ♀ juv., 1 ♂ juv., New Ireland, January to March. The ♂ is exactly like those from New Hanover. The females are paler on the underside, but one is really not separable from one of New Hanover, and the two palest birds are moulting, containing older paler and new darker feathers on the underside. Taking into consideration the great variability in the females of several other forms of *Edolisoma*, we cannot venture to separate the New Ireland birds from the New Hanover ones, which are topotypical.

Young birds are, of course, recognisable by their light bills, which are brown, greater part of under mandible light horn colour.

***Graucalus lineatus sublineatus* Sel.**

Graucalus sublineatus Sclater, *Proc. Zool. Soc. London*, 1879, p. 448 (New Ireland!).

(*G. lineatus* of Australia has the abdomen barred in both sexes, while in *sublineatus*, *axillaris*, *maforensis*, *pusillus*, *nigrifrons*, and *ombriosus* the females only have a barred underside, the males not. Stresemann, in *Archiv f. Naturg.* lxxxix, A, Heft 8, p. 18, believes that the male of *sublineatus* is also barred on the abdomen; our male shows only a few remains of bars, as they are also seen in some *ombriosus*, while others are quite unbarred; I believe that these bars will not always be present! Rothschild and I called the forms from the Solomon Islands *G. pusillus pusillus*, *pusillus nigrifrons*, and *pusillus ombriosus*, but I agree with Stresemann that they can be looked upon as subspecies of *lineatus*, notwithstanding the sexual dimorphism. The males of *G. l. ombriosus* and *sublineatus* are not distinguishable, except by size, the former being smaller than *sublineatus*; in the females the dark bars on the abdomen are blacker in *ombriosus*. I disagree, of course, with Stresemann, i.e., that *Coracina* Vieill. can be rejected on account of *Coracinus* Pall., but the names *Graucalus* and *Coracina* being both published in 1816, there is no sufficient reason to replace the familiar *Graucalus*!).

Eichhorn sent a male and a female shot on January 23. The male is almost uniform on the abdomen, but there are some faint indications of whitish bars and some distinct ones on the under tail-coverts. The female is barred like that of *ombriosus*, but the blackish bars are not so deep black. Wing of male 141.5, of female 138 mm. The iris is chrome yellow, bill and feet black.

***Graucalus papuensis sclateri* Salvad.**

Graucalus sclateri Salvadori, *Ann. Mus. Civ. Genova*, 1878, p. 325 (New Ireland).

Series January to March.

Most specimens show some moult. A January bird has still most of its juvenile tail feathers, a March female has only half a tail, all rectrices juvenile.

***Pachycephala pectoralis finschi* Rehw.**

Cf. Rehw., *Mitt. Zool. Samml. Berlin*, i, 3, p. 92; Dahl, *ibid.* p. 202; Rothschild & Hartert, *Nov. Zool.* 1903, pp. 101, 102; 1914, p. 216; 1924, p. 209.

5 ♂, 4 ♀, all collected in November. 3 ♂, 1 ♀ moulting wings and tail. This seems to be the resident, breeding *Pachycephala* of New Hanover, New Ireland, and New Britain, while *P. p. dahl*i Rehw. inhabits the small groups of Duke of

York, Credner, Pipon, Palakura, Nakung, but has also been observed near the sea-shore (but apparently not inland ?) on New Britain (Gazelle Peninsula), and at Kaeviang on N. New Ireland. It *seems*, therefore, that both are representative forms of *pectoralis*, though occasionally *dahli* is found in the same area as *finschi*.

The bills of *finschi* are rather variable in size on New Hanover as well as on New Ireland.

***Philemon eichhorni* Rothsch. & Hart.**

Philemon eichhorni Rothschild & Hartert, *Bull. B.O. Club*, xiv, p. 8 (1924—S.W. coast of New Ireland).

This *Philemon* is a quite distinct species. Its upperside is sepia-brown, the crown less dark, and sometimes with a rusty tinge, behind the crown is a white ring, formed by the white tips to the feathers. Tips of rectrices white. Underside paler brown, with a greyish white tip, lower abdomen uniform brown, throat and foreneck white (somewhat silvery) with bases and shaft lines deep brown. Under tail-coverts widely edged with white. "Bill black, iris dark brown, feet slaty blue." Wings ♂ 147–150, ♀ 135–139, tail ♂ 126–132, culmen 23–46 mm.

Eichhorn sent nine specimens from the hills 2,500 feet high in S.W. New Ireland, shot December, January, and February. Old birds moulting in December, specimens with remains of juvenile plumage (white edges on upperside, yellow wash on jugulum) in January.

***Myzomela pulchella* Salvad.**

Myzomela pulchella Salvadori, *Orn. Pap. Aggiunte*, iii, p. 231 (1891—New Ireland !); Reichenow *Mitt. Zool. Samml. Museum, Berlin*, i, 3, p. 101 (1899).

It seems that only the type in the British Museum is known in literature. Neither Brown, Heinroth, nor other collectors came across this bird, and Th. Kleinschmidt did not collect many. A. F. Eichhorn sent one "male" from S.W. New Ireland, shot 22.i.1924. He describes the iris as dark brown, bill as black, feet as slate colour. The wing measures only 62 mm.

***Myzomela cruentata coccinea* Rams.**

Cf. *Nov. Zool.* 1924, p. 210 !

Six full-plumaged adult "males," 2 juveniles marked ♀, two marked ♂, which seems correct, as two are larger. The adults are all of the same size, wings 58–60 mm.

***Zosterops fuscicapilla hypoxantha* Salvad.**

Cf. *Nov. Zool.* 1924, p. 211.

Seven specimens, January and February, juvenile or moulting. The young birds have the base of the under-mandible extensively light, "horn colour" according to the labels, flesh colour in dry skins.

These specimens do not have the top and sides of head so deep and extensively black-brown as our New Hanover specimens, but this is probably due to their being moulting or juvenile; as *hypoxantha* was described from New Britain, and only specimens collected by Kleinschmidt, Richards, and Dahl, in Hamburg, Berlin, and Liverpool are known, all from New Britain, a series from the latter

island must be awaited to decide finally if more than one form of it can be separated on the islands from New Britain to New Hanover.

***Dicaeum eximium eximium* Sel.**

Dicaeum eximium Selater, *Proc. Zool. Soc. London*, 1877, p. 102, pl. xiv (New Ireland!).

Though we already received a series from New Hanover, we were delighted to get a topotypical series from S.W. New Ireland. They agree entirely with the New Hanover birds. Wings ♂ 50.5–53 mm., ♀ 47–51 mm.

***Cinnyris sericeus corinna* (Salvad.).**

Cf. *Nov. Zool.* 1924, p. 212.

First described from Duke of York Island.

Both sexes from November to February. There is the same variation in the colour of the throat, which is usually steel-blue, sometimes with a distinct purplish tinge. Most January specimens show moult on wings and tails, also on the body plumage.

***Cinnyris jugularis flavigastra* (Gould).**

Nectarinia flavigastra Gould, *Proc. Zool. Soc. London*, 1843, p. 104 (New Ireland!).

4 ♂, 3 ♀ end of February and early in March. This topotypical series confirms that the birds from New Ireland and New Hanover to St. Matthias and Manus, as well as from Rook and Dampier Islands, are indistinguishable.

***Cisticola exilis* (subsp. ?).**

3 ad. ♂ with unstriped head, one with partially striped head (moult not seen), 1 ♀ ad., 1 ♂ juv., February and March. Cf. *Nov. Zool.* 1924, p. 212!

***Megalurus macrurus interscapularis* Sel.**

[*Sphenocacus macrurus* Salvadori, *Ann. Mus. Civ. Genova*, ix, sp. 35 (1876—Naiabui, S.E. Papua).]
Megalurus interscapularis Selater, *Proc. Zool. Soc. London*, 1880, p. 65, pl. vi (New Britain).

6 ♂♀ ad., 2 juv., all February 23–29. "Iris brown. Upper mandible brown, lower light horn colour. Feet light brownish horn colour." Wings ♂ 73–75, ♀ 78. 79 mm. In the young birds the crown is not rufous, but of the colour of the back, and the underside pale yellow.

The form *interscapularis* from the Bismarck Archipelago is easily distinguishable from the typical *macrurus* of S.E. Papua; the latter has the crown deeper chestnut, the edges to the feathers of the upperside more rufescent (much more greyish in *interscapularis*), wings, rump, and tails more rufous brown.

A series from the Kumusi River, in N.E. British Papua, south of the former German boundary, and one from the Upper Mambare River, is clearly intermediate between *M. macrurus macrurus* and *interscapularis*; they are clearly less rufous than the specimens from the southern slopes of the Owen Stanley Mountains and elsewhere in S.E. Papua, and hardly separable from *interscapularis*. Unfortunately we are not yet sufficiently acquainted with the seasonal changes of these birds. The Australian form *alisteri* (possibly separable into more than one subspecies) is clearly a subspecies of *macrurus*, as already pointed out by Stresemann.

(We have also a skin from the Rawlinson Mountains, inland of Huongolf, from 1,450 m. elevation, collected by the Rev. Keysser, 2.ix.1911, which seems to agree with the Owen Stanley birds.)

(We also have a specimen shot by Webster at Expedition Bay, New Hanover, 15.iii.1897, sent in spirits and skinned here. It seems to agree with New Ireland and New Britain birds, but the bill seems to be larger. Unfortunately Eichhorn did not get this species on New Hanover.)

***Erythrura trichroa goodfellowi* Grant.**

Erythrura trichroa goodfellowi Ogilvie-Grant, *Bull. B.O. Club*, xxix, p. 29 (1911—Moroka Mts., British New Guinea).

A single male was shot 21.xii.1923. It seems to agree with *E. t. goodfellowi*, which we have from S.E. Papua, Vulean, Dampier, and Sudest Islands, the blue of the forehead being less in extent and somewhat darker than in *E. t. eichhorni* (Nov. Zool. 1924, p. 274) from St. Matthias Island. The bill is somewhat thicker than in our *goodfellowi*, but not much, and there is some variation in this respect. No *Erythrura* has ever before been found on New Ireland. Wing 63 mm.

***Munia forbesi* Schl.**

Munia forbesi Sclater, *Proc. Zool. Soc. London*, 1879, p. 449, pl. xxxviii (South New Ireland).

This *Munia* is only known from New Ireland. The type was got at Topaia in South New Ireland, and after that, apparently, only Dr. Heinroth came across it in the utmost north of the island. Eichhorn sent eleven skins, all obtained in the last week in February. The colour of the upperside is somewhat variable, being lighter and more yellowish in worn plumage, darker, more chestnut in a fresh state. In one specimen there are greyish fringes to the feathers of the back. "Iris dark brown. Bill slaty black. Feet slaty blue." Wings 51–53 mm.

A young male is much paler above and below, and the crown is striped dark brown and blackish.

(*Munia hunsteini* (Finsch), only known from the utmost north of New Ireland, where Finsch, and more recently Heinroth, collected it, has not been received.)

***Aplonis cantoroides cantoroides* (Gray).**

Calornis cantoroides Gray, *Proc. Zool. Soc. London*, 1861, p. 431 (Mysol).

4 ♂, ♀ ad., December, January, and March.

"Iris yellowish red, bill and feet black."

***Aplonis metallica nitida* (Gray).**

Calornis nitida Gray, *Proc. Zool. Soc. London*, 1858, p. 181 (New Ireland). Cf. *Nor. Zool.* 1924, p. 212.

Series from December to February. Most December specimens moulting. The specimens with indistinct or absent purple patch on the interscapulum are females.

***Mino dumontii kreffti* (Schl.).**

Cf. *Nor. Zool.* 1924, p. 212.

A series November to January. Some December birds are moulting.

The bases of the feathers of the hind-neck are sometimes pure white, some-

times dark grey to the base, or at least nearly so. What is the reason for this striking variation? Are the birds with grey bases to the feathers females? The labels on our skins do not bear this out.

Artamus insignis Sl.

Artamus insignis Selater, *Proc. Zool. Soc. London*, 1877, p. 101, pl. xv (New Ireland!).

January to March. "Iris dark brown. Bill chalky blue, utmost tip blackish. Feet pale chalky blue, pale slaty blue." Wings 144-149 mm. A younger bird has white tips to quills and rectrices.

P. L. Selater, when describing *A. insignis*, called already attention to the fact that *A. monachus* from Celebes was the nearest ally—perhaps in modern view only subspecies.

Dicranostreptus megarhynchus (Quoy et Gaimard).

Edolius megarhynchus Quoy et Gaimard, *Voy. Astrolabe*, Zool. i, p. 184, pl. vi (1830—"Dorey, New Guinea," errore! The type must have come from New Ireland!).

This remarkable species, with its long deeply forked tail and elongated outer rectrices twisted completely round near the tip, is only known from New Ireland. It was first erroneously stated to have come from Dorey in the Beran Peninsula. Then Gray quoted it even more erroneously as from the Key Islands (in such tabular lists errors are often made by the writer or by the printer), an error repeated without criticism by Finsch; finally Selater quoted it to have come from the Solomon Islands, in a list of birds sent in spirits by the captain of the yacht *Chance*, during a voyage to the Solomon Islands. It is, however, certain that some of these were picked up on other islands than any Solomon archipelago ones, none being specially labelled, and a vague locality like "Solomon Islands" is at once open to doubt. In any case, New Ireland is the only island whence *Dicranostreptus megarhynchus* is known. It must be fairly common in the southern parts of this island. We received long ago eight bad skins from there by Curtis, and now Eichhorn sent a fine series, collected in November, December, and February. The iris is marked as dark red and burnt red, bill and feet as black. Wings in adult males 183-187, in females 171-179 mm. Longest tails in adult males 380 and 400 mm., in females shorter (330, 360). Tail moult in February.

[In the list of birds appears still a "*Dicrurus comice*," *Edolius comice* Lesson, *Voy. Coquille*, Zool. i, p. 344, said to have been shot at Praslin Harbour, South New Ireland. This should be eliminated from the Papuan fauna! It is supposed to have been grey, with the underside paler, and to be only a "variety" of the Javan *D. cineraceus*! As this group is not known to occur in the Papuan region, I have no doubt whatever that it was erroneously believed to have been shot on New Ireland. The type was lost in a shipwreck near the Cape of Good Hope.]

Corvus coronoides insularis Heinr.

Cf. *Nor. Zool.* 1903, p. 90; 1914, p. 218; 1924, p. 218.

A young male, 4.iii.1924,



1. *DOMICELLA ALBIDINUCHA* R.&H.
2. *MICROPSITTIA MEEKI* R.&H.

A NEW FORM OF CHUKAR PARTRIDGE.

Alectoris graeca kleini subsp. nov.

By ERNST HARTERT.

IN 1917 I named the Chukar inhabiting Cyprus *Alectoris graeca cypriotes*. In 1921 I stated that this form is much wider spread than I knew in 1917, ranging from Crete, Rhodes, and Cyprus to the Greek Islands (Sporades, Cyclades), through Asia Minor and to Syria and the mountains of Judaea in Palestine. This I must again restrict, as I have received from the Natural History Museum of the King of the Bulgars, through the kindness of Dr. E. Klein in Sofia, two specimens from Dede Agach and another from Harmanli. With these agree specimens from Skyros (Northern Cyclades) and "Bosphorus" (probably the European side). All these are darker on the upperside, being browner, and especially the rump and upper tail-coverts are less greyish, more olivaceous; the upperside thus becomes more uniform, while in true *cypriotes* there is a strong contrast, especially in fresh plumage, between the greyish neck and rump and the vinous-brown back. The throat of the European specimens is also darker brown. I have examined specimens from Skyros, Dede Agach (Dedeagatsch), Harmanli, and "Bosphorus." I propose for this form the name *Alectoris graeca kleini*, after Dr. E. Klein of Sofia. Type ♀ ad., Island of Skyros, Aegaeon Sea, 14.x.1894. Strimeneas coll. (Tring Museum).

This new form is surprisingly near the Himalayan *A. graeca chukar*, but in the latter the rump is more greyish (though not so grey as in *cypriotes*), the throat not so brownish.

A specimen from Eregli, north of the Bulghar Dag, in south-eastern Asia Minor, is not so dark as the specimens from Bulgaria, Dede Agach, and Skyros, and hardly distinguishable from Cyprus examples, but rump and upper tail-coverts are more sandy; of those collected by Meinertzhagen, twenty miles east of Damascus, on a stretch of dark soil in the desert, one is like true *cypriotes*, two others more like the Eregli one, on the rump and upper tail-coverts.

Those collected by Meinertzhagen in the Judaeon Hills, near Jericho, are quite pale like Sinai ones, *A. g. sinaica*. Two from Engeddi are also very pale, but not quite so light-coloured as the latter. About these birds see Meinertzhagen, *Ibis*, 1922, pp. 69, 70. As the author said, the two Engeddi birds are intermediate between those from Cyprus and *sinaica*, but nearer *sinaica* than *cypriotes*.

TYPES OF BIRDS IN THE TRING MUSEUM.

BY ERNST HARTERT, PH.D.

B. Types in the General Collection.¹

INDICATORIDAE.

1303. *Indicator minor senegalensis* Neum. = *Indicator minor senegalensis*.*Indicator minor senegalensis* Neumann, *Bull. B.O. Club*, xxi, p. 43 (1908—"Senegambia").

Type: ♂ ad., Thiès, Senegal Colony, 9.v.1907. F. W. Riggenbach coll. No. 662.

This subspecies is very much like *I. minor minor* from South Africa, but the crown of the head and breast are paler. C. H. B. Grant, in his otherwise excellent review of the forms of *I. minor*, *Ibis*, 1915, pp. 431-434, overlooked the existence of *I. m. senegalensis*, and his *I. minor alexanderi* is probably the same.

CAPITONIDAE.

1304. *Lybius bidentatus aethiops* Neum. = *Lybius bidentatus aethiops*.*Lybius bidentatus aethiops* Neumann, *Bull. B.O. Club*, xxiii, p. 29 (December 1908—"Shoa, South Ethiopian Lakes, and Omo Region").

Type: ♂ ad., Uba, Omo Region, 25.i.1901. Oscar Neumann Coll.

Comparing our series from southern Ethiopia, collected by Neumann, Kovacz, and Trofimoff, with a series from Uganda, Unyoro, Kavirondo, S.E. Elgon, and other places in East Africa, collected by Seth-Smith, Grauer, Neumann, and van Someren, it is obvious that the former have as a rule smaller bills and shorter wings, which range only up to 105, but are usually shorter, while the latter have larger bills and wings not under 105, and rarely up to 111 mm. The larger form is of course *L. b. aequaloralis*. The birds collected by Dr. Christy at Meridi, Baginzi, and Yambio (South Bahr-el-Ghazal), with wings 95-105 mm. (*Ibis*, 1919, p. 635), must belong to *L. b. aethiops*. Selater and Praed (i.e.) say that "There appears to be a good deal of variation" and that "There is hardly any ground for recognizing" *aethiops*; van Someren (*Nov. Zool.*, 1922, p. 55) says that *aethiops* "is on the whole smaller, but quite a number of Uganda birds are as small, while the size of the Ethiopian birds is constantly the same"; this latter statement is not quite correct, but the size of *aethiops* is usually less.

1305. *Lybius vieilloti buchanani* Hart. = *Lybius vieilloti buchanani*.*Lybius vieilloti buchanani* Hartert, *Nov. Zool.*, 1924, p. 23 (Aïr).

Type: ♂ ad., Tebeig, Aïr, 26.vii.1922. No. 176 Buchanan coll.

¹ Continued from NOVITATES ZOOLOGICAE, 1924, p. 134. For former instalments see NOVITATES ZOOLOGICAE, 1919, pp. 4-63; 1919, pp. 124-178; 1920, pp. 425-505; 1922, pp. 365-412; and 1924, pp. 112-134.

† 1306. *Lybius undatus senafensis* Neum. = *Lybius undatus thiogaster*.

Lybius thiogaster Neumann, *Orn. Monatsber.* 1903, p. 59 ("Bogosland, Keren, nördliches Abyssinien")
Lybius undatus senafensis Neumann, *Bull. B.O. Club*, xxiii, p. 29 (December 1908—"Region south of the Bogos country: Upper Mareb River in North Tigre").

Type: ♂ ad., Senafe Pass, 7,500 feet, 28.xii.1902. G. Schrader coll.

I cannot separate the form from the Mareb River from that of Bogosland (Keren), but I believe that the so-called *senafensis* are males of *thiogaster*, the latter being mostly females. Neumann says that the Ali-Beret specimens in the Tring Museum are his *senafensis*, but if the two forms were different one would be most typical *thiogaster*, the other *senafensis*. On the other hand it was of course perfectly correct to separate the North Abyssinian form, *thiogaster*, from *undatus*, of which, strangely enough, it used to be considered the female or juv. The fact is, as already shown by Neumann, that the sexes are practically inseparable, and I may add the young birds lack the red on the forehead, as shown by young and moulting specimens in the Tring Museum, where there is now a fine series from southern Abyssinia and Shoa, collected by Kovacz, Trofimoff, and Neumann.

† 1307. *Lybius undatus gardullensis* Neum. = *Lybius undatus undatus*.

Lybius undatus gardullensis Neumann, *Bull. B.O. Club*, xiv, p. 16 (October 1903—"South Ethiopia: Lake Chain and Omo System").

Type: ♀ ad., Gardulla, west of Lake Gandjule, 15.i.1901. Oscar Neumann coll. No. 601.

Our series of 28 specimens shows, in my opinion, clearly that the supposed differences of *gardullensis* are individual, not geographical.

1308. *Tricholaema hirsutum angolense* Neum. ? = *Tricholaema hirsutum angolense*.

Tricholaema hirsutum angolense Neumann, *Bull. B.O. Club*, xxi, p. 47 (1908—North Angola).

Type: ♀ Golungo Alto, North Angola, 15.i.1904. W. J. Ansorge coll. No. 523.

We have seven specimens from North Angola, 2 ♂, 5 ♀. All have the bills blackish brown, not black, and the sharp tooth of the old birds on the upper bill is not well developed, and I believe that not one of them is fully adult, so that Reichenow's question (*Journ. f. Orn.* 1918, p. 71), if these brown birds could not be the young of *flavipunctatum*, is not quite so unfounded as Bannerman thinks—that is to say, if we substitute *hirsutum* by *flavipunctatum*, as Reichenow could not have meant (what he wrote) that they were *hirsutum*, i.e. the Gold Coast form! We have two ♀ Gabun specimens, which seem to me indistinguishable from *angolense*. Referring once more to the difference of the sexes, I must say that I find Ansorge's specimens, as usual, correctly sexed, also those of Bates, while in other collections there are a few errors, though the majority also agrees with my view.

1309. *Gymnobucco bonapartei intermedius* van Som. = *Gymnobucco bonapartei intermedius*.

Gymnobucco bonapartei intermedius van Someren, *Bull. B.O. Club*, xli, p. 41 (1921—"Mabira Forest, west to the Mpanga and Ruwenzori, and S. Ankole"); *Nov. Zool.* 1922, p. 57 (the same).

Type: ♂, Mpanga Forest, 20.ix.1916. Collected by van Someren's well-trained natives.

Very closely allied to *G. b. cinereiceps*, but smaller. The supposed difference in the colour of the tail is not there, and it is doubtful if the "mantle and wings are more striped," as the series of *G. b. cinereiceps* (12 specimens collected by H. J. A. Turner for R. Meinertzhagen) are all in more or less worn plumage, and a worn example collected by Rudolf Grauer in the Mpanga Forest does not show much "striping," in fact no more than a hirundo female. In *Nov. Zool.* 1922, p. 57, *G. b. intermedius* appears again as "subsp. nov." with exactly the same diagnosis as in the *Bulletin* 1921, the author apparently having forgotten that he had published it already.

1310. *Barbatula subsulphurea ituriensis* Neum. = *Pogoniulus subsulphureus ituriensis*.

Barbatula subsulphurea ituriensis Neumann, *Journ. f. Orn.* 1907, p. 344 (Kitima on Ituri River, twenty-one days from Fort Beni, Congo Free State).

Type: ♀, Kitima, 25.x.1899. W. J. Ansorge coll. No. 489.

Described from the single specimen, but extending to Budongo, Mabira, Kyetume in Uganda. Cf. *Nov. Zool.* 1922, p. 59, *Rev. Zool. Afric.* x, fasc. 2, p. 107.

1311. *Cyanops rubescens* Baker = *Cyanops asiatica rubescens*.

Cyanops rubescens Baker, *Nov. Zool.* 1896, p. 257 (highest ranges of the eastern North Cachar Hills).

Type: Hungrum, North Cachar Hills, 9.ii.1895. E. C. Stuart Baker coll.

This form is no doubt a distinct subspecies from the high ranges of the Cachar Hills, and in certain places seems to intergrade; even at Hungrum adult females have only a trace of maroon colour on the back, and at Gunjong some males have a small amount of the red and maroon colouring, others not.

1312. *Cyanops duvauceli borneonensis* Parrot = *Cyanops duvaucelii borneonensis*?

Megalaima duvauceli borneonensis Parrot, *Abh. K. Bayer. Akad. Wiss.*, Klasse ii, xxiv. I, p. 171 (1907—Borneo).

Type: ♂ ad., Lawas, N. Borneo, 28.ii.1866. John Whitehead coll. No. 619.

It seems, indeed, that Bornean specimens have usually purer-black ear-coverts than specimens from the Malay Peninsula and Sumatra. The size of the breast patch is somewhat variable, and not a good character for distinguishing these subspecies.

Baker's "*Cyanops duvauceli robinsoni*" (*Bull. B.O. Club*, xxxix, p. 20, 1918, Malay Peninsula) (instead of *C. duvauceli robinsoni*) seems to be an absolute synonym of *C. duvauceli duvauceli*, described from Sumatra; at least I cannot see differences between Sumatran and Malaccan specimens. "*C. d. duvauceli*" of Baker must be *C. d. borneonensis*, though the distribution is not mentioned. *C. d. cyanotis* is, of course, a well-differentiated form.

1313. **Trachyphonus darnaudi usambiro** Neum. = *Trachyphonus darnaudi usambiro*.

Trachyphonus darnaudi usambiro Neumann, *Bull. B.O. Club*, xxiii, p. 30 (1908—"Countries south and south-west of Lake Victoria").

Type: Usambiro, S.W. of Lake Victoria, 2.ix.1889. Emin Pasha coll. No. 318.

1314. **Trachyphonus margaritatus somalicus** Zedl. = *Trachyphonus margaritatus somalicus*.

Trachyphonus margaritatus somalicus Zedlitz, *Orn. Monatsber.* 1910, p. 57 ("N. Somaliland, Galla ländern").

Type: Al Dubar, N. Somaliland, ii.v.1905. G. W. Bury coll. No. 3.

This very distinct subspecies is smaller and paler, especially on the underside than *T. m. margaritatus*.

1315. **Capito aurantiicinctus Dalmas** = *Capito auratus aurantiicinctus*.

Capito aurantiicinctus Dalmas, *Bull. Soc. Zool. France*, xxv, p. 177 (1900—Caura River, southern affluent of the Orinoco).

Type: Caura River, E. André, 1897.

† 1316. (?) **Capito auratus intermedius** Berl. & Hart. = *Capito auratus aurantiicinctus*.

Capito auratus intermedius Berlepsch & Hartert, *Nov. Zool.* ix, p. 98 (1902—)

Type: ♀ ad., Nericagua, R. Orinoco, 12.iv.1892. Geo. K. and Stella Cherrie coll. No. 12483.

It is now supposed that our *intermedius* is the same as Dalmas' *aurantiicinctus*, and I have accepted this view, but not without doubt! Our ♂ and ♀ from Nericagua on the Orinoco are not "orange clair" on abdomen and flanks, but merely lemon yellow. Unfortunately, the two ♂ and two ♀ from the Caura, which we received with the rest of the Dalmas collection, have the middle of the lower abdomen cut away, but three of them show distinct traces of orange. The ♂ from Nicare on the Caura mentioned *Nov. Zool.* 1902, p. 99, No. 336, has the abdomen orange and not yellow. It is therefore still possible that there is a form with yellow on the Orinoco and one with orange abdomen on the Caura River, but otherwise the two forms agree perfectly.

1317. **Buccanodon anchietae rex** Neum. = *Buccanodon anchietae rex*.

Buccanodon anchietae rex Neumann, *Bull. B.O. Club*, xxi, p. 47 (1908—North Angola).

Type: ♂ ad., Duque de Braganza, N. Angola, 5.viii.1903. W. J. Ansorge coll. No. 885.

The type and three males and one female from N'Gungo in N. Bailundu, collected by Hubert Pemberton in 1901, are quite distinct from a good series from Caconda, Cambul, Candue River in Benguela. Besides the unstriped black occiput, they are smaller in both sexes, the wings being about 3 to 5 mm. shorter. Specimens from Bihé, east of the Bailundu district, have the shorter wings of *B. a. rex*, but the occiput is striped, though apparently not so heavily as in *B. a. anchietae*. They might thus be called a third subspecies, but most of

our specimens are juvenile, and I object to giving a name to such forms; this is another case of the many that have recently come under my notice, where examples from intermediate localities are intermediate between two otherwise well-marked subspecies, often to such an extent that single specimens might be thought to belong to either of them. Reichenow's suggestion that "*rex*" is the young *anchietae* is not correct; it is true that the young have the stripes on the nape less developed, but the type and the Bailundu specimens are perfectly adult.

1318. *Tricholaema hirsutum angolense* Neum. = *Tricholaema hirsutum angolense*.

Tricholaema hirsutum angolense Neumann, *Bull. B.O. Club*, xxi, p. 47 (1908—"North Angola").

Type: ♀, Golungo Alto, 15.i.1904, W. J. Ansorge coll. No. 53.

Our specimens are all alike, but none has a fully black bill, the bills of all being more or less brown, at least on the underside, which is a sign of immaturity. This form is very closely allied to *flavipunctatum*.

1319. *Tricholaema hirsutum hybridum* Neum. = *Tricholaema hirsutum hybridum*.

Tricholaema hirsutum hybridum Neumann, *Bull. B.O. Club*, xxi, p. 46 (1908—"Southern Nigeria").

Type: ♀, Degama, Lower Niger, 3.vii.1902. W. J. Ansorge coll. No. 540.

This form is a very distinct and peculiar subspecies, but it has been badly treated by ornithologists. The describer himself has described it far too cursorily, for the two white stripes, one over and one under the ear-coverts, are only present in five of our nine specimens, and the ear-coverts are only spotted in eight of them, but unspotted in one! We have, therefore, in *T. h. hybridum* a form in which these white stripes are present in some, absent in other individuals, while in the other subspecies they are either always present or always absent. The presence of these stripes in *hybridum* is independent of sex and age. The sexes of these Barbets, however, have hitherto not been fully understood. Arthur Goodson and I have carefully gone over the material available in Tring and London, and we have no doubt that the females and young differ from the adult males in having the upperside somewhat more brownish, the spots more golden yellow, while in adult males the upperside is more black, the spots lemon yellow and often smaller; in the Uganda *T. h. ansorgii* the crown is unspotted in adult males, spotted in females and young! The size of the yellow spots is very variable, and not useful for distinguishing subspecies.

Bannerman (*Rev. Zool. Afr.* x, 2, p. 112, 1922) and W. L. Selater (*Bull. B.O. Club*, xlii, p. 62, 1922) reviewed the forms of *T. hirsutum*, but they quite misunderstood *hybridum*, and this led to erroneous statements in their comparisons of the various forms. They jumped to the conclusion that three skins collected by W. P. Lowe near Lagos were specimens of *T. h. hybridum*, without reading Neumann's description; therefore they stated that in *hybridum* the crown is uniform black, unspotted, while in the skins collected by Dr. Ansorge in the Niger Delta, at Degama and Oguta, the crown is always spotted.

The three Lagos examples in the British specimen seem hardly different from *T. h. ansorgii* of Uganda, but the female from Lagos has an unspotted

crown, if correctly sexed. Also the Uelle specimens and ours from Luluabourg are the same.

Since the above was written (in February 1924) Mr. Bannerman has again studied this group and he has independently fully realised his and Mr. Selater's mistakes, and has now separated the Lagos birds, with which he associates those from the Uelle River, as *T. hirsutum chapini*. A fuller paper by Mr. Bannerman is appearing in the *Revue Zoologique Africaine*, reviewing the known subspecies of *T. hirsutum* in detail.

RHAMPHASTIDAE.

† 1320. *Ramphastos haematorhynchus* Berl. & Hart. = *Ramphastos monilis monilis*.

? ? *Ramphastos tucanus* Linnaeus, *Syst. Nat.* ed. x, p. 103 (1758—"Habitat in America meridionale."

The diagnosis is ridiculously short, and no exact habitat is given; the name is therefore absolutely doubtful. The additions in *Syst. Nat.* ed. xii, p. 151 (1766) do not help us, as the quotations refer to two or three different Tucans: Edwards' white-throated and Brisson's yellow-throated species, as well as to Maregrave's Brazilian Tucan).

Ramphastos monilis P. L. S. Müller, *Natursystem, Suppl.* p. 83 (1776—Cayenne. Ex Daubenton, pl. 262. Though the number of the plate is not mentioned, there is no doubt that Müller merely described pl. 262—or rather attempted to describe it! The bill is very badly coloured, but there is no other white-throated species with a more or less dark-red bill, and no other is known from Cayenne, where this species is common. Therefore, the name *monilis* can be accepted).

Ramphastos erythrorhynchus Gmelin, *Syst. Nat.* i. 1, p. 355 (1788—"Habitant in America australi." Ex Edwards and Brisson! Edwards described a specimen "preserved in Salter's Coffee-House, in Chelsea, near London," locality not known. Brisson described a specimen sent to Réaumur from Cayenne, by M. des Essars. While there is no doubt about Réaumur's bird, the figure of Edwards looks at first glance very much like the form with light-red beak from British Guiana, but the blackish mottling shown on the red of the bill and the description, "the red, both on the upper and under chap, is clouded more or less in different parts with black," do not allow us to accept his bird to be the bird with unspotted light-red sides of the bill from British Guiana. Gmelin's name *erythrorhynchus* must, therefore, be referred to the dark-billed birds from Cayenne, Surinam, N.E. Brazil, and the Caura basin).

Ramphastos haematorhynchus Berlepsch & Hartert, *Nor. Zool.* 1902, p. 99 ("Hab. in regione, fluminis Caura dict., affluentis fl. Orinoco dict.").

Type: ♂ ad., La Pricion, Caura River, 16.ii.1901 (not 1902). E. André coll.

It is strange that the birds with clear or light orange-red bills, only known from British Guiana (Bartiea Grove, River Carimang, Roraima, Essequibo River) have continually been united with the dark-billed ones from N.E. Brazil, Surinam, Cayenne, and the Caura River, which, as I hope to have proved, may be called *R. monilis monilis*. Berlepsch and I have clearly shown the differences of the two forms, but we thought we could apply the name *erythrorhynchus* to the former, and we rejected the name *monilis*, therefore naming the dark-billed form *haematorhynchus*. As this was wrong, no name is available for the bird with fire- or orange-red bill from British Guiana, and I therefore name it

1321. *Ramphastos monilis aurantirostris* subsp. nov.

Type: Ad., Essequibo River, British Guiana. R. Tennant coll.

Ramphastos subspeciei *R. monilis monilis* dictae simillimus, sed rostri lateribus aurantio-rubris vel igneis unicoloribus, nec obscure sanguineis variegatis, Habitat in Guiana Britannica.

The culmen and wide basal band of the upper mandible are pale yellow ; a narrow basal line, a wider one dividing the pale basal band from the red sides, the cutting edges of both mandibles, and the tip of the lower, except the utmost end, which is like the culmen, are black ; the basal band of the lower mandible is whitish grey or mauve.

Two other subspecies of *R. monilis* are *R. monilis cuvieri* and *R. monilis inca*.

BUCCONIDAE.

1322. **Bucco maculatus parvirostris** Hellm. = *Bucco maculatus parvirostris*.

Bucco maculatus parvirostris Hellmayr, *Nov. Zool.* 1908, p. 86 (Rio Araguaya, Goyaz, Brazil).

Type : ♂ ad., Rio Araguaya, 550 m., June 1906. G. A. Baer coll. No. 2226.

1323. **Nonnula sclateri** Hellm. = *Nonnula sclateri*.

Nonnula sclateri Hellmayr, *Bull. B.O. Club*, xix, p. 55 (1907—Humaytha on the left bank of the Rio Madeira).

Type and unique specimen : ♀, Humaytha, 16.viii.1906. W. Hoffmann coll. No. 1093.

PIC1.

1324. **Iynx pulchricollis** Hartl. = *Jynx ruficollis pulchricollis*.

Iynx pulchricollis Hartlaub, *Ibis*, 1884, p. 28, pl. iii (one pair Babira, east of the Bahr-el-Djebel).

Type : ♂ ad., Babira, 17.xi.1882. Emin Pasha coll. No. 399.

This rare Wryneck does not seem to have been rediscovered yet. The peculiar rufescent colour of the upperside is not shown in the plate. *Jynx ruficollis thorbecki* Rehw., from Kamerun, is a very closely allied form ; the supposed larger bill and redder upperside are not characteristic for this form, but the underside is slightly more buff, and the red throat-spot less elongate.

1325. **Iynx torquilla mauretanica** Rothsch. = *Jynx torquilla mauretanica*.

Iynx torquilla mauretanica Rothschild, *Bull. B.O. Club*, xxiii, p. 103 (N. Algeria).

Type : ♂ ad., Hammam Meskoutine, N. Algeria, 17.v.1909. Rothschild Hartert and Hilgert coll. No. 542.

1326. **Sasia abnormis magnirostris** Hart. = *Sasia abnormis magnirostris*.

Sasia abnormis magnirostris Hartert, *Nov. Zool.* 1901, p. 51 (Nias Island, west of Sumatra).

Type : ♀ ad., Madjajan, Nias, August 1897. Raap coll. No. 344.

1327. **Picumnus olivaceus harterti** Hellm. = *Picumnus olivaceus harterti*.

Picumnus olivaceus harterti Hellmayr, *Bull. Brit. Orn. Club*, xxiii, p. 67 (1909—Paramba, N. Ecuador).

Type : ♂ ad., Paramba, 3,500 feet, 22.xi.1899. G. Flemming coll. No. 650.

1328. **Picumnus innominatus malayorum** Hart. = *Picumnus innominatus malayorum*.

Picumnus innominatus malayorum Hartert, *I'ög. pal. Fauna*, p. 937 (February 1912—Malay Peninsula and N. Borneo).

Type: "♂" Gunong Ijau, Perak, Malay Peninsula, 4,000 feet, April 1898. A. L. Butler coll.

1329. **Picumnus cirratus tucumanus** Hart. = *Picumnus cirratus tucumanus*. 5
Picumnuscirratus tucumanus Hartert, *Nor. Zool.* 1909, p. 229 (Tucuman).

Type: ♂ ad., Rio Colorado, Tucuman, Argentina, 29.vi.1902. L. Dinelli coll.

The author's name is not "Hartert and Venturi," but merely Hartert, as explained in the same article, p. 160. Cory, *Cat. B. America*, part ii, p. 503, places the name *tucumanus* as a synonym of *pilcomayensis*, presuming that Hellmayr, *Verh. Orn. Ges. Bayern*, xii, p. 156, had said it was the same, but Cory did not read what he wrote or did not understand it, or he could not have made this mistake, as Hellmayr clearly confirmed the differences of the two forms. As Temminck spelt the name *cirratus* we ought to follow him.

1330. **Thriponax javensis confusus** Stres. = *Dryocopus javensis confusus*.

Thriponax javensis confusus Stresemann, *Nor. Zool.* 1913, p. 318 (Luzon, Philippines).

Type: ♂ ad., Mt. Arayat, Central Luzon, 21.xii.1893. John Whitehead coll. No. 69.

† 1331. **Thriponax kalinowskii** Tacz. = *Dryocopus richardsi*.

Dryocopus richardsi Tristram, *Proc. Zool. Soc. London*, 1879, p. 386, pl. xxxi, ♀ (Island of Tsushima near Corea).

Thriponax kalinowskii Taczanowski, *Proc. Zool. Soc. London*, 1887, p. 607 (Corea).

Type: ♂ ad., Corea. Kalinowski coll. No. 962.

Bought from Gerrard & Son, London, who had it with other rare birds from the Branicki Museum in Warsaw. Details on original labels in Chinese letters, marked by Taczanowski "*Thriponax kalinowskii* Tacz. *typ. descriptionis*." The Museum label is also marked "typus," apparently by Stolzmann.

1332. **Mülleripicus pulverulentus harterti** Hesse = *Mülleripicus pulverulentus harterti*.

Mülleripicus pulverulentus harterti Hesse, *Orn. Monatsber.* 1911, p. 182 ("Assam, Birma bis Tenasserim").

Type: ♂ (and ♀) Pya, Upper Chindwin, 20.iii.1904. A. Mearns coll.

Cf. also *Mitteil. Zool. Mus. Berlin*, vi, p. 231.

Baker, *Journ. Bombay Nat. Hist. Soc.*, xxviii, i, p. 135, adds to the distribution "Malay States, etc.," but this is incorrect, the birds inhabiting the "Malay States, etc.," i.e. Sumatra, Java, Borneo, being *M. pulverulentus pulverulentus*, which is darker.

(*Mülleripicus* Bp. seems to be the oldest generic name of this striking genus. The reason why the *Hand-list of Birds* [ii, p. 230] did not adopt it is rather amusing, Sharpe saying that *Mülleripicus* was no doubt the correct name, but "I decline

to use any of Bonaparte's nonsense-names, such as *Blythipicus*, *Lichtensteinipicus*, *Graydidasculus*, etc." Much as we may dislike these and similar names, we can of course not reject them. What would Sharpe have said of many of Mathews' generic names, such as *Carterornis*, *Dulciornis*, *Ethelornis*, *Leggeornis*, *Lewinornis*, *Morganornis*, *Northipsitta*, *Owenavis*, *Ramsayornis*, *Rogersornis*, *Whiteornis*, etc., and some of his specific or subspecific names, such as *westralis*, *westralensis*, *westraliensis*, *westralasianus*, etc. ?)

1333. *Celeus elegans léotaudi* Hellm. = *Celeus elegans léotaudi*.

Celeus elegans léotaudi Hellmayr, *Nov. Zool.* 1906, p. 39 (Trinidad).

Type: ♀, Valencia, Trinidad, 26.iii.1903. E. André coll. (per Bodington).

1334. *Celeus flavescens intercedens* Hellm. = *Celeus flavescens intercedens*.

Celeus flavescens intercedens Hellmayr, *Nov. Zool.* 1908 p. 82 (central eastern Brazil).

Type: ♂, Fazenda Esperança, State of Goyaz, Brazil, 700 m., December 1905. G. Baer coll. No. 1656.

1335. *Tiga javanensis exsul* Hart. = *Dinopium javanense exsul*.

Tiga javanensis exsul Hartert, *Nov. Zool.* 1901, p. 51 (Bali).

Type: ♂, Bali, March 1896. William Doherty coll.

1336. *Colaptes ferrugineus* Brehm = *Micropternus brachyurus brachyurus*.

Colaptes ferrugineus Brehm, *Allg. D. Naturh. Zeitung*, 1856, p. 464 (Java).

Type: ♀, Java. Brehm collection! This type was overlooked by me in the list of Brehm's types. This synonym is not quoted in the *Cat. B. Brit. Mus.* xviii, p. 396.

1337. *Mesopicos xantholophus chloroticus* Som. = *Mesopicos xantholophus chloroticus*.

Mesopicos xantholophus chloroticus van Someren, *Bull. B.O. Club*, xli, p. 105 (1921—"Uganda from Elgon and Nandi west of N. Tanganyika").

Type: ♂ ad., Lugalambo, 5.xi.1915. V. G. L. van Someren coll. (In the original description it should of course have been *to* N. Tanganyika. Cf. *Nov. Zool.* 1922, p. 67.)

This form is hardly distinguishable from *M. x. xantholophus*, but the wings are longer on an average, and many specimens are less yellowish, more greenish.

1338. *Veniliornis kirkii continentalis* Hellm. = *Veniliornis kirkii continentalis*.

Veniliornis kirkii continentalis Hellmayr, *Nov. Zool.* xii, p. 39 (1906—N. Venezuela: Caripé in Cumaná, San Esteban near Puerto Caballo).

Type: ♀, Caripé, January 1894. A. Mocquerys coll.

1339. *Iyngipicus obsoletus ingens* Hart. = *Dryobates obsoletus ingens*.

Iyngipicus obsoletus ingens Hartert, *Nov. Zool.* 1900, p. 33 (Nairobi).

Type: ♂ ad., Nairobi, East Africa, 29.i.1899. W. J. Ansorge coll. No. 49.

1340. *Jyngipicus obsoletus nigricans* Neum. = *Dryobates obsoletus nigricans*.

Jyngipicus obsoletus nigricans Neumann, *Journ. f. Orn.* 1904, p. 402 (Uma River in Konto, Omo system, and Longomeri in the equatorial province).

Type: ♂ ad., Uma River, 28.ii.1901. Oscar Neumann coll. No. 952.

1341. *Jyngipicus obsoletus heuglini* Neum. = *Dryobates obsoletus heuglini*.

Jyngipicus obsoletus heuglini Neumann, *Journ. f. Orn.* 1904, p. 402 (Erythrea and Bogos).

Type: ♂ ad., Ghadi-Saati on the Mareb River, Erythrea, 13.ii.1903. G. Schrader coll.

More material is desirable to confirm the two forms described by Neumann, but they are perfectly recognisable from the skins at present available. Cf. *Ibis*, 1919, p. 631, Nov. Zool. 1922, p. 69.

1342. *Dryobates obscurior* Rothsch. = *Dryobates obscurior*.

Dryobates obscurior Rothsbild, *Bull. B.O. Club*, xliii, p. 10 (1922—Lichiang Range, N.W. Yunnan, China).

Type: ♀, Lichiang Range, 9,000–11,000 feet, pine and mixed forest, May 1921. George Forrest coll. No. 1262.

This peculiar bird is only known from the type-specimen. It is very peculiar, the crown to the base of the upper bill nearly black, underside heavily striped. I am not sure about its relationship.

1343. *Jyngipicus scintilliceps swinhoi* Hart. = *Dryobates semicoronatus swinhoi*.

Jyngipicus scintilliceps swinhoi Hartert, *Nor. Zool.* 1910, p. 221 (Hainan).

Type: ♂ ad., No-tai, Hainan, 29.ix.1902. Katsumata coll. No. 61.

1344. *Dryobates minor buturlini* Hart. = *Dryobates minor buturlini*.

Dryobates minor buturlini Hartert, *Vöj. pal. Fauna*, p. 921 (1912—Italy).

Type: ♂ ad., Colle di Valdenza, Italy, 4.i.1907. Squilloni coll.

About the similarity and differences of *D. m. ledouci* from N. Algeria, see Nov. Zool. 1923, p. 87.

1345. *Dendrocopus minor comminutus* Hart. = *Dryobates minor comminutus*.

Dendrocopus minor comminutus Hartert, *British Birds*, i, p. 221 (1907—Great Britain).

Type: ♂ ad., Wingrave, Bucks, 22.iv.1902. Ernst Hartert coll.

1346. *Dendrocopus major anglicus* Hart. = *Dryobates major anglicus*.

Dendrocopus major anglicus Hartert, *Nor. Zool.* 1900, p. 528 (England).

Type: ♂ ad., Horsham in Sussex, 2.i.1895. Bought from Brazenor Bros. in Brighton.

1347. *Dendrocopus major parroti* Hart. = *Dryobates major parroti*.

Dendrocopus major parroti Hartert, *Orn. Monatsber.* 1911, p. 191 (Corsica).

Type: ♂ ad., "Erisa," Corsica, 1.iv.1883. John Whitehead coll.

1348. *Dryobates medius anatoliae* Hart. = *Dryobates medius anatoliae*.

Dryobates medius anatoliae Hartert, *Vög. pal. Fauna*, p. 924 (1912—Asia Minor).

Type: ♀ ad., Xanthus, Asia Minor, 3.iv.1874. C. Fellowes leg. (ex Coll. Elwes).

1349. *Dryobates hyperythrus marshalli* Hart. = *Dryobates hyperythrus marshalli*.

Dryobates hyperythrus marshalli Hartert, *Vög. pal. Fauna*, p. 926 (1912—N.W. Himalaya, from northernmost Kashmir to Nainital and Almora).

Type: ♂ ad., Murree, Col. C. H. T. Marshall coll.

1350. *Dendromus permistus kaffensis* Neum. = *Campethera permistus kaffensis*.

Dendromus permistus kaffensis Neumann, *Orn. Monatsber.* 1902, p. 9 (Konta, S. province of Kaffa, Abyssinia).

Type: ♀ ad., Dalba, Konta, Kaffa, 27.ii.1901. Oscar Neumann coll. No. 944 (not 144).

This appears to be still the only known specimen of this subspecies! Cf. *Journ. f. Orn.*, 1904, pp. 392, 393.

1351. *Campothera taeniolaema barakae* Som. = *Campothera taeniolaema barakae*.

Campothera taeniolaema barakae van Someren, *Bull. B.O. Club*, xi, p. 96 (1920—Baraka, N.W. Tanganyika).

Type: ♀ ad., forest N.W. of Baraka, 2,000 m., 17.ii.1908. Rud. Grauer coll. No. 3836.

This form is distinct from *C. t. taeniolaema* by the sharply pronounced barring of the underside, and especially the throat and sides of the head. Though the form appears to be quite distinct, I cannot agree with the description; the black of the crown is not more extended, the white spots on the crown are not smaller, the red nuchal band not narrower, the markings on the quills do not differ! Nor can I endorse the distribution given Nov. Zool. 1922, p. 65, as only the four Baraka specimens agree with the type, but not the one from the Mpanga Forest in Toru, Uganda. I am very doubtful if *C. t. hausburgi* is separable, anyhow the differences stated by van Someren do not hold good.

1352. *Campothera caroli budongoensis* Som. = *Campothera caroli budongoensis*.

Campothera caroli budongoensis van Someren, *Bull. B.O. Club*, xli, p. 105 (1921—"Belgian Congo, east to Uganda as far east as the Mabira Forest and Elgon").

Type: ♀ ad., Bugoma Forest, 20.x.1913. V. G. L. van Someren coll.

1353. *Dendromus abingoni annectens* Neum. = *Campothera abingoni annectens*.

Dendromus abingoni annectens Neumann, *Bull. B.O. Club*, xxi, p. 95 (1908—"From North Benguela and Angola to Lake Nyansa").

Type: ♀ ad., Sambo, Benguela, 24.ix.1904. W. J. Ansorge coll. No. 93.

1354. **Campethera loveridgei** Hart. = *Campethera cailliautii loveridgei*.

Campethera loveridgei Hartert, *Bull. B.O. Club*, xl. p. 139 (1920—"Morogoro, west of Dar-es-Salaam").

Type: ♀ ad., Morogoro, 20.viii.1917. Arthur Loveridge coll. No. 4910.

When I described this form I quite missed its real affinity! In spite of the similarity in colour with that of *C. nubica*, it has nothing to do with the latter, but is a subspecies of *C. cailliautii*, i.e. the *C. malherbei* of Reichenow's *Vög. Afr.* ii, p. 172. In fact, it only differs from *C. c. cailliautii*, with the designated type locality Mombasa (C. H. B. Grant, *Ibis*, 1915, p. 455) in being slightly more greenish above and below, and in having the round breast spots larger. This bird cannot be *C. c. fülleborni* Neum., which we have from the N.W. shores of Tanganyika, Baraka, and as far as 340 km. west of Baraka (Rud. Grauer coll.), as in the latter the spots merge, more or less, into transverse bars, in some specimens only on the flanks, while some are perfectly barred, except on the throat. The light spots on the upperside are generally smaller, and in one female quite obsolete, so that it looks quite uniform. These specimens were mistaken by van Someren (Nov. Zool. 1922, p. 641), for *nyansae* of Neumann, and the distribution of that form (No. 382 of Someren's list) must be restricted to "south of Lake Victoria, north-west to Kagua and Kasaka in Uganda," while the specimens from the Kivu and Tanganyika region are *fülleborni*, which has been well described by Neumann, and probably also those from N.E. Rhodesia, unless they are *loveridgei*. Of *C. c. loveridgei* I have in Tring seen two collected by Loveridge, and one from Dodoma, in the same region farther west. Of *C. c. nyansae*, described with a striated throat, we have only a young bird from Lake Urigi in Karagwe (Bukoba); also collected by Grauer.

1355. **Chloronerpes litae** Rothsch. = *Chloronerpes leucolaemus litae*.

Chloronerpes litae Rothschild, *Bull. B.O. Club*, xi. p. 79 (1901—Lita, N. Ecuador, 3,000 feet).

Type: ♂ ad., Lita, 12.ix.1899. R. Miketta coll. No. 109.

1356. **Gecinus puniceus observandus** Hart. = *Picus (Brachylophus) puniceus observandus*.

Gecinus puniceus observandus Hartert, *Nov. Zool.* 1896, p. 542 (Malacca, Borneo, Sumatra).

Type: Deli, Sumatra, 22.i.1888. Ernst Hartert coll. No. 191.

1357. **Gecinus rodgeri** Hart. & Butl. = *Picus (Brachylophus) chlorolophus rodgeri*.

Gecinus rodgeri Hartert & Butler, *Nov. Zool.* 1898, p. 508 (Perak, Malay Peninsula).

Type: ♂ ad., Gunong Ijau (meaning the Green Mountain), Perak, Malay Peninsula, 4,000 feet, March 1898. A. L. Butler Coll.

Differs at a glance from *B. c. chlorolophus* in its darker coloration, especially the abdomen, as well as the upperside, and also larger size.

1358. **Gecinus chlorigaster longipennis** Hart. = *Picus (Brachylophus) longipennis*.

Gecinus chlorigaster longipennis Hartert, *Nor. Zool.* 1910, p. 222 (Hainan).

Type: ♂ ad., Mt. Wuchi, Central Hainan, 15.xi.1906. Katsumata (Alan Owston's collector) coll. No. B 211.

In the original description compared with *chlorigaster*, because of the almost entirely red crown, but much nearer to *G. c. rodgeri*, from which it chiefly differs in the absence of the red moustachial line, less amount of red on crown (which varies), less golden, more lemon-yellow nuchal crest, less brownish underside and longer wing. *G. c. chlorigaster* is very much smaller, the male has a red crown, the female a much more determined and larger hind-crown, though Baker is apparently right in treating it also as a subspecies of *chlorolophus*.

1359. **Brachylophus chlorolophus vanheysti** Rob. & Kloss = *Picus (Brachylophus) chlorolophus vanheysti*.

Brachylophus chlorolophus vanheysti Robinson & Kloss, *Journ. Straits Branch R. Asiat. Soc.* No. 80, p. 97 (1919—Deli and Padang Highlands in Sumatra).

Type: ♂ ad., Bandar Baroe, Deli, Sumatra, 12.iv.1917. A. C. F. A. van Heyst coll. No. 254.

This subspecies is, as described, intermediate between *P. (B.) chlorolophus chlorolophus* and *rodgeri*, but easily distinguishable from both.

† 1360. **Picus viridis pluvius** Hart. = *Picus viridis virescens*.

Picus viridis pluvius Hartert, *Brit. Birds*, v, p. 125 (1911—England).

Type: ♂ ad., Ninfield in Sussex, 28.iv.1903. Ruskin Butterfield coll.

It seems to be impossible to separate the British race from the Continental *virescens*. About measurements and the name *virescens* contra *pinetorum* see *Vög. pal. Fauna*, p. 2183.

1361. **Picus viridis pronus** Hart. = *Picus viridis pronus*.

Picus viridis pronus Hartert, *Brit. Birds*, v, p. 125 (1911—Italy).

Type: ♂ ad., Firenzola near Florence, 20.i.1902. Exchanged from the Florence Museum.

1362. **Picus vittatus limitans** Stres. = *Picus vittatus limitans*.

Picus vittatus limitans Stresemann, *Archiv f. Naturg.* lxxxvii, Heft 7, p. 74 (1921—"Kangean, anscheinend auch Bali").

Type: ♂, E. Kangean, September. Ernst Prillwitz leg. No. 187.

(Only differs in size, being distinctly larger than specimens from the Malay Peninsula, Sumatra, and Java, though one skin from the latter island surpasses the Kangean examples! As ten Kangean specimens were measured, this form may be recognised, but it is objectionable to name forms that differ slightly in size only, if not more than a few specimens have been measured!)

TROGONES.

1363. *Harpactes whiteheadi* Sharpe = *Harpactes whiteheadi*.

Harpactes whiteheadi Sharpe, *Ibis*, 1888, p. 395, pl. xii (Kina Balu, Borneo).

Type: ♂ ad., Kina Balu, 3,000 feet, 2.iv.1888. John Whitehead leg. No. 2373.

MUSOPHAGIDAE.

1364. *Gymnoschizorhis personata centralis* Neum. = *Gymnoschizorhis personata centralis*.

Gymnoschizorhis personata centralis Neumann, *Bull. B.O. Club*, xxi, p. 94 (1908—"Countries between Lake Victoria and Lakes Kivu and Albert Edward").

Type: ♂ ad., Kitengule, Kagera River, 25.v.1907. Rud. Grauer leg. No. 251.

This is quite a distinct subspecies, though it is rather too strongly expressed, if it is said that the crest of *G. personata leopoldi* is "dirty white"! In fact, it is paler, more brownish, not so blackish but always brown.

1365. *Ruwenzorornis johnstoni kivuensis* Neum. = *Ruwenzorornis johnstoni kivuensis*.

Ruwenzorornis johnstoni kivuensis Neumann, *Bull. B.O. Club*, xxi, p. 54 (1908—"Western Kivu Volcanoes").

Type: ♂ ad., shot in primeval forest, 2,400 m. high, in the "Vorberge" of the Western Kivu Volcanoes, 27.viii.1907, by Rudolf Grauer. No. 1122.

(The description of *R. j. kivuensis* appeared actually February 29. In the March number of the *Orn. Monatsberichte*, Reichenow described the same form as *Ruwenzorornis chalcophthalmicus* from the Rugege (Lugege) forest. This number of the *Monatsberichte* appeared in March, but certainly not before March 1, and even then *kivuensis* had one day's priority!

Writers with *furor genericus* would create a "new genus" for this subspecies, but we hope that ornithology will be spared this folly.

CUCULIDAE.

1366. *Phoenicophaea curvirostris deningeri* Stres. = *Phoenicophaea curvirostris deningeri*.

Phoenicophaea curvirostris deningeri Stresemann, *Nor. Zool.* xx, p. 347 (1913—Bali).

Type: ♂ ad., Tegal, Bali, 1,500 feet, 4.iii.1911. Erwin Stresemann coll. No. 310.

1367. *Phoenicophaea calorhynchus rufiloris* Hart. = *Phoenicophaea calorhynchus rufiloris*.

Phoenicophaea calorhynchus rufiloris Hartert, *Nor. Zool.* x, p. 24 (1903—Buton, S.E. of Celebes).

Type: ♂ ad., S.W. side of Buton, 25.xi.1901. Heinrich Kühn coll. No. 4163.

Only the original pair of this distinct form is known to exist in collections,

1368. *Rhopodytes tristis hainanus* Hart. = *Rhopodytes tristis hainanus*.*Rhopodytes tristis hainanus* Hartert, *Nor. Zool.* 1910, p. 218 (Hainan).

Type: ♂ ad., No Tai, Hainan, 26.ix.1902. Katsumata leg.

1369. *Piaya cayana insulana* Hellm. = *Piaya cayana insulana*.*Piaya cayana insulana* Hellmayr, *Nor. Zool.* xiii, p. 43 (1906—Trinidad).

Type: ♂ ad., Chaguaramas, Trinidad, 11.i.1903. E. André coll.

1370. *Centropus sinensis parroti* Stres. = *Centropus sinensis parroti*.*Centropus sinensis parroti* Stresemann, *Nor. Zool.* xx, p. 323 (1913—"Ceylon und Vorderindien, nach Norden zu begrenzt durch das Gangestal und die Grosse Indische Wüste.")

Type: ad., Ceylon. E. Ernest Green Coll.

1371. *Centropus sinensis anonymus* Stres. = *Centropus sinensis anonymus*.*Centropus sinensis anonymus* Stresemann, *Nor. Zool.* xx, p. 323 (1913—"Tawi-tawi, Jol6-Sulu").

Type: ♀ ad., Tawi-tawi Island, July 1893. Alfred Everett coll.

1372. *Centropus bengalensis sarasinorum* Stres. = *Centropus bengalensis sarasinorum*.*Centropus bengalensis sarasinorum* Stresemann, *Nor. Zool.* xix, p. 338 (1912—"Lombok, Sumbawa, Sumba, Savu, Flores, Djampea, Kalao, Kalidupa, Celebes, Siao, Sangir, Talaut; Pantar, Alor, Wetter, Kisser, Roma, Letti, Moa, Timor").

Type: ♀ ad., Kalidupa Island, 4.i.1902. Heinrich Kühn coll. No. 4494.

1373. *Centropus grilli caeruleiceps* Neum. = *Centropus grilli caeruleiceps*?*Centropus grilli caeruleiceps* Neumann, *Journ. f. Orn.* 1904, p. 380 ("Am Gandjule-See, Smith's Abaya-See").

Type: "♀," Lake Abaya, 18.v.1895. Dr. A. Donaldson Smith coll. No. 626.

This specimen is much less blackish-brown on the upperside (back, scapulars, inner secondaries) than all our specimens from S. Angola, Tanganyika, Kivu, and one from the Bahr-el-Zeraf (A. L. Butler coll.); the bill is perhaps a little more elongated. I do not think that the blue gloss of the head is a distinguishing character at all, as the colour of the head varies even in Benguellan specimens, but the colour of the back is much less blackish. More material is required to confirm *caeruleiceps* as a recognisable subspecies. Possibly the type of *caeruleiceps* is an unusual coloration of *grilli*. Cf. *Ibis*, 1915, pp. 419, 420, *Rev. Zool. Afr.*, x, 2, p. 129, *Syst. Av. Ethiop.*, p. 184—all based merely on comparison of the *only specimen* of "*caeruleiceps*."

1374. *Centropus monachus occidentalis* Neum. = *Centropus monachus occidentalis*.*Centropus monachus occidentalis* Neumann, *Bull. B.O. Club*, xxi, p. 77 (1908—"West Africa from the Gold Coast to the Gaboon").

Type: ♂, Ombrokua (Ugomo), Ogowe River, 26.viii.1907. W. J. Ansorge coll. No. 717.

1375. **Centropus monachus angolensis** Neum. = *Centropus monachus angolensis* ?

Centropus monachus angolensis Neumann, *Bull. B.O. Club*, xxi, p. 77 (1908—"North Angola").

Type: ♂, Canhoca, N. Angola, 17.xii.1903. W. J. Ansorge coll. No. 1476.

Our three specimens differ from *C. m. occidentalis* in having the upper tail-coverts barred with buff. The other alleged differences are in my opinion of no importance whatever; but we have also two specimens from East Africa with barred upper tail-coverts! This form therefore requires confirmation! (Cf. Bannerman in *Rev. Zool. Afric.*, x. 2, pp. 130, 131; Selater, *Syst. Av. Ethiop.* i, p. 184.)

1376. **Centropus albidiventris** Rothsch. = *Centropus milo albidiventris*.

Centropus albidiventris Rothschild, *Bull. B.O. Club*, xiv, p. 59 (1904—Gizo).

Type: ♂ ad., Gizo (near Kulambangra), Solomon Islands, 3.xi.1903. Albert S. Meek coll. No. A 739.

This wonderful *Centropus* differs from *C. milo milo* of Guadalcanar in having the whole underside of a rich cream-colour, while in *milo* abdomen and thighs are black; on the upperside too, the cream colour extends to the tail, while in *milo* the lower back is black. In the young the tail bars are wider, but this is of little importance as they vary much in width. The shape of bill and dimensions are quite similar in both forms. *C. m. albidiventris* is now known from Gizo, Kulambangra, Vella Lavella, and Rendova Islands in the central group of the Solomon Islands.

1377. **Centropus superciliosus intermedius** van Som. = *Centropus superciliosus intermedius* ?

Centropus superciliosus intermedius van Someren, *Bull. B.O. Club*, xli, p. 125 (1921—"Mombasa").

Type: ♂ ad., Changamwe close to Mombasa, 12.iv.1919. Van Someren coll.

The East African form does not always differ from South Arabian specimens in being "darker above and smaller." It therefore requires confirmation.

1378. **Eudynamis orientalis alberti** R. & H. = *Eudynamis scolopacea alberti*.

Eudynamis orientalis alberti Rothschild & Hartert, *Nov. Zool.* xiv, p. 440 (1907—Solomon Islands).

Type: ♂ ad., Gizo, Solomon Islands, 31.x.1903. Albert S. Meek coll. No. A 696.

About the earliest name, *seolopacea*, of this species, see *Auk*, 1919, p. 569. For review of the genus, *Nov. Zool.* 1903, pp. 235–238.

1379. **Eudynamis orientalis salvadorii** Hart. = *Eudynamis scolopacea salvadorii*.

Eudynamis orientalis salvadorii Hartert, *Nov. Zool.* 1900, p. 232 ("New Britain and New Ireland").

Type: ♂ ad., "New Ireland." Collected by some missionary or Mr. Curtis. Cf. *Nov. Zool.* 1903, p. 238, 1914, p. 211.

We have ♂♀ said to have been collected on New Ireland by a Mr. Curtis, or by some missionary—in any case without indication of the exact place and without date and label. Besides these we have a female collected on New Britain

by Th. Kleinschmidt, and another female which we believe to belong to this subspecies, from Rook Island. If the latter is *salvadorii*, this form must extend over New Ireland, though in a recent collection made in S.W. New Ireland by A. Eichhorn, *Eudynamis* was not represented. In Reichenow's list of the birds of these groups only New Britain and Duke of York Islands are mentioned.

1380. *Eudynamis cyanocephala everetti* Hart. = *Eudynamis scolopacea everetti*.
Eudynamis cyanocephala everetti Hartert, *Nov. Zool.* vii, p. 231 (1900—"Alor, Sumba, Timor, Key Islands, and islands north of Key group").

Type: ♂ ad., W. Sumba, December 1896. Alfred Everett coll. Cf. also *Nov. Zool.* 1903, p. 237.

1381. *Eudynamis orientalis harterti* Ingr. = *Eudynamis scolopacea harterti*.
Eudynamis orientalis harterti Ingram, *Nov. Zool.* 1912, p. 279 (Hainan).

Type: ♂ ad., Hoihow, Hainan, 19.iii.1902. Katsumata coll. Cf. also *Nov. Zool.* xvii, p. 219.

1382. *Chrysococcyx rufomerus* Hart. = *Chalcites malayanus rufomerus*.
Chrysococcyx rufomerus Hartert, *Nov. Zool.* 1900, p. 21 (Dammer Island).

Type: ♂ ad., Wulur, Dammer (Damar) Island, 11.xii.1898. Heinrich Kühn coll. No. 1158.

1383. *Chrysococcyx auratus sharpei* Som. = *Chrysococcyx cupreus sharpei*.
Chrysococcyx auratus sharpei van Someren, *Nov. Zool.* xxix, p. 53 (1922—"The South African Bird").

Type: ♂ ad., Iafa River, Natal, 1895 (Woodward Coll.).

Van Someren correctly separated the South African form, though otherwise his remarks on these Cuckoos were not very clear. Bannerman, *Nov. Zool.* 1922, pp. 417, 418, and *Rev. Zool. Afric.* x, 2, p. 120, accepts this correctly, while Selater, *Syst. Av. Ethiop.* i, p. 183, does not accept "*sharpei*," without comment and without mentioning the name at all.

1384. *Cacomantis blandus* R. & H. = *Cacomantis variolosus blandus*.
Cacomantis blandus Rothschild & Hartert, *Nov. Zool.* xxi, p. 290 (1914—Manus, Admiralty Island).

Type: ♂ ad., Manus, 16.ix.1913. A. Eichhorn coll. No. 6072 of the Meek collections.

1385. *Cacomantis websteri* Hart. = *Cacomantis variolosus websteri*.
Cacomantis websteri Hartert, in Webster's *Through New Guinea*, App. p. 370 (1898—New Hanover).
Cf. also *Orn. Monats'cr.* 1899, p. 138, *Ibis*, 1899, p. 278.

Type: ♂ New Hanover, 15.ii.1897. Cayley Webster, 15.ii.1897.

1386. *Cacomantis assimilis fortior* Rothschild & Hart. = *Cacomantis variolosus fortior*.
Cacomantis assimilis fortior Rothschild & Hartert, *Nov. Zool.* xxi, p. 4 (1914—Goodenough and Fergusson Islands).

Type: ♂, Mountains of Goodenough Island, 17.iv.1913. A. S. Meek coll. No. 5584.

1387. *Cacomantis excitus* R. & H. = *Cacomantis cineraceus excitus*.

Cacomantis excitus Rothschild & Hartert, *Nov. Zool.* xiv, p. 436 (1907—"In montibus Novae Guineae meridionalis orientalis").

Type: ♂ ad., Owgarra, Angabunga River, 16.ii.1905. A. S. Meek coll. No. A 2104.

1388. *Cacomantis meeki* R. & H. = *Cacomantis cineraceus meeki*.

Cacomantis meeki Rothschild & Hartert, *Nov. Zool.* ix, p. 586 (1902—"Insula Ysabel dicta, Ins. Salomonis").

Type: "♀" ad., Isabel Island, 1.vii.1901. A. S. Meek coll. No. 3460.

† 1389. *Cacomantis castaneiventris bihagi* Math. = *Cacomantis castaneiventris weiskei*.

Cacomantis castaneiventris bihagi Mathews, "Austral Avian Record," ii, p. 92 (1914—"Bihagi, head of the Mambare River, British New Guinea").

Type: ♂ ad., Bihagi, 13.ii.1906. A. S. Meek coll. No. A 2402.

This Papuan subspecies of *castaneiventris* differs in being darker on the under surface; this is obvious when a series from New Guinea is compared, but single specimens are not always easily to distinguish. On the Upper Aroa and Mambare Rivers, in the "Snow Mountains," and on Mt. Goliath, also on the Hydrographer Range, this little cuckoo is common, and we have now twenty-seven skins in the Tring Museum, among them three young ones. In Australia (North Queensland) *C. castaneiventris castaneiventris* is apparently rare, as there are only three adult and one young in the Mathews collection. Though described from a young bird, *Cacomantis weiskei* Reichenow, *Orn. Monatsber.* 1900, p. 186, refers without doubt to this mountain form; it came from the Upper Aroa River.

Cacomantis addendus R. & H. = *Cacomantis variolosus addendus*.

Cacomantis addendus Rothschild & Hartert, *Nov. Zool.* viii, p. 185 (1901—Kulambangra, Central Solomon Islands).

Type: ♂ ad., Kulambangra, 5.iii.1901. A. S. Meek coll. No. 2833.

1390. *Cuculus canorus bakeri* Hart. = *Cuculus canorus bakeri*.

Cuculus canorus bakeri Hartert, *Vög. pal. Fauna*, p. 948 (1912—Khasia Hills, Assam).

Type: ♂ ad., Shillong, Khasia Hills, 13.iv.1908. E. C. Stuart Baker coll. No. 2160.

This subspecies has become very much known since Baker brought together such enormous and most instructive series of eggs with their foster-parents.

† (?) 1391. *Cuculus waigoui* Math. = probably *Cuculus optatus kelungensis*.

Cuculus waigoui (sic) Mathews, *B. Australia*, vii, p. 291 (1918—"Waigu," by which was meant the island of Waigin, Waigiou, or Waigen, N.E. of West Papua).

Type: "♂" ad., according to a label written by G. M. Mathews, shot 7.ii.1903, so there must have been an original label. Collector's name not

stated, but seems to be one of Waterstradt's skins. How did the collector's label come off ? !

It is difficult to decide from a single example what it might be, but it is most objectionable to name a bird after an island, where one must suppose that it was only a winter visitor. As it is, the specimen is indeed darker and also small for an *optatus*, but I cannot see how it differs from Formosan specimens, which, in addition to their shorter wings, have the upperside darker than *C. o. optatus*, and must be called *C. o. kelungensis* (cf. *Vög. pal. Fauna*, p. 950). This *C. o. kelungensis* is apparently quite a "good" form, being darker and smaller in the wing than *C. o. optatus*. The status of this form, however, is still somewhat uncertain. If it breeds on Formosa we may expect it to be resident there, and in that case, how did it reach Waigiü ? If it should be a migrant to Formosa and Waigiü (and doubtless many other places), then where is its home ?

The wing of the type of "*waigüi*" measures 195 mm.

1392. **Cuculus mabirae** Someren = *Cuculus gabonensis mabirae*.

Cuculus mabirae van Someren, *Bull. B.O. Club*, xxxv, p. 116 (1915—Kasala forest, Uganda).

Type: ♂, Kasala forest, 24.vi.1914. V. G. L. van Someren Coll.

† 1393. **Cuculus intermedius insulindae** Hart. = *Cuculus intermedius musicus*.

Cuculus intermedius insulindae Hartert, *Vög. pal. Fauna*, p. 952 (1912—Sumatra, Java, Borneo, Lombok, and Flores). Cf. *Vög. pal. Fauna*, p. 2192 !

Type: ♂ ad., Mt. Kina Balu, N. Borneo, 8,000 feet, 14.ii.1888. John Whitehead coll.

This is a very distinct subspecies, but *musicus* is an older name for it !

1394. **Surniculus lugubris brachyurus** Stres. = *Surniculus lugubris brachyurus*.

Surniculus lugubris brachyurus Stresemann, *Nov. Zool.* xx, p. 340 (1913—Sumatra, Borneo, Malakka).

Type: ♂ ad., Bentong, Pahang, Malay Peninsula, 21.vi.1910. No. 1725 of the Selangor Museum collections, Herbert C. Robinson dir.

(*Surniculus lugubris minimus* Baker, *Nov. Zool.* 1919, p. 292 (Palawan), is apparently not separable from *brachyurus*.)

1395. **Clamator jacobinus taprobanus** Hart. = *Clamator jacobinus taprobanus*.

Clamator jacobinus taprobanus Hartert, *Nov. Zool.* xxii, p. 254 (1915—Ceylon).

Type: ♂ ad., N.W. Ceylon, 26.xi.1869. E. Holdsworth coll.

(About the different Angolan form see l.c. If the name *caroli* should not be available, a new name would be required, but probably *caroli*—though the type is exceptionally long-winged—is available.)

PODARGI.¹1396. *Aegotheles pulcher* Hart. = *Aegotheles pulcher*.

Aegotheles pulcher Hartert, *Bull. B.O. Club*, viii, p. 8 (1898—"Mts. of British New Guinea").

Type: ad., Mts. British Papua, Emil Weiske coll.

This specimen was bought in London. Later on I recognised that it was undoubtedly collected by Emil Weiske, and most likely came from the Upper Aroa River.

N.B.—Types of Australian birds described by G. Mathews are *not* included in this list; they will, we hope, be enumerated together, in the future, as "types in the Mathews collection."

1397. *Podargus intermedius* Hart. = *Podargus ocellatus intermedius*.

Podargus intermedius Hartert, *Bull. B.O. Club*, v, p. 10 (December 1895—Kiriwina, Trobriand Islands, E. of New Guinea and Fergusson).

Type: ♂ ad., Kiriwina, 18.v.1895. A. S. Meek leg. No. 205.

We have now twelve skins from the Trobriand Islands, Fergusson and Goodenough Islands.

1398. *Podargus inexpectatus* Hart. = *Podargus ocellatus inexpectatus*.

Podargus inexpectatus Hartert, *Bull. B.O. Club*, xii, p. 24 (1901—Isabel, Solomon Islands, A. S. Meek coll.).

Type: ♂ ad., Isabel Island, 22.vi.1901. A. S. Meek leg. No. 3368.

I am convinced that the birds from Choiseul and Bougainville from another separate subspecies with shorter wings (♂ not yet known), but can only repeat what I said Nov. Zool. 1905, p. 259.

1399. *Podargus meeki* Hart. = *Podargus ocellatus meeki*.

Podargus meeki Hartert, *Bull. B.O. Club*, viii, p. 8 (1898—Sudest Island).

Type: ♀ ad., Sudest Island, Louisiade group, 9.iv.1898. A. S. Meek leg. No. 1701.

This interesting form varies very much. The sexes are very much alike, but the males are on the upperside less dark or less reddish and on the underside more white, though very variable. Some of the females have very bold black spots on the underside, and in both sexes some specimens have conspicuous white spots on the wing-coverts, others not. Notwithstanding the dark and not much reddish coloration of the females, I think I am right to treat this as a subspecies of *P. ocellatus*. The following forms of *P. ocellatus* are recognisable:

P. ocellatus ocellatus: New Guinea, Aru Islands, Waigiu, Jobi Island.

P. ocellatus marmoratus: Cape York Peninsula, Australia.

P. ocellatus intermedius: Trobriand Islands, Fergusson and Goodenough Islands.

P. ocellatus inexpectatus: Isabel Island, Choiseul and Bougainville Islands.

P. ocellatus meeki: Sudest Island, Louisiade group.

¹ The *Podargi* should have been Nos. 1183 to 1186, but were inadvertently omitted, the manuscript having been mislaid.

UEBER DIE INDOAUSTRALISCHEN GLANZKUCKUCKE (*CHALCITES*).

VON ERNST HARTERT und ERWIN STRESEMANN.

DIE Systematik der indoaustralischen Glanzkuckucke, die wir in der Gattung *Chalcites*¹ vereinigen, und die Feststellung ihrer Verbreitung bietet mancherlei Schwierigkeiten, an denen schon mehrere Versuche zu einer natürlichen Klassifikation dieser Vögel gescheitert sind. Frühere Untersucher haben einem wesentlichen Umstand zu wenig Rechnung getragen, dessen Beachtung von Wichtigkeit ist: dass einige dieser Kuckucke ausserhalb der Fortpflanzungszeit weite Wanderungen unternehmen und dass daher der Erbeutungsort vielfach nicht der Heimat des Vogels entspricht.

Alle in den subtropischen und gemässigten Klimaten heimischen Glanzkuckucke vermögen dem Winter nicht zu trotzen und weichen ihm aus. Der im östlichen Himalaya und seinen östlichen Fortsetzungen sich vermehrende *Chalcites maculatus* gelangt auf der Südwanderung gelegentlich bis nach Sumatra, wo er sich mit einem Bürger Südaustraliens, dem *Chalcites basalis*, in der Winterherberge treffen kann; andere Südaustralier begeben sich nach dem Bismarck-Archipel und den Salomons-Inseln.

Bei Berücksichtigung dieser Verhältnisse sind wir dahin gelangt, die indoaustralischen Glanzkuckucke in 7 Species zu gliedern, von denen 2, *Chalcites maculatus* und *Ch. xanthorhynchus*, einander geographisch zu vertreten scheinen, während es von einer (*Ch. malayanus*) noch nicht ganz sicher ist, ob sie nicht richtiger in 2 Species zu zerlegen wäre.

In dem Bestreben, alles überflüssige Beiwerk fortzulassen, haben wir eine kurze Beschreibung der Formen nur dort in unsere Uebersicht aufgenommen, wo sie uns von Wichtigkeit zu sein schien.

I. *Chalcites basalis* (Horsfield).

Cuculus basalis Horsfield, *Trans. Linn. Soc.* xiii, p. 179 (1821—Java).

Cuculus chalcites Temminck (ex Illiger MS.), *Pl. Col.* 102, Fig. 2 (1823—l'Océanie. "Java" designiert durch Mathews).

Cuculus neglectus Schlegel, *Mus. Pays-Bas, Cuculi*, p. 35 (1864—Borneo).

Lamprococyx modesta Diggles, *Trans. Philos. Soc. Queensl.* 1876, p. 12 (1876—Queensland: Norman's Creek).

Chrysococyx basalis mellori Mathews, *Austr. Av. Record*, i, p. 14 (1912—South Australia: Eyre's Peninsula).

Chrysococyx basalis wyndhami Mathews, *ibid.* p. 14 (1912—N.W. Australia: Point Torment).

Verbreitung: Fortpflanzungsgebiet das südliche Australien sowie Tasmanien. Auf dem Durchzuge und als Wintergast (iii.–x.) erscheint die Art, über das nordwestliche Australien wandernd, auf den Sundainseln bis Java (regelmässig und zahlreich), Sumatra (selten), Malakka (höchstens einmal nachgewiesen), Borneo (selten), Süd-Celebes (1 mal nachgewiesen); ferner als Ausnahmeerscheinung

¹ *Chalcites* Lesson, *Traité d'Ornithologie*, 1830, p. 152; Typus durch Tautonymie *Cuculus chalcites* Illiger = *Cuculus basalis* Horsfield. Als generisch verschieden kann man betrachten den *Cuculus cupreus* Shaw, den Typus der Gattung *Chrysococyx* Boie 1826. Vgl. Bannerman, *Nov. Zool.* xxix, 1922, pp. 413–420.

auf den Aruinseln und der Cape York-Halbinsel. Die normalen Winterquartiere scheinen also die Inseln zwischen Sumbawa und Java (beide eingeschlossen) zu bilden.

Max Bartels jun. fand die Art in dem von ihm und seinem Vater und Bruder besuchten Teilen Javas als regelmässige Erscheinung, teils einzeln, teils in Trupps. Aufenthalt hauptsächlich im Tieflande, in trockneren Jahren aber auch im Gebirge. Exemplare wurden mit Bestimmtheit im Juni, Juli, und September gesammelt. Wahrscheinlich erscheinen sie schon im März oder April, sicher ziehen sie im Herbst wieder fort.

II. *Chalcites maculatus* (Gmelin).

Trogon maculatus Gmelin, *Syst. Nat.* i. 1, p. 404 (1788—Ceylon, errore! Patria subst. [Robinson & Kloss, 1923] Pegu),

Chrysococcyx hodgsoni Horsfield & Moore, *Cat. Birds Mus. E. I. Comp.* ii, p. 705 (1858—Nepal).

Chrysococcyx schomburgki Gould, *Proc. Zool. Soc.* 1864, p. 73 (1864—Siam).

Verbreitung: Fortpflanzungsgebiet im Himalaya unterhalb 1,400 m. westwärts bis Kumaun, ostwärts durch Yünnan und Süd-Tibet bis Szetschwan (Kwan-hsien), südwärts bis Assam und Cachar. Auf dem *Durchzuge* und als *Wintergast* (ix.–iii.) über Birmah südwärts bis Malakka, Sumatra (selten). Siam, Annam, Hainan, Südchina bis zum unteren Yangtse.

III. *Chalcites xanthorhynchus* (Horsfield).

Cuculus xanthorhynchus Horsfield, *Trans. Linn. Soc.* xiii, p. 179 (1822—Java).

Lampromorphia anethystina Vigors, *Proc. Zool. Soc.* 1831, p. 98 (1831—Manilla).

Chrysococcyx limborgi Tweeddale, *Proc. Zool. Soc.* 1877, p. 366 (1877—Mouleit Range, Tenasserim).

Verbreitung: Von der Südgrenze des *Ch. maculatus* in Assam und Birmah südwärts über Hinterindien bis Malakka und Siam; ferner Nicobaren, Andamanen, Sumatra, Java, Borneo, Palawan, Philippinen.

IV. *Chalcites lucidus*.

Verbreitung der Species: zur Fortpflanzungszeit Neuseeland, Chatham- (und Norfolk?) Inseln, das südliche Australien und Neu-Caledonien. 3 Subspecies.

1. *lucidus* (Gmelin).

Cuculus lucidus Gmelin, *Syst. Nat.* i. 1, p. 421 (1788—"hab. in nova Seelandia").

Cuculus nitens Forster, *Descriptio Anim.* p. 151 (1844—"hab. ad Aestuarium Reginae Charlottae").

Lamprococcyx lucidus australis Mathews, *Bull. B.O. Club.* xxxvi, p. 83 (1916—Queensland: Capricorn-Inseln).

Verbreitung: Fortpflanzungsgebiet Neuseeland, die Chatham-Inseln (u. Norfolk-Inseln?). Auf dem *Durchzuge* und als *Wintergast* über Ost-Australien und das östliche Neuguinea bis zum Salomons-Archipel.

2. *plagosus* (Latham).

Cuculus plagosus Latham, *Index Ornith. Suppl.* ii, p. xxxi (1801—"hab. in Nova Hollandia").

Cuculus metallicus Vigors & Horsfield, *Trans. Linn. Soc.* xv, p. 302 (1826—"Australia").

Lamprococcyx poliurus Salvadori, *Ornith. Papuasie, Aggiunte*, p. 49 (1889—Tarawai). Typus untersucht.

Chrysococcyx plagosus tasmanicus Mathews, *Austr. Avian Record*, i, p. 17 (1912—Tasmanien).

Chrysococcyx plagosus carteri Mathews, *ibid.* p. 17 (1912—S.W. Australia: Broome Hill).

Ähnlich *Ch. l. lucidus*, aber Oberkopf und Nacken in der Regel mehr purpurn, weniger grünlich schillernd, 2. Steuerfeder (von aussen) meist mit

Rostfarbe gezeichnet, während diese Farbe bei *Ch. l. lucidus* fast stets durch Schwarz ersetzt wird. Flügel 100–108 mm.

Verbreitung: *Fortpflanzungsgebiet* Tasmanien und das südliche Australien. Auf dem Durchzuge und als *Wintergast* (iii.—Anfang x.) in Nordaustralien, auf den Kleinen Sundainseln (Wetar, Flores, Sumbawa), im östlichen Neuguinea (an der Südküste Neuguineas nicht westlich des Fly-Flusses gefunden, an der Nordküste nicht westlich des Mamberano angetroffen),¹ dem Louisiade- und Bismarek-Archipel und den Salomonen.

3. *layardi* (Mathews).

Chrysococcyx layardi Mathews, *Austr. Avian Record*, i, p. 16 (1912—Neu-Caledonien).

Kleiner als die beiden anderen Formen: Flügel nur 95–101 mm., Kehle nahezu ohne dunkle Querbinden, mithin viel schwächer gebändert als bei *Ch. l. lucidus* und *plagosus*.

Verbreitung. Standvogel auf Neu-Caledonien.

V. *Chalcites malayanus*.

Dieser Formenkreis ist der am weitesten verbreitete und am reichsten gegliederte. Er umfasst nur tropische Formen, die sämtlich sesshaft zu sein scheinen. Von der malayischen Halbinsel an ostwärts wohnen *malayanus*-Formen auf fast allen Inseln des malayischen Archipels ostwärts bis Neuguinea und der Fergusson-Insel; auch das tropische Gebiet Australiens ist von dieser Species besiedelt worden. Nicht vertreten ist der Formenkreis im Bismarek- und Salomons-Archipel (dort pflanzt sich keine einzige Glanzkuckucksart fort!) auch fehlt bisher der Nachweis von Bali, Lombok, Sumbawa, Flores und Sumba, sowie von Palawan und der Nordgruppe der Philippinen. Die Zusammenstellung der folgenden 10 Formen zu einem Formenkreis ist von unserer Seite nicht unbedenklich erfolgt. *Ch. crassirostris* weicht morphologisch von seinen Nachbarn im Westen und im Osten, *Ch. m. malayanus* und *Ch. m. poecilurus*, beträchtlich ab, scheint uns aber mit letzterem durch die Formen *minutillus-rufomerus-salvadorii* eng verknüpft zu werden. Die am Fundort typischer Vertreter des *Ch. crassirostris* gesammelten Individuen, die bisher in der Literatur als Angehörige der Form *Ch. m. poecilurus* bezeichnet wurden, möchten wir als ♀♀ oder jüngere Stücke von *Ch. crassirostris* ansprechen, ohne jedoch unserer Sache ganz sicher zu sein. Sollte es sich in Zukunft herausstellen, dass sich tatsächlich 2 *Chalcites*-Formen auf den gleichen Molukken-Inseln fortpflanzen, so wird man die Form *crassirostris* artlich trennen und auch die systematische Stellung von *salvadorii* einer Nachprüfung unterziehen müssen.

1. *malayanus* (Raffles).

Cuculus malayanus Raffles, *Trans. Linn. Soc.* xii, p. 286 (1821—Malay Peninsula).²

Verbreitung: Malayische Halbinsel nordwärts bis Patani; Sumatra, Java,³ Borneo, Sulu-Inseln, Mindanao, Negros, Celebes.

¹ Im Tring-Museum 1 Exemplar von der Insel Ron in der Geelvink-Bai.

² Nach erneuten Erwägungen scheint uns kein Bedenken vorzuliegen, den Namen *Cuculus malayanus* auf diese Art anzuwenden. Die Beschreibung trifft ausgezeichnet zu, nur die Grösse (about seven inches in length) ist von Raffles falsch angegeben worden. Dagegen, dass Raffles einen *Ch. basalis* vor sich hatte (cf. Mathews, *Austr. Av. Record*, i, 1912, p. 18) spricht neben vielen anderen der Umstand, dass diese Art auf der malayischen Halbinsel, wenn überhaupt, so nur als ganz grosse Seltenheit vorgekommen ist).

³ Vgl. Finsch, *Notes Leyden Mus.* xxii, 1900, pp. 95–96.

Chalcites malayanus hat auf Java eine sehr lokale Verbreitung. Max Bartels und seine Söhne fanden ihn an der Nordküste Westjawas in sumpfigen Wäldern, namentlich an den Waldändern und Flüssen. Er sitzt meist in den Kronen der Bäume, und man würde ihn fast nie bemerken, wenn er sich nicht durch seinen oft wiederholten, viersilbigen flötenden Ruf verriete. Am 27. iii. 1923 fand Max Bartels jun. am Gedari-Flusse ein Nest von *Gerygone modiglianii* mit zwei bronzefarbenen Eiern dieses Kuckueks.

2. *poecilurus* (Gray).

Chrysococcyx poecilurus G. R. Gray, *Proc. Zool. Soc.* 1861, p. 431 (1861—Misol).

Lamprococcyx poeciluroides Salvadori, *Ann. Mus. Civ. Genova*, xiii, p. 460 (1878—Warmon auf Sorong).

Sehr ähnlich *Ch. m. malayanus*, aber Aussenfahne der Steuerfedern und meist auch das ganze mittlere Steuerfederpaar auf der Oberseite mit \pm deutlichem rostfarbenen Anflug, der bei *C. m. malayanus* durch grünlichen Schiller ersetzt ist. Brust im Gegensatz zur Nominatform vielfach röstlich getönt. "Flügelspiegel," womit hier das auf der Unterseite der Schwingen sichtbare helle Feld bezeichnet werden mag, in der Regel röstlicher, weniger weisslich. Flügel 86–96 mm. (wie bei *malayanus*).

Verbreitung: Neuguinea und einige anliegende Inseln: Aru-Inseln, Misol, Vulkan-Insel, Dampier-Insel, Fergusson-Insel.

3. *russatus* (Gould).

Chrysococcyx russata Gould, *Proc. Zool. Soc.* 1808, p. 76 (1868—Cape York).

Sehr ähnlich *Ch. m. poecilurus*; Schwanzfärbung genau wie bei diesem; aber Bänderung der Unterseite im Durchschnitt etwas schmaler. Brust (ganz wie bei *poecilurus*) oft mit und ebenso oft ohne rostfarbene Tönung; je röstlicher die Brust, um so intensiver röstlich ist auch der "Flügelspiegel" gefärbt, bei blassbrüstigen Individuen kann er nahezu weiss sein. Flügel 92–99 mm., also grösser als *poecilurus*. *Verbreitung*: Cape-York-Halbinsel.

4. *minutillus* (Gould).

Chrysococcyx minutillus Gould, *Proc. Zool. Soc.* 1859, p. 128 (1859—Port Essington).

Chrysococcyx barnardi Mathews, *Austr. Avian Record*, i, p. 20 (1912—Queensland: Dawson-River).

Chrysococcyx minutillus perplexus Mathews, *Austr. Avian Record*, i, p. 38 (1912—N.W. Australia: Parry's Creek).

Chrysococcyx minutillus melvillensis Zietz, *South Austr. Ornithologist*, i, p. 14 (1914—Melville Island)

Ähnlich *Ch. m. russatus*, aber Schnabel ein wenig schlanker, insbesondere Oberschnabel meist etwas niedriger (was in der Seitenansicht am deutlichsten hervortritt); Brust meist (aber nicht stets) ohne rostfarbenen Anflug, dementsprechend der "Flügelspiegel" in der Regel blasser (weiss bis blass isabelfarben); Schwanzfärbung wie bei *Ch. m. malayanus*, nicht wie bei *poecilurus* und *russatus*, äusserstes Steuerfederpaar daher im Gegensatz zu *russatus* meist ohne Rostfarbe. Flügel 92–99 mm.

Verbreitung: Kimberley, Arnhem-Land, Melville-Insel, North Queensland südlich der Cape-York-Halbinsel.

5. *misoriensis* (Salvadori).

Lamprococyx misoriensis Salvadori, *Ann. Mus. Civ. Genova*, vii, p. 914 (1875—Misori).

Sehr ähnlich *minutillus*, aber Unterflügeldecken ohne Querbänderung; Oberseite einfarbig grün schillernd, am Kopf etwas dunkler; Flügel 91 mm. (nach Salvadori). *Verbreitung*: Insel Misori in der Geelvink-bai.

6. *rufomerus* (Hartert).

Chrysococyx rufomerus Hartert, *Nov. Zool.* vii, p. 21 (1900—Dammer).

Chalcococyx innominatus Finsch, *Notes Leyd. Mus.* xxii, p. 94 (1900—Kisser).

An *minutillus* anschliessend, aber im ganzen verdunkelt: dunkle Querbinden der Unterseite breiter, Oberseite viel lebhafter metallisch glänzend; Schwanzfedern nur bei manchen Individuen (den jüngeren?) wie bei *minutillus* rostrot gezeichnet: gewöhnlich ist die rostrote Farbe im Schwanz durch Schwarz ersetzt. Schnabelform und Färbung des "Flügelspiegels" wie bei *minutillus*, Grösse dagegen etwas bedeutender: 93–100 mm. Zuweilen Andeutung eines durch die Säume der mittleren Flügeldeckfedern gebildeten weissen Flügelflecks.

Verbreitung: Damar (Dammer), Sermata, Letti, Romah, Moa, Kissar.

7. subsp. ?

3 Exemplare von *Wetar* (Wetter) sind äusserst ähnlich *Ch. m. minutillus*, schillern aber auf dem Oberkopf mehr bronzerot, weniger grünlich. Vermutlich eine endemische Form?

8. subsp. ?

2 Exemplare von *Timor* gleichen vollkommen extrem röstlichen Stücken von *Ch. m. russatus* mit rostfarbenem Brustton, sind aber grösser (Flügel 99–100 mm.). Vermutlich eine endemische Form?

9. *salvadorii* subsp. nov.

Chrysococyx spec. an. subsp. nov. ? Hartert, *Nov. Zool.* 1906, p. 295 (Babber Island).

♂ ad. Oberseite dunkelgrün, metallglänzend, auf dem Kopfe mit stahlblauem Schimmer; einige der mittleren Oberflügeldecken mit weissen Bändern, wodurch ein unregelmässiger weisser Fleck entsteht. Unterseite weiss, die Federn mit 2, am Vorderhalse mit nur einer Binde von schwärzlicher, etwas metallglänzender Färbung; letztere Farbe auch an den Seiten der Kehle. Schwingen tiefbraun, an den Aussenfahnen bronzeglänzend, an den Innenfahnen aller mit Ausnahme der zweiten (!) ein grosser weisser Fleck. Schwanz wie beim alten *crassirostris* ohne Rotbraun, die äusserste Steuerfeder mit breitem weissen Fleck an der Spitze der Innenfahne. Flügel 99 mm. Tapa, Babber, 15. ix. 1905, ges. von Heinr. Kühn (Typus). Unterscheidet sich vom ganz alten *crassirostris* durch nicht tiefblaue, sondern dunkelgrüne Oberseite und schwarzgebänderte Unterseite; diese breite Bänderung ist nicht mit der schmalen, blassen bei den *crassirostris* im zweiten Kleide zu verwechseln! Nur das eine Stück bekannt. Benannt nach Graf Salvadori, dessen *Ornitologia della Papuasia* die Grundfeste aller Kenntnis jener Länder ist und ewig bleiben wird.

10. *crassirostris* (Salvadori).

Lamprococcyx crassirostris Salvadori, *Ann. Mus. Civ. Genova*, xiii, p. 460 (1878—Klein Kei: Tual).
Chalcococcyx Nieuwenhuisi Vorderman, *Nat. Tijdschr. Nederl. Indië*, lviii, p. 196 (1898—Halmahera).

Das Jugendkleid ist im Gegensatz zu dem aller übrigen Formen oberseits rostbraun ohne Metallglanz. Ein weisser Flügelstreck fehlt noch (stets?). Individuen, die wir für junge Vögel nach der Jugendmauser halten, sind nicht von gleich alten *L. m. minutillus* zu unterscheiden. Bei den ausgefärbten Individuen mit tief blauschwarzer Oberseite fehlt der Unterseite jegliche dunkle Querbänderung, sie ist daher rein weiss; die Oberseite schillert dunkelblau, ein grosser weisser Flügelstreck, von den mittleren Oberflügeldeckfedern gebildet, ist meist vorhanden. Während der Jugendschwanz noch ebensoviel Rostfarbe zeigt wie bei *Ch. m. minutillus*, ist im Altersschwanz alles Rostrot durch Schwarz ersetzt. Schnabel meist etwas breiter als bei *rufomercus*. Flügel 90–97 mm.

Verbreitung: Tenimber-Inseln (Larat 18. ii. 1901, Kühn coll.), Kei-Inseln, Koer, Taam, Goram, Seran, Ambon, Buru, Ternate, Halmahera, Sorong!¹

VI. *Chalcites ruficollis* (Salvadori).

Lamprococcyx ruficollis Salvadori, *Ann. Mus. Civ. Genova*, vii, p. 913 (1875—Arfak-Gebirge).

Ähnlich *Ch. malayanus poecilurus*, aber Schwanz (schon im Jugendkleid) ganz anders gezeichnet als bei diesem: während bei *Ch. m. poecilurus* die Innenfahne der 2.–4. Steuerfeder mit Ausnahme einer schwarzen, grau grundierten Praeapicalbinde völlig rotbraun ist, besitzen dieselben Federn bei *Ch. ruficollis* eine ausgedehnte schwarze Basis und eine breite schwarze Binde vor einem weissen Spitzenfleck; diese beiden schwarzen Zonen werden an der Innenfahne durch eine breite rostfarbene Binde getrennt. Flügelstreck reiner weiss als bei *Ch. m. poecilurus*. Brust im Alterskleid stets sehr intensiv rostfarben getönt. Flügel 91–98 mm.

Verbreitung: Hohe Gebirge von Neuguinea, etwa oberhalb 2,000 m.²

VII. *Chalcites meyeri* (Salvadori).

Chrysococcyx splendidus A. B. Meyer (nec Gray), *Sitzungsber. K. Akad. Wissensch. Wien*, lxi, pp. 74, 81 (1874—Arfak-Gebirge).

Chrysococcyx meyeri Salvadori, *Ann. Mus. Civ. Genova*, vi, p. 82 (1874—Arfak-Gebirge: Hatam).

Verbreitung: Diese in der Färbung von allen übrigen erheblich abweichende Art bewohnt die Gebirge Neuguineas oberhalb 1,000 m.

¹ Sorong nach Finsch, *Notes Leyden Mus.* xxii. 1900, p. 98. Von der gleichen Insel stammt der Typus von *Lamprococcyx poeciluroides* Salvadori.

² Der kaum flugfähige Nestling vom Owen-Stanley-Gebirge, 11,000 ft., den Rothschild und Hartert in *Nov. Zool.* xiv. 1907, p. 439 unter *Chrysococcyx plagosus* aufführen, gehört zu *Ch. ruficollis*.

REVIEW OF THE GENUS *CACOMANTIS* MÜLL.

By ERNST HARTERT.

THE genus *Cacomantis* (synonyms *Polyphasia*, *Gymnopus*, and *Ololygon*) has received rather harsh treatment in the *Cat. B. Brit. Mus.*, and more recently by Mathews, who went entirely wrong about the nomenclature. Shelley enumerated ten species; I now admit four species, separable into twenty-seven subspecies. The differences from Mathews's treatment—which he now told me he considered wrong himself in parts, i.e. the application of the name "*rubricatus*"—will be seen in the following notes; as it is, neither of Mathews's specific names, as used in his *B. of Australia*, is correct, and much time had to be wasted on clearing up the nomenclature of the forms.

CACOMANTIS MERULINUS.**1. *Cacomantis merulinus merulinus* (Scop.).**

Cuculus merulinus Scopoli, *Del. Flor. et Faun. Insubr.* ii, p. 89 (1786—Ex Sonnerat, *Voy. Nour. Guinée*, i, p. 121, pl. lxxxii, Island of Panay, Philippine Islands).
Cuculus flavus Gmelin, *Syst. Nat.* i, p. 421 (1788—Also based on Sonnerat, l.c., Panay).
Cuculus lanceolatus Müller, *Verh. Nat. Gesch. Oost-Indië, Land- en Volkenk.*, p. 178 (Java).
Cacomantis borneensis Bonaparte, *Ateneo Ital.* 1854, is nomen nudum!
Cacomantis dysonymus (not *dysonomus*) Heine, *Journ. f. Orn.* 1863 ("Borneo, Java, Sumatra").

Underside of adults pale, wing 98–111 mm.

Philippine Islands, Celebes, Palawan, Sulu Islands, Borneo, Bali, Java.
 On Celebes rare and possibly only as a visitor from China?

2. *Cacomantis merulinus threnodes* Cab. & Heine.

Cacomantis threnodes Cabanis & Heine, *Mus. Hein.* iv, p. 19 (1862—Malacca).
 ? *Cacomantis merulinus subpallidus* Oberholser, *Smiths. Misc. Coll.* ix, No. 7, p. 5 (1912—Nias).

This form stands between *C. m. merulinus* and *querulus*, having wings as a rule shorter than *querulus*, and the underside is either almost or entirely as dark as in the latter, or as pale as in *C. m. merulinus*. Wings 97–107 mm.

Malay Peninsula and Sumatra.

Probably *C. m. subpallidus*, described as smaller and paler than *C. m. merulinus*, belongs also to this form, which is really intermediate and in colour sometimes like the darker, sometimes like the paler subspecies; it might therefore, as suggested by Stresemann, *Nov. Zool.* 1912, p. 333, better be labelled as *C. merulinus merulinus* \leq *querulus*, instead of a special name; Stresemann, however, assigned it only to Malacca, while it inhabits the Malay Peninsula as well as Sumatra, as shown by van Heyst's collection from N.E. Sumatra.

3. *Cacomantis merulinus querulus* Heine.

Cacomantis querulus Heine, *Journ. f. Orn.* 1863, p. 352 ("Vorderindien und Nepal").

Polyphasia rufiventris Jerdon *Ibis*, 1872, p. 15. (Name for No. 209 of Jerdon's B. India: "Lower Bengal, and all the Countries to the East, as Assam, Sylhet, Burmah, and even so far as China." Nepal substituted as typical locality by Baker in *Handl. B. India*, but as this was not mentioned by Jerdon, cannot be accepted.)

Underside of adults ferruginous rufous, wings 104–166, exceptionally even 117 and 118 mm.

Near Calcutta, in Eastern Bengal, Assam, Eastern Himalayas, southwards to Burma, to Tenasserim, east to Yunnan, southern China and Hainan.

4. *Cacomantis merulinus passerinus* (Vahl).

Cuculus passerinus Vahl, *Skriv. Nat. Selsk.* iv, p. 57 (1797—India).—I quote this, but have not seen it.

Cuculus tenuirostris Gray, in *Hardwicke's Ill. Ind. Zool.* ii, pl. xxxiv, fig. 1 (1833–34—No exact locality).
Polyphasia nigra Jerdon, *Ibis*, 1872, p. 14, pl. i (N.W. Himalaya, S. India).

Adult: Underside slate-grey, paling on the abdomen, which is sometimes whitish, sometimes not lighter than the breast, under tail-coverts white, edge of wing white. Sometimes quite melanistic, being slate-colour all over!—juv. variable, usually above bright chestnut, with top of head, hind-neck, rump and upper tail-coverts uniform, sometimes barred; other specimens are above slaty-brown, more or less edged or barred with rufous.

Ceylon, South India to Himalayas, east to Sikkim, in the west to Simla, but absent from the Indus Valley and in Rajputana apparently only known on Mt. Abu, which is covered with forests.

This is a melanistic form, and analogies in *C. variolosus* permit us to look upon it as a subspecies of *C. merulinus*, as has been suggested first by Baker in his *Hand-list of the Birds of India*, p. 155.

CACOMANTIS VARIOLOSUS.

(This species has recently been reviewed, the Australian forms by Mathews, *B. Australia*, vii, the *sepulcralis* group by Stresemann, *Nov. Zool.* xix, 1912, pp. 334, 335, and afterwards the latter added *macrocerus* from New Britain, Rothschild & Hartert *blandus* from the Admiralty Islands, and *fortior* from the D'Entrecasteaux group. The following review, however, will show that still more forms must be recognised.)

1. *Cacomantis variolosus sepulcralis* (S. Müll.).

Cuculus sepulcralis S. Müller, *Verh. Nat. Gesch., Land- u. Volkenkunde*, p. 177 (1839–1844—Java and Sumatra).

Sumatra, Java (Borneo?), Bali, Lombok, Sumbawa, Sumba, Philippine Islands. It is strange that there is, apparently, no proof of the occurrence in Borneo.

The colour of the underside is somewhat variable. It is most peculiar that no specimens from Borneo are available, while specimens from the Philippines do not differ from others of Java and other localities! Wing 113–120 mm.

2. *Cacomantis variolosus everetti* subsp. nov.

A form very closely allied to *sepulcralis* is found on the Sulu Islands between Borneo and Mindanao. We have an adult female from Tawi-tawi collected by Alfred Everett in July 1893, which has the underside chestnut to the base of the lower mandible, showing no grey on the throat. A similar specimen is mentioned by Meyer and Wigglesworth (*B. Celebes*, i, p. 198) as being in Nehrkorn's collection. I name this form as above, type Everett's specimen, in memory of one of the best collectors and gentlest gentlemen whom it was my pleasure to have to do with.

3. *Cacomantis variolosus aeruginosus* Salvad.

Cacomantis aeruginosus Salvadori, *Ann. Mus. Civ. Genova*, xiii, p. 458 ("Buru, Amboina, Ceram."

Terra typica clearly Buru, specimens from Amboina and Ceram said to be exactly like the Buru ones).

Buru only.

Very much like *C. v. sepulcralis* and *virescens*, and underside very constant, dark rufous, in the series a shade darker than in *virescens*, bill larger, wing 114–119 mm.

This form differs from *virescens* almost only in the larger bill, from *sepulcralis* in the constant, and usually darker, richer, coloration of the underside, and I can well understand that it has often been united with both the latter, nor do I find any new enlightenment in Meyer & Wigglesworth's *Bird of Celebes*, i, p. 198 (not 108!).

4. *Cacomantis variolosus stresemanni* subsp. nov.

Cacomantis subsp. *C. v. aeruginosus* dicta persimilis, sed rostro multo crassiore haud difficile distinguendus.

Ceram (and probably Amboina).

The wings of the two males shot by Stresemann measure 116 and 119 mm. The colour is not appreciably different from that of Buru specimens, but the bill is strikingly thicker, higher, and wider. I therefore name it after Dr. Stresemann.

Type: ♂, Gunong Sofia, Ceram, 3,000 feet, 19.vi.1911. E. Stresemann coll. No. 712.

5. *Cacomantis variolosus virescens* (Brüggem.).

Cuculus virescens Brüggemann, *Abh. Naturf. Ver. Bremen*, v, p. 59 (1876—Celebes).

Celebes and neighbouring Islands of Banggai, Binungko, and Tomia (Tukang Bessi group).

This form is very closely allied to both *C. v. sepulcralis* and *aeruginosus* from Buru, but has a smaller, finer bill; the rufous colour of the underside is dark and fairly constant, the upperside inclined to be more bluish; the grey on the throat is inclined to be darker.

Stresemann (Nov. Zool. xix, p. 334) erroneously unites with *virescens* a specimen from Tawi-Tawi in the Sulu group between Borneo and the Philippines, in fact close to Borneo. Apparently he mistook Sulu for Sula, where this form might occur, though it does not seem to be known. Wing 106–117 mm.

6. *Cacomantis variolosus infaustus* Cab. & Heine.

Cuculus assimilis Gray, 1858, nec Brehm, 1831.

Cacomantis infaustus Cabanis & Heine, *Mus. Hein.* iv, p. 23 (1862—Mysol !)

I believe we must unite the birds from Mysol, the Key and Aru Islands, the South-East Islands, Salwatti, Ceramlaut, Goram, Waigiu, the Berau Peninsula, and the north coast of Papua east of the Geelvink Bay as far as Simbang north of Huon Gulf.

The two very old specimens from Mysol collected by Heinr. Kühn are almost pure grey on the whole abdomen: the others which I have examined are not fully adult; this great amount of grey is, however, probably not a feature peculiar to Mysol birds, as among the series from the Key Islands (Tual) there is an equally grey bird, and several approaching it. Better series are required from northern Papua, Berau Peninsula, and Aru Islands—the last having frequently been visited by collectors, but never thoroughly investigated by an expert ornithologist!

All these underneath light cinnamon rufous, paler than in *aeruginosus*, with or without a grey wash, to almost pure grey, but even in the most rufous specimens the chin and upper throat remains more or less grey. The bill is long, but slender, wing 115–123 mm. Stresemann measures a ♂ from Ramu 125 mm.!

The name *Cuculus assimilis* is preoccupied, therefore *infaustus* must be used!

7. *Cacomantis variolosus oblitus* subsp. nov.

Cacomantis variolosus subspeciei *infaustus* dictae similis, sed alis plerumque longioribus, necnon colore subtus pallidior distinguendus.

North Moluccas: Batjan, Ternate, and Halmahera, also Obi.

This form differs from its nearest ally, *infaustus*, in having the underside paler, lighter. The bill is generally larger. The rufous specimens are brighter, lighter, more ochraceous, the greyish ones more whitish grey. The wings of fully adult examples measure 125–130 mm. Type: ad., Batjan, Aug. 1902.

For want of material hitherto overlooked. The difference is striking when a series is examined. We have fourteen specimens collected by Doherty and Waterstradt, not counting juveniles. The darkest specimens are barely separable from the lightest *infaustus*.

Salvadori, in his immortal *Ornitologia Papuasie*, i, pp. 338, 339, already called attention to the greater dimensions of specimens from Batjan, Ternate, Halmahera, Morty, Obi Major, Mafor, Duke of York, and New Britain! That was perfectly correct, but the birds from the latter islands differ again very much from the North Moluccan ones.

Cacomantis variolosus subsp. ?

Large specimens, with thick and long bills, were collected on the island of Mafor in Geelvink Bay by William Doherty. They seem to be inseparable from *C. v. fortior* of the D'Entrecasteaux Islands. Wings ♂, 127, 128, 129 mm. They are underneath pale grey with a rufous wash, one more rufous than the other two. A young from Mafor is very light.

8. *Cacomantis variolosus fortior* R. & H.

Cacomantis assimilis fortior Rothschild & Hartert, *Nov. Zool.* xxi, p. 4 (1914—Goodenough and Fergusson Islands).

Goodenough and Fergusson Islands, D'Entrecasteaux group.

Differs from *C. v. infaustus* in being larger, having larger and longer bills and longer wings. Wings 123–138 mm. The latter measurement only once, in the others 123–129 mm. Underside more or less rufescent, not quite grey as in *websteri*.

To *C. v. fortior* seem to belong also our skins from Rook, Dampier, and Vulean Islands! Wings 120–131 mm. This distribution would be very peculiar!

9. *Cacomantis variolosus blandus* R. & H.

Cacomantis blandus Rothschild & Hartert, *Nov. Zool.* xxi, p. 290 (1914—Manus, Admiralty group).

Manus, Admiralty Islands.

This is a small form, wings adults 109–113 mm. Differs from *C. v. infaustus* in its smaller size, slate or bluish grey (not bronzy-brown) upper tail-coverts, while the underside is light cinnamon rufous, apparently never grey. Our series of eight adults and two young is the only one recorded. The grey on the throat is very pure, covering the whole chin and throat to the crop.

10. *Cacomantis variolosus addendus* R. & H.

Cacomantis addendus Rothschild & Hartert, *Nov. Zool.* viii, p. 185 (1901—Kulambangra, Central group of the Solomon Islands).

Kulambangra and New Georgia, Solomon Islands.

Differs from the other forms by its uniform almost blue-black upperside. Wings 116–123 mm.

11. *Cacomantis variolosus websteri* Hart.

Cacomantis websteri Hartert, in Webster's *Through New Guinea*, App. p. 370 (1898—New Hanover)

New Hanover.

Differs from all other forms in its constantly dark-grey underside; the under tail-coverts only are sometimes not grey, but cinnamon rufous or barred with rufous; rarely there is a rufous tinge on the upper breast. The tail is rather long.

12. *Cacomantis variolosus macrocerus* Stres.

Cacomantis sepulchralis macrocerus Stresemann, *Anz. Orn. Ges. Bayern*, No. 5, p. 37 (1921—"Nen Pommern, wahrscheinlich auch Neu-Mecklenburg und Neu-Lauenburg").

New Britain, Duke of York Island, and New Ireland.

Wing 116–130 mm. Tail longer than in other subspecies, except New Hanover. Underside with exception of the rufous tail-coverts, pale grey, grey washed with rufous to rufous (with exception of throat).

13. *Cacomantis variolosus oreophilus* subsp. nov.

Subspecies *C. v. infaustus* dictae similis, sed rostro robustiore, brevior primo visu distinguendus.

Mountain Ranges of South-Eastern Papua, but also near Collingwood Bay (Haidana), and inland of Milne Bay, as well as on the foothills of the Snow Mountains Range (Mimika, Wataikwa, Setekwa, and Eilanden Rivers).

Differs from *C. s. infaustus* at a glance by its thicker, and generally shorter and at base wider bill. The underside is greyish brown or brownish grey with a ferruginous wash, which in a few specimens is so strong that the underside looks very rufous, while sometimes the colour is more slaty and darker—but not one of the over twenty examined is quite grey or quite rufous. Wings 116–123, once (Hydrographer Mts.) 126 mm. Other Hydrographer Mts. specimens are not so large.

Type: “♂” ad., Hydrographer Mts., W. of Dyke Acland Bay, 2,500 feet, 12.v.1918. A. Eichhorn coll. No. 8015.

14. *Cacomantis variolosus variolosus* (Vig. & Horsf.).

? *Cuculus rufulus* Vieillot, *Nouv. Dict. d'Hist.Nat.* (nouv. éd.), vii, p. 234 (1817—Australia); Pucheran, *Rev. et Mag. Zool.* 1852, p. 562 (not 560!).—The description of Vieillot's *Cuculus rufulus* agrees in my opinion much better with the present species than with *cineraceus* (*flabelliformis* auct.), but it was taken from a young bird, and is too vague to be accepted with certainty. Pucheran, when saying that Vieillot's *rufulus* was a young “*cineraceus*, espèce présentement rapportée au *C. flabelliformis*,” judged from the description, as he expressly stated, and had not seen the type, which was not in the Paris Museum, but in the collection of M. Baillon.

Cuculus Variolosus Vigors & Horsfield, *Trans. Linn. Soc. London*, xv, p. 300 (1827—“Paramatta, New South Wales”). Type (a young bird) in the British Museum.

Cuculus insperatus Gould, *Proc. Zool. Soc. London*, 1845, p. 19 (New South Wales).

Top of head slate-colour, back, wings, and tail brownish- or olive-grey, somewhat variable, throat sometimes extending to the chest, pale grey, rest of underside light fawn-colour, or cinnamon-fawn, generally with some greyish tinge. Wings 130–140 mm.

Victoria, New South Wales, and South Queensland. This form is, at least partially, migratory, having occurred on Batjan and on migration at Cape York.

15. *Cacomantis variolosus dumetorum* (Gould).

Cuculus dumetorum Gould, *Proc. Zool. Soc. London*, 1845, p. 19 (Port Essington, Northern Territory). *Cacomantis lineatus* Dodd, *Emu*, xii, p. 165 (1913—Nelson near Cairns in N. Queensland. Description of a young bird in first plumage, but no mention of this fact!).

Cuculus westwoodia Mathews, “*Austral Avian Record*,” i, p. 190 (1913—“Central Queensland, Range Queensland.” Description of a ♀ with underside barred with dull white and pale brownish grey, from Westwood near Rockhampton, Queensland).

Cacomantis pyrrhophanus vidgeni Mathews, *B. Austr.* vii, p. 326 (1918—Cape York).

Very much like *variolosus* but paler, upperside more greyish, underside lighter, wing shorter, bill as a rule thinner, sometimes shorter; the weaker bill is specially conspicuous in most specimens from Melville Island and N.W. Australia as well as in those from Cape York. Wings 120–130, exceptionally to 132 mm. The specimens from Normanton (from the Mathews collection) have mostly rather larger bills, some as big as those of *variolosus*, but even among these there is much variation, and it seems to me quite evident that all the northern birds from N.W. Australia, Melville Island, Arnhem Land, Cape York, and Northern Queensland are one and the same subspecies—with the exception of a few specimens, which were doubtless on migration. This form is also, at least partially, migratory, having occurred on Batjan, Key Islands, and apparently New Guinea (Dorey). North-West Australia, Melville Island, and Arnhem Land to Cape York, Cape York Peninsula, Northern and Middle Queensland. Also Key Islands and Batjan on migration.

In Mathews's *B. Australia* these birds are very unsatisfactorily treated.

As usual in his later volumes the author places all names given to a species and its allies as if they were synonyms! Then, at the end of his article on the particular species he mentions which forms might now, in his opinion, be separated, often without clearly stating differences, so that one can only find them out by referring to the original quotations, which are only available to a few. Even having done so in this case, no differences are even to be guessed between *lineatus* and *vidgeni*. As it is, one can only distinguish between a southern form (*variolosus*) and a northern one (*dumetorum*).

Mathews says that he has not seen any extra-Australian specimens of either *variolosus* or *dumetorum*, but there are in the Tring Museum adults of both (see distribution, above), and young from the Oetakwa River, Obi, Halmahera, Kisser, and Ceramlaut, of which, however, I am uncertain whether they belong to *variolosus* or *dumetorum*, as I do not know how the young of these subspecies differ.

CACOMANTIS CASTANEIVENTRIS.

1. *Cacomantis castaneiventris castaneiventris* Gould.

Cuculus (Cacomantis) castaneiventris Gould, *Ann. & Mag. Nat. Hist.* ser. III, vol. xx, p. 269 (1867—Cape York district).

♂♀ ad., upperside slate-colour, chin slaty-grey, rest of underside chestnut; tail a bit darker than wings, more steel-black, all except the middle ones notched or small spotted with white along the edges, tipped with white, outermost pair with white, sometimes incomplete, cross-bars on the inner webs, second pair with white spots along the shaft. Young above, rusty-brown, underside pale cinnamon buff, palest on abdomen, tail-feathers with rufous tips, edges rufous, outer pairs barred (more or less irregularly) with rufous.

Distinguished from other species by the uniform, unspotted, and unbarred upper- and underside of the body of the young!

Cape York Peninsula to Claudie River and Cooktown.

This bird is rare in collections, and there are only a few specimens of it. There are only three adults and one young in the Mathews collection.

? *Cacomantis castaneiventris arfakianus* Salvad.

Cacomantis arfakianus Salvadori, *Orn. Pap.*, Aggiunte i, p. 49 (1889—Western New Guinea).

Said to be smaller, with a longer bill, and to have a paler underside than *C. castaneiventris*. The wing in Cape York specimens is really only 107–111, Salvadori gives 106–113, so this is no difference from the Cape York form, while in the dark *weiskei* the wing is 111–119 mm. But Salvadori had also before him a ♂ from Arfak, Beccari coll., with a wing of quite 115 mm. The bills vary somewhat everywhere, and it cannot be said that the "*arfakianus*" have longer bills. As regards the paler underside, it must be explained that, while a series from the mountains of British New Guinea (twenty-one specimens in Tring!), a few from the Snow Mountains, one from the Weylandt Mountains, and one from Arfak (specimen *c* of Salvadori's list in *Orn. Pap.* i, p. 334), and apparently one from the Sepik River, are underneath very dark, and have wings of 111–119 mm., there are a number of others from the Berau Peninsula, Snow Mts., and British Papua which have the wings as in the Australian form, the underside lighter than in the above-mentioned mountain birds. Through Dr. Gestro's kindness I have been able to examine Salvatore's specimens.

We have before us one young from Naiabui, S.E. Papua, which has the

underside very much like the only known young from Australia (Cape York, H. S. Vidgen coll., ex coll. Mathews), though a little browner, and in Salvadori's dark Arfak specimen *e* some feathers on the abdomen are whitish !

The question is now : in which relation to these paler birds stand the others ? They seem to be indistinguishable from Cape York *castaneiventris* and should not have been separated by name ! But when Salvadori named "*arfakianus*" he did this, apparently, not with all the material in hand that he had when writing his immortal work, but named it on A. B. Meyer's note, in *Zeitschr. ges. Orn.* iii, p. 12, and having compared a dark Hufeisen Mts. bird with the Arfak ones, without seeing his dark specimen *e*, and obviously believing that Australian birds were also dark ! and altogether he only *suggested* this new subspecies as being "not improbable" !

The paler birds inhabit perhaps the lowlands, while the dark *weiskei* are chiefly or entirely mountain-dwellers ; but even this requires confirmation, and it may be that all light and dark birds are after all the same !

We cannot suggest that the young of the paler Papuan specimens are whitish underneath, because in Salvadori's specimen *e* the new chestnut feathers are of the darkest !

? *Cacomantis castaneiventris* subsp. ?

Cf. *Nov. Zool.* 1907, p. 436,

Cacomantis castaneiventris occurs also on the Aru Islands, as two specimens from there are known : an adult male collected by Rosenberg, in the Leyden Museum, and a young, collected by Heinrich Kühn, in the Tring Museum. The adult is dark like *C. c. weiskei*, wing 111 mm., bill somewhat small and slender. The young, however, differs in having the underside not brown, but creamy white, with a few chestnut feathers coming in ; these coming feathers appear to be more like those of Cape York birds, not as dark as in *weiskei*, but single feathers on a white ground are difficult to judge to a nicety. The bill is large. The question arises : Is the Aru form the same as the Papuan one, the underside being abnormal, or is it a local subspecies, differing only in the young, and possibly in very minute details of the adult ? These questions can only be solved on the evidence of a series from Aru.

2. *Cacomantis castaneiventris weiskei* Rehw.

Cacomantis weiskei Reichenow, *Orn. Monatsber.* 1900, p. 186 (Aroa River, 5,000 feet).

Cacomantis castaneiventris bihagi Mathews, "Austral Avian Record," ii, p. 92 (1914—Bihagi, head of the Mambare River, British New Guinea).

This form, of which we have now twenty-one adult and three young, is very dark on the underside, darker than the (few) Cape York specimens available, the bill is inclined to be short and thick, but varies ! The young are on the underside brown, darker than in the one from Cape York and the one from Naiabui, S.E. Papua. It seems, therefore, that this dark form is peculiar to New Guinea, and perhaps only to the mountains. Reichenow described it from a young bird, saying that it was apparently ("anseheinend") a younger bird, but this is most obvious. He only knew young *Cacomantis* to be barred and spotted, and the unspotted young of *C. castaneiventris* was not described until 1907 (*Nov. Zool.* p. 436). Mathews was not aware of the description of *C. weiskei*, the type of which is in the British Museum ; we have adults from the same locality (Mambare River).

It is remarkable that Ogilvie-Grant (*Ibis, Jubilee Supplement* ii, p. 182, 1915) separated the dark *weiskei* as *C. castaneiventris* from the lighter birds, which he called *C. castaneiventris arfakianus*, saying that they were "undoubtedly" referable to this subspecies. (See what I said above!) Mathews holds him to task for his remarks (*B. Australia*, p. 330), and says that he finds them "all to be referable to one form, the dark coloured specimen being adult, while the lighter ones are the first adult plumage." This view is not correct, as there is no different first adult plumage, two of our adult *weiskei* still showing juvenile wing- and body-feathers, being of the darkest, and also the one from Arfak mentioned above (specimen *e* of Salvadori's list) has some juvenile feathers remaining on the abdomen which seem to be as whitish as in our Aru bird (!), and yet the fresh chestnut feathers are of the very darkest!

CACOMANTIS CINERACEUS.

1. *Cacomantis cineraceus cineraceus* (Vig. & Horsf.).

Cacomantis flabelliformis auct. nec *Cuculus flabelliformis* Latham, *Ind. Orn. Suppl.* ii, p. 30! Latham's name is based on the description and plate of the "Fan-tailed Cuckoo" in the *Suppl.* ii to the *General Synopsis of Birds*, p. 138, pl. exxvi. We must agree with North and Mathews that the name *flabelliformis* is not acceptable, and it is regrettable that for about three-quarters of a century the name has been generally used. Latham described the bird—like many others—from a drawing, which, in this case, must have been a fanciful picture, as no such bird is yet known to exist. Latham's "Fan-tailed Cuckoo" is above brownish brown, underneath orange, with a broad black collar across the jugulum.

Cuculus cineraceus Vigors & Horsfield, *Trans. Linn. Soc. London*, xv, p. 298 (1827—"Australia." New South Wales, teste Mathews). Type in British Museum.

Cuculus incertus id., t.e. p. 299 (1827—"Australia." New South Wales, teste Mathews). Type in British Museum.

Cacomantis rufulus (nec *Cuculus rufulus*, Vieillot 1817) North 1906, Mathews 1908, and others. The description of Vieillot is taken from a young *Cacomantis* which was probably a young *C. variolosus*, but is too indefinite to be accepted.

Cuculus rubricatus (nec *Sylvia rubricata* Lath !) Mathews, "Austral Avian Rec." i, p. 21, 1912, *B. Australia*, vii, 312.—Mathews accepted the name *rubricatus*, because he supposed that Latham's Ruddy Warbler, *Gen. Synops.* *Suppl.* ii, p. 249, and *Sylvia rubricata*, *Index Orn. Suppl.* pl. iv (1801), were based on the Watling Drawing 202 which represents this Cuckoo, but he kindly tells me that he does not now take this view, and I agree with him that the description "a trifle larger than a Red-breast, beneath wholly ferruginous, inclining to yellow, wings and tail brown" is not at all in agreement with this Cuckoo, though Watling's drawing 202 represents a *Cacomantis* and is marked as Latham's *Sylvia rubricata*. The description of *Sylvia rubricata* can never have been taken from the *Cacomantis* represented on pl. 202, which was probably marked in error as the *Sylvia rubricata*.

Cuculus rubricatus athertoni Mathews, "Austral Avian Rec." i, p. 11 (1912—Atherton, North Queensland).

? *Cuculus rubricatus albani* Mathews, t.e. p. 12 (1912—Albany, West Australia).

Cacomantis rubricatus eyrei Mathews, *B. Australia*, vii, p. 320 (1918—Eyre's Peninsula, South Australia).

This species is easily distinguished from the other *Cacomantis* found in Australia by its bluish slate upperside and cinnamon rufous, more or less vinous, underside, large size and long slate-black tail with pure-white markings.

It inhabits Australia, with the exception of the north-east parts, and Arnhem Land, but occurs also on Tasmania and Flinders Island. Mathews separated four subspecies, *C. rubricatus rubricatus*, *athertoni*, *albani*, and *eyrei*.

The type-specimen of *athertoni*, from the Baron River, as per label, from Atherton according to Mathews, in N. Queensland, is, I have no doubt, an

exceptional specimen, being exceptionally small, and the underside is brighter rufous, not "deeper" as Mathews says! The wing measures only 133 mm. It is, however, difficult to understand how Mathews can say that the birds from that district are a different subspecies, as a series from there do not differ in the least from others, only this one specimen being different!

C. c. albani is described as being smaller, paler above and below! The fact, however, is that at least two examples are *deeper* rufous on the underside, one of them the type. Probably Mathews meant to say deeper when he wrote paler, as nobody can possibly describe a deeper rufous colour as paler. The supposed smaller size is incorrect. It is true that the left wing of the type measures 138 mm., as he says, but specimens from Broome Hill and Warren River, in the same region, have wings of 142, 144, and 149 mm. I have allowed a ? with the name *albani*, as it is possible that in S.W. Australia a form with generally darker underside might predominate—but I do not believe it.

To crown his work Mathews, in 1918, described *eyrei*, saying that "South Australian birds are darker in colouration than the typical series," but this is absolutely *not* the case.

(In the review of the supposed subspecies of "*rubricatus*" Mathews gave an incomplete description of the distribution. Under his "*athertoni*" he gave only "Atherton," under *rubricatus* only New South Wales (while it is, of course, found as well in Victoria, South Queensland, etc.), under *eyrei* only Eyre's Peninsula, leaving it to the unfortunate readers to guess to which forms belonged the specimens from Cape York, Kangaroo Island, Tasmania, etc. As I do not separate his subspecies, they all belong for me to *C. cineraceus cineraceus*.)

2. *Cacomantis cineraceus excitus* R. & H.

Cacomantis excitus Rothschild & Hartert, *Nor. Zool.* xiv, p. 436 (1907—"In montibus Novae Guineae meridionalis orientalis." Type: Owgarra, Angabunga River).

Mountains on Upper Aroa, Mambare and Angabunga Rivers, Owen Stanley Range.

Upperside very much darker than in *cineraceus cineraceus*, underside also, deep chestnut.

3. *Cacomantis cineraceus meeki* R. & H.

Cacomantis meeki Rothschild & Hartert, *Nor. Zool.* ix, p. 586 (1902—"Insula Ysabel dicta, ins. Salomonis").

Isabel Island, Solomon group.

Much like *C. c. cineraceus*, but upperside darker, slaty-black, underside also darker, uniform, but not as deep chestnut as in *excitus*.

When describing this Cuckoo we did not compare it with its nearest ally, *C. c. bronzinus* (rectius *pyrrhophanus*), from New Caledonia, as we had no specimen from there, but I find now that it is indeed very close to it. All I can see is, that the underside of *pyrrhophanes* is a shade brighter, and perhaps deeper in colour, while the bill is apparently slenderer; the latter character is perhaps a mere suggestion, as we have only two of each form, and in two, one from New Caledonia and one from Isabel, the beak is shot off. As birds from New Caledonia are, as a rule, very different from those of the Solomons, and as a quite different race inhabits the New Hebrides, I have no doubt that these differences, minute as they are, must be constant, and that *meeki* is separable from *pyrrhophanus*, but more material is desirable to finally settle this point.

4. *Cacomantis cineraceus pyrrhophanus* (Vieill.).

Cuculus pyrrhophanus Vieillot, *Nouv. Dict. d'Hist. Nat.* nouv. éd. viii, p. 234 (not 324) (1817—"Nouvelle Hollande," error for "Nouvelle Calédonie"); Pucheran, *Rev. et Mag.* 1852, p. 560 (Pucheran says that the type was collected by Labillardière on Java; though collected by Labillardière, however, it came, according to the label, from New Caledonia; this must be the case because the description and the specimen agree absolutely with New Caledonian specimens, and not with anything occurring on Java or in Australia).

Cuculus (Cacomantis) bronzinus Gray, *Proc. Zool. Soc. London*, 1859, p. 164 (Island of Nu, New Caledonia).

Only known from New Caledonia, but see above about *C. c. meeki*, which is very much like it.

I am very much obliged to Dr. Menegaux and Dr. Trouessart of the Paris Museum, for kindly sending over the type of Vieillot's *Cuculus pyrrhophanus*. It agrees entirely with two adults from New Caledonia collected by P. D. Montague.

It is not clear why Mathews concluded that the name *C. pyrrhophanus* referred to a bird of the *variolosus* group, as the description did not agree with the latter, since it is not entirely rufous underneath. The description of the upperside by Vieillot is bad, but was corrected by Pucheran. Vieillot's description, in any case, if taken from an Australian specimen, would have suited *cineraceus* or *castaneiventris* much better than *variolosus*, and I cannot understand why Mathews fixed the name on the latter group, thus confusing the nomenclature for the time being. When quoting Vieillot's name he adds: "Nouvelle Hollande" = Java [= Timor?]. This is a somewhat enigmatical though short way, and I do not know why Timor was suggested at all. Labillardière collected on Java as well as New Caledonia; so it came that Pucheran thought the type came from Java, while Vieillot, who more than once confused localities, mixed up New Holland and New Caledonia. In any case, Mathews, when writing a big and important book, *The Birds of Australia*, feeling the uncertainty of the name *pyrrhophanus*, because he did not venture to assign it to any subspecies, should have tried to examine the type, either by asking for its loan or by examining it in the Paris Museum. The type-specimen (originally mounted, of course) is in good condition. The contrast of the somewhat faded wing to the slate colour of the head and back is obvious, the colour of the underside has not changed, and is as in freshly collected specimens. The wing measures 142, in two fresh specimens 143 and 145 mm.

5. *Cacomantis cineraceus simus* (Peale).

Cuculus simus Peale, *U.S. Expl. Exp.* p. 134 (Sandalwood Bay, Fiji Islands).

Cuculus infuscatus Hartlaub, *Ibis*, 1866, p. 172 (Viti Levu, Fiji Islands).

Much like *C. c. pyrrhophanus*, but much smaller (wings 128-132 mm.), bill shorter and wider, underside a shade brighter, upperside more brownish. Tail-bars wider on outer rectrices.

Stresemann was right in stating that *C. infuscatus* is not a different species, but the blackish variety of *simus*!

6. *Cacomantis cineraceus schistaceigularis* Sharpe.

Cacomantis schistaceigularis Sharpe, *Ibis*, 1900, p. 338 (Espiritu Santo, New Hebrides).

New Hebrides.

Very much like *C. c. simus*, but upper and underside darker, grey of throat darker and more extended.

REVIEW OF THE BIRDS COLLECTED BY ALCIDE D'ORBIGNY IN SOUTH AMERICA. (CONTINUATION.)

By C. E. HELLMAYR.

Muscipeta brevirostris Lafr. & Orb. = **Sublegatus modestus modestus** (Wied).¹

Muscipeta brevirostris Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 49 (1837—Corrientes, rep. Arg.; descr. orig.); d'Orbigny, *Voyage*, Ois., p. 321 (Corrientes).

No. 1, adult (skin): "No. 100, Corrientes, juillet 1829, par d'Orbigny. *Muscipeta brevirostris* Nob."—Wing, 72; tail, 67; bill, 9½ mm.

This bird, which is in very worn breeding plumage, agrees, except for its rather larger size, with Bahia skins (topotypical *S. m. modestus*). After carefully comparing some thirty examples from various parts of Brazil, Argentine, Bolivia, and Peru, including the types of *Phyllomyia modesta* Reinh., *Phyllomyias platyrhyncha* Sel. & Salv., *Elaenia brevirostris* Tsch., *Muscipeta brevirostris* Lafr. & Orb., *Sublegatus griseocularis* Sel. & Salv., as well as topotypes of *Muscipeta modesta* Wied and *Sublegatus frontalis* Salvad., I am unable to separate any local races of this wide-spread species.² All that can be said is that birds from the western part of its range average generally slightly larger, although the variation is hardly appreciable. Adults from various localities measure as follows:

	Wing.	Tail.	
Four (unsexed) from Bahia, E. Brazil . . .	64-66	57-61	mm.
One ♂ from Mexiana Island, N. Brazil . . .	68	63	"
Three ♂♂ from Goyaz, Brazil . . .	65-68	60-63	"
Three ♀♀ from Goyaz, Brazil . . .	62, 66, 67	56, 60, 62	"
One ♂ from Mattogrosso (Cuyabá) . . .	68	60	"
Two ♀♀ from Mattogrosso (Chapada, Jatuba) . . .	64, 66	58, 58	"
One ♂ from Minas Geraes (Paracatú) . . .	68	65	"
One ♀ from Minas Geraes (Lagoa Santa) . . .	67	58	"
One (♂) from Corrientes, Argentine . . .	72	67	"
Two ♂♂ from prov. Santa Fé, Argentine. . .	67½, 68	64, 65	"
One ♂ from eastern Bolivia (R. Surutú) . . .	70	64½	"

¹ *Muscipeta modesta* Wied, *Beitr. Naturg. Bras.* 3, ii, p. 923 (1831—"aus der Gegend von Camamú und Bahia," E. Brazil; descr. opt.!).

² Its synonymy is as follows:

Muscipeta modesta Wied, *Beitr. Naturg. Bras.* 3, ii, p. 923 (1831—Bahia, E. Brazil).

Muscipeta brevirostris Lafr. & Orb., *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 49 (1837—Corrientes).

Elaenia brevirostris Tschudi, *Arch. f. Naturg.* 10, i, p. 274 (1844—Peru).

Elainea Wiedii Pelzeln, *Zur Ornith. Bras.* iii, p. 390 (1870—new name for *Muscipeta modesta* Wied).

Phyllomyia modesta Reinhardt, *Vidensk. Medd. naturh. Foren. Kjøbenhavn*, 1870, p. 348 (1870—Paracatú and Lagoa Santa, Minas Geraes, Brazil).

Phyllomyias platyrhyncha Sclater & Salvin, *Nomencl. Av. Neotrop.* p. 159 (1873—Goyaz, Brazil; coll. Natterer).

Sublegatus griseocularis Sclater & Salvin, *Proc. Zool. Soc. Lond.* 1876, p. 17 (1876—Maranura, S.E. Peru).

Sublegatus frontalis Salvadori, *Boll. Mus. Zool. Torino*, 12, No. 292, p. 14 (1897—Caiza, S.E. Bolivia).

	Wing.	Tail.	
One ♀ from eastern Bolivia (R. Surutú) . . .	68	64	mm.
One ♂ from S.E. Peru (Maranura) . . .	71	62½	„
Two ♀♀ from S.E. Peru (Maranura, Santa Ana)	65, 67	58, 60	„
One ♂ from "wood region" of Peru (type of <i>Elaenia brevirostris</i> Tschudi) . . .	70	65½	„
One ♀ from Central Peru (Chuchurras, dept. Huánuco) . . .	65	—	„

N.B.—The earliest available name for this species is evidently *Muscipeta modesta* Wied. Although the types are lost Wied's account is unmistakable, the characteristic shape of the bill, among other features, being most exactly described.

Pipra fasciata Thunberg¹ which Berlepsch and Hellmayr,² following Lönnberg,³ have adopted in their joint communication on little-known types of neotropical species, can hardly refer to the present bird. It is described as being about the size of the Great Tit (*Parus major*) and having the abdomen white, which is certainly not the case in *S. m. modestus*. Thunberg's diagnosis rather suggests *Suiriri suiriri* (Vieill.), and the type in the Upsala Museum should be carefully re-examined.

***Muscipeta virgata* = *Myiophobus fasciatus flammiceps* (Temm.).⁴**

Muscipeta virgata (Gm.);⁵ L. & O., *Syn. Av.* i, p. 49 (Yuracarès, Yungas, Chiquitos, Moxos, Bolivia; Rio de Janeiro, imp. Brasil.); d'Orbigny, *Voy.*, p. 320 (Rio de Janeiro au Brésil; Moxos, Chiquitos, Yungas).

No. 1, ♂ ad. (skin): "Envoi de M. d'Orbigny, 13. 9^{bre} 1827, de Rio de Janeiro. Mâle. No. 4 des Pass. *M. virgata* Nob., femelle."—Wing, 62; tail, 58; bill, 13 mm.

No. 2 (♂), ad. (skin): "D. 237. Yungas, d'Orbigny, 1834. *M. virgata* Nob. Mâle. No. 169."—Wing, 62; tail, 57; bill, 12½ mm.

No. 3 (♀), ad. (skin): "D. 237. Yuracarès, d'Orbigny 1834. *M. virgata* Nob. Mâle. No. 169."—Wing, 57; tail, 51; bill, 12 mm.

The South American representatives of *M. fasciatus* were long considered as pertaining to a single species of rather wide distribution until Ridgway⁶ revived Gould's term *auriceps*⁷ for the large, rufous-backed Argentine birds. The careful study of some seventy individuals in the Munich and Tring collections, while substantially corroborating the existence of two geographic races in Eastern South America, tends to show that the area inhabited by the larger, southern form, is much more extensive than was assumed by that distinguished authority, and furthermore, that *M. f. auriceps* is not its earliest name. Birds from

¹ *Mém. Ac. Imp. Sci. St. Pétersb.* viii, p. 285 (1822—Brazil).

² *Journ. f. Ornith.* liii, 1905, p. 4.

³ *Ibis*, 1903, p. 241.

⁴ *Muscicapa flammiceps* Temminck, *Rec. Pl. col.*, livr. 24, pl. cxliv, fig. 3 (July 1822—"Brésil"; the description was doubtless based upon specimens procured by J. Natterer in the vicinity of Rio de Janeiro, S.E. Brazil).

⁵ *Muscicapa virgata* Gmelin, *Syst. Nat.* 1, ii, p. 948 (1789—ex Daubenton, *Pl. enl.* 574, fig. 3: Cayenne); = *Muscicapa fasciata* P. L. S. Müll. 1776.

⁶ *Bull. U.S. Mus.* 50, Part 4, 1907, p. 543.

⁷ *Myiobius auriceps* Gould in Darwin, *Zoology of the "Beagle,"* Birds, p. 47 (July 1839—Buenos Ayres, La Plata).

Cayenne (topotypical *M. f. fasciatus*), Trinidad, and northern Venezuela (Bermudez ; La Cumbre de Valencia ; Mérida) agree very well together. They are of relatively small size, and have the upper parts rather dull rufescent brown.

Specimens from Argentine (Buenos Aires, Entrerios, Salta, Tucumán), south-eastern and central Brazil (Rio de Janeiro, São Paulo, Minas Gerais, Goyaz) are decidedly larger, and of a much brighter, more cinnamon-rufous tinge on the dorsal surface. Temminck's term *flammeiceps*, which was certainly established upon one of Natterer's specimens from Rio de Janeiro, is much anterior to *M. auriceps* Gould and must, consequently, be adopted for this large race.

The two Bolivian skins of d'Orbigny's and two additional females from the province of Sara in the Tring Museum are practically identical with those from southern Brazil and are, no doubt, also referable to *M. f. flammeiceps*. Their conspicuously rufous upper parts show not the slightest approach to the Peruvian *M. fasciatus saturatus* (Berl. & Stolzmann),¹ which has the back even duller brownish than typical *M. f. fasciatus*.

Bahia skins are difficult to place. In coloration they resemble the southern form (*M. f. flammeiceps*), but are smaller. The few unsexed trade-skins which I have seen are, however, insufficient for definite conclusions.²

The subjoined figures may serve to illustrate the measurements of the two races.

(a) *M. fasciatus fasciatus* (P. L. S. Müll.).

	Wing.	Tail.
Two ♂♂ from French Guiana (Cayenne)	58, 58	52, 53 mm.
Three ♂♂ from Trinidad	59-60	53-56 „
Three ♂♂ from Bermudez, N.E. Venezuela	58-59	53-56½ „
Five ♂♂ from Mérida, W. Venezuela	58-60, once 62	56-57, once 60 mm.
One ♂ from La Cumbre de Valencia, Venezuela	58	55 mm.
Three ♀♀ from French Guiana (Cayenne)	53-57	49-52 „
One ♀ from Surinam (Paramaribo)	52½	47 „
Five ♀♀ from Trinidad	55-58	48-55 „
One ♀ from Bermudez (N.E. Venezuela)	55	53 „
Five ♀♀ from Mérida (W. Venezuela)	55-57	51-55 „

(b) *M. fasciatus flammeiceps* (Temm.).

Three ♂♂ from Buenos Aires	62-64	56-59 mm.
Two ♂♂ from Tucumán, N.W. Argentine	60, 63	53, 58 „
One ♂ from Salta (Oran), N.W. Argentine	62	52 „
One ♂ from Rio de Janeiro	62	58 „
Four ♂♂ from Goyaz, Brazil	63-64	57-61 „
Two ♂♂ from São Paulo, S.E. Brazil	63, 63½	59 „
One ♂ from Bolivia (Yungas)	62	57 „
Two ♀♀ from Buenos Aires	60, 60	54, 56 „
Three ♀♀ from Bolivia (Yuracarès, Sara)	56-58	51-54 „

¹ *Myiobius naevius saturatus* Berlepsch & Stolzmann, *Ornis*, 12, ii, p. 88 (Sept. 1906—Chirimoto, N. Peru).

² It may be mentioned that the colour of the vertical patch in this species appears to be a purely individual character. I have both yellow and cinnamon-crowned males from Trinidad, Bermudez, Mérida (Venezuela), Buenos Aires, and São Paulo, although those with yellow crest are much in preponderance. The same variability obtains in the female sex. As a whole, the birds with cinnamon crown patch are much less common.

(c) *M. fasciatus* — ?

Three unsexed adults from Bahia, E. Brazil.—Wing, $57\frac{1}{2}$, 60, 60; tail, 52, $55\frac{1}{2}$, 56 mm.

***Muscipeta cinnamomea* = *Pyrrhomyias cinnamomea cinnamomea* (Lafr. & Orb.).**

Muscipeta cinnamomea Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 49 (1837—Yungas, rep. Boliviana; descr. orig.).

*Muscipeta vieillotii*¹ d'Orbigny, *Voy.*, Ois., p. 321, pl. xxxiv, fig. 1 (Yungas).

No. 1 (♂), ad. (skin): "D. 213. Yungas. *Muscipeta Vieilloti* d'Orb. No. 175. d'Orbigny, 1834."—Wing, 71; tail, 59; bill, 11 mm.

This is an adult male with large, golden-yellow coronal patch. A series from the Andes of Carabaya, S.E. Peru, in the Munich Museum are perfectly similar.

***Setophaga bruniceps* Lafr. & Orb.**

Setophaga bruniceps Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 50 (1837—Yungas; descr. orig.); d'Orbigny, *Voy.*, Ois., p. 329, pl. xxxiv, fig. 3 (prov. Yungas).

No. 1, adult (skin): "No. 148. d'Orbigny, 1834. D. 263. Yungas. *Setophaga bruniceps*, Nob."—Wing, 63; tail, $65\frac{1}{2}$; bill, $11\frac{1}{2}$ mm.

Three additional specimens from Bolivia (Valle Grande, Santa Ana, Quebrada onda) I have examined in the Berlepsch collection. Birds from N.W. Argentine (Tucumán, Salta) are in no way different. The type of *S. virescens* Burm.,² which was kindly forwarded to my inspection by the authorities of the Halle Museum, is an aberrant example, lacking the white orbital rim and supraloral streak. This feature is, however, strongly pronounced in all other Argentine and Bolivian skins.

S. bruniceps is peculiar to the Andes of Bolivia and N.W. Argentine (south to Catamarca).

***Setophaga verticalis verticalis* Lafr. & Orb.**

Setophaga verticalis Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 50 (1837—Ayupaya, Bolivia; descr. orig.); d'Orbigny, *Voy.*, Ois., p. 330, pl. xxxv, fig. 1.

No. 1, adult (skin): "D. 262. d'Ayupaya, d'Orbigny, 1834. No. 149. *Setophaga verticalis* Nob."—Wing, $64\frac{1}{2}$; tail, 58; bill, [damaged] mm.

In size and in the deep yellow tone of the under-parts the type resembles the average of Peruvian and Ecuadorian examples, while others from the same localities are decidedly paler. Vide Hellmayr & Seilern, *Arch. f. Naturg.*, 78, Abt. A, Heft 5, Sept. 1912, pp. 48–49.

***Muscicapa suiriri* = *Suiriri suiriri* (Vieill.).³**

Muscicapa suiriri Vieill.;² L. & O., *Syn. Av.* i, p. 51 (Mojos, rep. Boliviana; Choao [laps, typogr. for Chaco], rep. Argentina).

Suiriri suiriri d'Orbigny, *Voy.*, Ois., p. 336 (Corrientes, Mojos, Chiquitos).

No. 1 (♂), ad. (skin): "d'Orbigny, juillet 1829. No. 35. Chaco, Arg. *Muscicapa Suiriri* Vieill."—Wing, $75\frac{1}{2}$; tail, 71; bill, $11\frac{1}{2}$ mm.

¹ Proposed as a substitute for *Muscipeta cinnamomea* Lafr. & Orb. on account of the earlier *Muscicapa cinnamomea* Vieillot (*Nouv. Dict. d'Hist. Nat.* 21, 1818, p. 450: Cayenne), which, however, does not exclude the use of the former name.

² *Journ. f. Ornith.* 8, p. 251 (1860—Tucumán).

³ *Muscicapa suiriri* Vieillot, *Nouv. Dict. d'Hist. Nat.* 21, p. 487 (1818—ex Azara, No. 179: Paraguay).

No. 2 (♀), ad. (skin): "D. 354. Mojos, Bolivie. *Muscicapa suiriri* Vieill. M. d'Orbigny, 1834. No. 166."—Wing, $69\frac{1}{2}$; tail, $65\frac{1}{2}$; bill, 12 mm.

On comparing a very satisfactory series of twenty specimens from various localities, I am unable to discover any difference connected with particular geographic areas, either in size or colour. Birds in worn breeding plumage are much duller above, ashy greyish instead of light olivaceous grey, and the wing-bars appear nearly whitish instead of pale olive-grey. Upon such an example Gould based his *Pachyrhamphus albescens*,¹ and two similar ones are in the Tring Museum, an adult male procured by C. B. Brittain at La Soledad, Entrerios, and a female obtained by G. Garlepp near Trigal, eastern Bolivia.

Specimens from different localities measure as follows:

	Wing.	Tail.
Two ♂♂ from Paraguay	74, $75\frac{1}{2}$	71, $72\frac{1}{2}$ mm.
Two ♂♂ from eastern Bolivia	72, $75\frac{1}{2}$	$68\frac{1}{2}$, 71 "
One ♂ from Tucumán, N.W. Argentine	75	71 "
One ♂ from Chaco, Argentine	$75\frac{1}{2}$	71 "
One ♂ from Entrerios, Argentine	76	$70\frac{1}{2}$ "
One ♂ from Pirapora, Minas Geraës, Brazil	76	70 "
One ♀ from Paraguay	70	68 "
Four ♀♀ from Bolivia	$67\frac{1}{2}$ –71	$65\frac{1}{2}$ –68 "
Two ♀♀ from Tucumán	$70\frac{1}{2}$, 71	66, 69 "

S. suiriri ranges from the southern parts of the province of Buenos Aires (Bahia Blanca) north to Paraguay, N.W. Argentine (Salta, Tucumán), and eastern Bolivia (Trigal, Santa Cruz, Guarayos, Potrerito, Moxos). Moreover, I have lately received for examination from my valued correspondent Prof. H. von Jhering, of São Paulo, an adult male in worn plumage which had been shot by E. Garbe in August 1912 at Pirapora, on the upper São Francisco River, western Minas Geraës, Brazil! As far as one can judge from a single example it is perfectly similar to Paraguay birds. Pirapora is quite a new locality for *S. suiriri* and a very interesting addition to the Brazilian fauna. It should be added that Senhor Garbe, at the same place, also obtained a typical example of *Suiriri affinis affinis* (Burm.).²

***Muscicapa chloronotus* Lafr. & Orb. = *Mionectes oleagineus oleagineus* (Licht.).³**

Muscicapa chloronotus "Less."; ⁴ Lafresnaye & d'Orbigny, *Syn. Av. i*, in *Mag. Zool.* cl. ii, p. 51 (1837—Yuracarès, Bolivia; descr. orig.).

Muscicapara oleaginea d'Orbigny, *Voy., Ois.*, p. 323 (Yuracarès).

No. 1 (♂), ad. (skin): "D. 424. Yuracarès, *Musc. oleaginea* Licht. par d'Orbigny, 1834. No. 145."—Wing, 64; tail, 52; bill, — mm.

No. 2 (♀), ad. (skin): "D. 424. d'Yuracarès. *Muscicapa oleaginea* Licht. par d'Orbigny 1834. No. 145."—Wing, 59; tail, 47; bill, $11\frac{1}{2}$ mm.

¹ In Darwin, *Zoology of the "Beagle,"* Birds, p. 50, pl. xiv (July 1839—Buenos Aires).

² *Elaeena affinis* Burmeister, *System. Über. Th. Bras.* ii. p. 477 (1856—Lagoa Santa, Minas Geraës; types in the Halle Museum examined).

³ *Muscicapa oleaginea* Lichtenstein, *Verz. Dubl. Berliner Mus.* p. 55 (1823—Bahia).

⁴ *Muscicapa chloronotus* Lesson (*Traité d'Orn.* 1831, p. 392) is a pure *nomen nudum*.

These skins, which are, of course, the types of *M. chloronotus*, agree with examples from the Rio Madeira and Lower Amazonia, and apparently do not differ from a Bahia bird, *M. o. olcagineus*.

***Muscicapa striaticollis* = *Mionectes striaticollis striaticollis* (Lafr. & Orb.).**

Muscicapa striaticollis Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 51 (1837—Yuracarès, Bolivia; deser. orig.).

Muscicapara striaticollis d'Orbigny, *Voy.*, Ois., p. 323, pl. xxxv, fig. 2 (Yungas, Yuracarès).

No. 1 (♀), ad. (skin): "D. 232. *Muscicapa striaticollis*, Nob. Yuracarès, par d'Orbigny, 1834. No. 144."—Wing, 67; tail, 54; bill, 12 mm.

The type is a female with the second primary of normal shape, not attenuated as in the adult males. As far as coloration is concerned it agrees perfectly with the latter, having the top and sides of the head pure slate-grey, the throat and foreneck somewhat lighter, with sharply defined, whitish shaft-streaks; breast and abdomen are pale olive-yellow, obsoletely striped with dusky green on the flanks. As shown by a series from the western Bolivian Yungas (Chaco, Yungas), the males are considerably larger, the wing varying from 70 to 73 against 64 to 67 in the females.

The typical form of *M. striaticollis* appears to be confined to the mountain forests of Bolivia.

Birds from central and northern Peru differ by having the slate-grey of the head and throat mixed with olive greenish; the median and greater upper wing-coverts conspicuously edged with buffy, etc. They may be distinguished as *Mionectes striaticollis poliocephalus* Tsch.¹

***Muscicapa vermivora* = (*Basileuterus auricapillus auricapillus* (Swains.).²
(*Basileuterus auricapillus viridescens* Todd.)³**

Muscicapa vermivora "Vicill."; ¹ L. & O., *Syn. Av.* i, p. 51 (Corrientes; Chiquitos, Bolivia).

Muscicapara vermivora d'Orbigny, *Voy.*, Ois., p. 324 (Corrientes; Monte grande, forest on the road from Santa Cruz to Chiquitos).

Nos. 1, 2, adults (skins): "No. 87. Corrientes, juillet 1829, d'Orbigny. *Muscicapa vermivora* Nob."=*Basileuterus auricapillus auricapillus* (Swains.).

No. 3, adult (skin): "D. 331, d'Orbigny, 1834. Chiquitos."=*B. auricapillus viridescens* Todd.

Birds from Corrientes, Santa Fé (Ocampo), and Buenos Aires are identical with those from Paraguay and southern Brazil.

The Chiquitos specimen, like another from Santa Cruz, E. Bolivia, is more decidedly greenish, less brownish above, and the under-parts are of a somewhat clearer yellow. These birds no doubt represent *B. a. viridescens*, though the slight differences should be confirmed by a larger series before the race can be considered as satisfactorily established.

¹ *Mionectes poliocephalus* Tschudi, *Faun. Perua.*, Aves, p. 148, pl. x, fig. 1 (1846—Wood-region of Peru, between 11th and 12th degree south. lat.).

² *Scotophaga auricapilla* Swainson, *Anim. in Menag.* p. 293 (1838—"Mexico (err.) and Brazil").

³ *Proc. Biol. Soc. Wash.* 26, p. 170 (1913—Buenavista, prov. Sara, E. Bolivia).

⁴ Cf. Berlepsch, *Ibis*, 1881, p. 240.

Muscicapa bivittata { ♂ = **Basileuterus bivittatus bivittatus** (Lafr. & Orb.).
 ♀ = **Basileuterus flaveolus** (Baird).¹

Muscicapa bivittata Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 51 (1837—Yungas, Chiquitos, Bolivia; descr. "♂♀").

Muscipara bivittata d'Orbigny, *Voy.*, Ois., p. 324 (descr. "♂"; Carcuata, Yungas).

No. 1, adult (skin): "No. 148. *Muscicapa bivittata* Nob. Mâle. Yungas, D. 275."—Wing, 72; tail, 64; bill, 11 $\frac{3}{4}$ mm. = *Basileuterus b. bivittatus* (Lafr. & Orb.). *Type*.

No. 2, adult (skin): "No. 150. d'Orbigny, 1834, Chiquitos, D. 352."—Wing, 66; tail, 61; bill, 12 mm. = *Basileuterus flaveolus* (Baird).

The type of *M. bivittata* agrees in colour and size with specimens of male sex from the Yungas of Bolivia (Songo, Santa Cruz), while females are smaller (wing, 64–66; tail, 60–63) and slightly paler yellow underneath. A series of ten fine skins from N.W. Argentine (Ledesma, Jujuy; Rio Bermejo, Dept. Oran, Salta) in the collections at Tring and Munich are evidently also referable to *B. b. bivittatus*, although the yellow of the under-parts, as a rule, is a little lighter.²

Birds from central Peru, *B. bivittatus chrysogaster* (Tsch.),³ are much smaller and more yellowish green above. Besides, the lateral stripes of the pilcum are much less distinct, being blackish olive instead of decidedly black; the olive-yellow superciliary stripe is produced to above the auriculars, instead of ending at the anterior angle of the eye, etc. etc. There are, thus, four geographic races of the yellow-browed Warbler:

(a) *B. bivittatus bivittatus* (Lafr. & Orb.). N.W. Argentine (Jujuy; dept. Oran, Salta); Bolivia (eastern and western Yungas).

(b) *B. bivittatus chrysogaster* (Tschudi). Central Peru, Chanchamayo district (Amable Maria, La Merced, Monterico, etc.).

(c) *B. bivittatus chlorophrys* Bcrl.⁴ Western Ecuador (Paramba, Lita, etc.).

(d) *B. bivittatus roraimae* Sharpe.⁵ Mountains of British Guiana (Roraima, Merume).

The alleged "female" of *M. bivittata* ["supra tota olivacea, subtus superciliisque flavis"] from Chiquitos (No. 2) proves to be an example of *B. flaveolus*. It hardly differs from several Bahia skins by very slightly more yellowish green upper and somewhat deeper yellow under-parts. These insignificant variations would no doubt disappear in a series.

B. flaveolus is chiefly found in the campos of Brazil from Bahia and Maranhão west to Mattogrosso, northern São Paulo, and Paraguay. It is, therefore, not surprising that it should also occur in the adjacent plains of eastern Bolivia.

¹ *Myiothlypis flaveolus* Baird, *Review Amer. Birds*, i, p. 252, note (1865—Paraguay).

² *B. bivittatus* was first recorded for Argentine by Salvadori (*Boll. Mus. Zool. Torino*, 12, No. 292, 1897, p. 4) from San Lorenzo, eastern Jujuy, and afterwards by Bruch (*Revista Mus. La Plata*, 11, 1904, p. 257) from Dept. Oran, prov. Salta. Both these records appear to have been overlooked by Hartert (*Nov. Zool.* 16, 1909, p. 167).

³ *Setophaga chrysogaster* Tschudi, *Arch. f. Naturg.* 10, i, p. 276 (1844—Peru; type in Neuchâtel Museum examined; cf. Berlepsch & Hellmayr, *Journ. f. Ornith.* 53, 1905, pp. 6–7).

⁴ *Ornis*, 14, p. 347 (1907—"Quito," Ecuador; type examined).

⁵ *Basileuterus roraimae* Sharpe, *Cat. Birds Brit. Mus.*, 10, p. 392 (1885—Roraima, Merume Mts., Brit. Guiana).

Muscicapa elegans Lafr. & Orb. = **Elaenia viridicata viridicata** (Vieill.).¹

Muscicapa elegans Lafresnaye & Orbigny (nec Lesson),² *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 52 (1837—Chiquitos, Bolivia; descr. orig.).

Muscicapara viridicata, d'Orbigny, *Voy.*, Ois. p. 325 (Santo Corazon, Chiquitos).

No. 1, adult (skin): "No. 143. d'Orbigny, 1834. D. 362, de Chiquitos. *Muscicapa viridicata* Nob."—Wing, 63; tail, 61; bill, [damaged] mm.

A second unsexed adult bird from the same general district, Santa Cruz de la Sierra, obtained by Gustav Garlepp on September 27, 1889, I have examined in the Berlepsch collection. Besides, there are before me 2 ♂, 2 ♀ from Ypanema, São Paulo, S. Brazil,³ seven trade-skins from Bahia, including the type of *Elaenia viridicata delicata* Berl.,⁴ an adult male from Tucumán, N.W. Argentine (topo-type of *Elaenia grata* Cab.,⁵ and a couple from Sapucay, Paraguay. After careful comparison, I must refer them all to one and the same form, viz. *E. v. viridicata*, a conclusion in which the late Count Berlepsch, to whom I had submitted the entire material, also concurred. The birds from São Paulo, Paraguay, and E. Bolivia are practically identical, and offer not the slightest difference, either in size or coloration.⁶ The Tucumán example (*E. grata* Cab.) and most of the Bahia skins have narrower, smaller bills, the back of a paler green, and the dusky bordering of the yellow crown-patch less blackish. An adult male from Maranura, Santa Ana Valley, S.E. Peru, is very similar, but the upper parts are still duller, more greyish green. In view of the great individual variation of the Bahia series, and considering the fact that the ♂ from Tucumán which geographically ought to belong to the Bolivia-Paraguay form agrees with the East Brazilian birds, I cannot maintain *E. v. delicata* even as a subspecies, although the examination of further material is desirable. Birds from Venezuela (San Esteban, prov. Carabobo; Quiribana de Caicara, Orinoco River) which Count Berlepsch refers to his *E. v. delicata* are very difficult to allocate. As far as I can judge from three examples, two of which only are adult, they combine the general coloration of *E. v. viridicata* with the large, broad bill of *E. viridicata implacens* Sel.,⁷ from W. Colombia (Cauca) and W. Ecuador.

¹ *Sylvia viridicata* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 11, p. 171 (1817—ex Azara, No. 156: Paraguay).

² *Traité d'Ornith.*, livr. 5, p. 391 (end of 1830—no locality; the type which I have examined in the Paris Museum (No. 3922) was procured by Auguste de Saint Hilaire in 1818 in S.E. Brazil); = *Serpophaga suberistata* (Vieill.), 1817.

³ = *Elaenia implacens* (errore) Pelzeln, *Zur Ornith. Bras.* p. 108 (part).

⁴ *Ornis*, 14, p. 430 (Feb. 1907—Bahia, E. Brazil).

⁵ *Journ. f. Ornith.* 31, p. 216 (1883—Biscacheral, near Tucumán).

⁶ *Myiopagis viridicata rondoni* Cherrie (*Bull. Amer. Mus. N.H.* 35, 1916, p. 188: Urucúm, near Corumbá, S.W. Matto Grosso) is, therefore, almost certainly a synonym of *E. v. viridicata* (Vieill.).

⁷ *Elaenia implacens* Sclater (*Proc. Zool. Soc. Lond.* 1861, p. 408) was originally based upon two examples secured by L. Fraser at Esmeraldas, N.W. Ecuador, resp. Babahoyo, S.W. Ecuador, now in the British Museum. On examination, only one of them, "♂ Nov. 1859, Esmeraldas, No. 1334b of Cat. Coll. P. L. Sclater," proves to belong to the large-billed *viridicata*-form found in W. Ecuador and W. Colombia; while the second, "♂ July 1859, Babahoyo, No. 1334a of Cat. P. L. S.," is a very young bird of *Elaenia subplacens* Sel. (*Proc. Zool. Soc. Lond.* 1861, p. 407: Pallatanga, Rio Chimbo, S.W. Ecuador), with hardly any indication of the yellow vertical patch. Sclater's description has, however, evidently been taken from the adult male ex Esmeraldas (vide "pileo . . . medially auro"), so the name *implacens* may be retained for the *viridicata*-form of W. Ecuador. *E. subplacens* Sel., which is restricted to the Guayaquil district of S.W. Ecuador, Puna Island, and adjacent portion of N.W. Peru (Lechugal), is immediately recognisable from *E. v. implacens* by possessing a broad, white superciliary stripe, besides many other characters.

Muscicapa angustirostris = Phylloscartes ventralis angustirostris (Lafr. & Orb.).

Muscicapa angustirostris Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 52 (1837—Yungas; descr. orig.).

Muscicapara angustirostris d'Orbigny, *Voy.*, Ois. p. 325 (prov. Yungas).

No. 1, adult (skin): Yungas, Bolivie, d'Orbigny, 1834. *M. angustirostris* Lafr. & Orb. Type.—Wing, 57; tail, 59; bill, $11\frac{1}{2}$ mm.

In Nov. Zool. 13, July 1906, pp. 321–322, I have fully dealt with this species and explained its characters. *Leptopogon tristis* Sel. & Salv.¹ is a pure synonym of *M. angustirostris*, the types of both having been procured in the same region, viz. the western Yungas of Bolivia.

Phylloscartes v. ventralis ranges all over the wood-region of South-East Brazil from the confines of Minas (Itatiaya) down to Rio Grande do Sul, extending westwards to Entrerios (Concepcion del Uruguay), Misiones (San Javier), and Paraguay (Sapucay).

P. ventralis angustirostris replaces the typical race in the mountainous district of N.W. Argentine (Sierra de Totoral, Catamarca; Tucumán; Oran, Salta), the Yungas of Bolivia (Samaipata, Simacu), and in Peru (Chachapoyas).

Muscicapa albicilla = Elaenia gaimardii gaimardii (d'Orb.).

"*Muscicapa albicilla* Vieill." (lapsu); ² L. & O., *Syn. Av.* i, p. 52 (Yuracarès, Bolivia; descr. opt.).

Muscicapara gaimardii d'Orbigny, *Voy.*, Ois., p. 326 (1839—Yuracarès; descr. orig.).

No. 1, adult (skin): "D. 425. de Yuracarès, d'Orbigny, 1834. *Muscicapa Gaimardi* Nob. Type.—Wing, 60; tail, 56; bill, [damaged] mm.

This bird is perfectly similar to an adult male from Yahuar Mayo, Carabaya, S.E. Peru, in the Munich Museum, and the type of *Elaenia elegans* Pelz.,³ from Engenho do Gama, western Mattogrosso, with which it was directly compared. In the types of *E. elegans* and *M. gaimardii* the back is slightly duller greenish, as both are old faded skins, but in other respects they resemble the Peruvian bird.

Muscicapa cristata { ♂ = *Serpophaga subcristata subcristata* (Vieill.).⁴
 { ♀ = *Serpophaga munda* Berl.⁵

"*Muscicapa cristata* Vieill." (lapsu); ⁴ L. & O., *Syn. Av.* i, p. 52 (Chiquitos, Bolivia; Corrientes, Argentina).

Muscicapara subcristata d'Orbigny, *Voy.*, Ois., p. 326 (descr. "♂," Corrientes; ♀ Chiquitos).

No. 1, adult (skin): "No. 86. *Muscicapa subcristata* Nob. Mâle. Corrientes, par d'Orbigny, juillet 1829."—Wing, 46; tail, 49; bill, $8\frac{1}{2}$ mm. = *Serpophaga subcristata subcristata* (Vieill.).

No. 2, adult (skin): "No. 155. *Muscicapa subcristata* Nob. de Chiquitos, d'Orbigny 1834. D. 338."—Wing, $46\frac{1}{2}$; tail, 45; bill, $8\frac{1}{2}$ mm. = *Serpophaga munda* Berl.

¹ *Proc. Zool. Soc. Lond.* 1876, p. 254 (1876—Simacu, Yungas of Bolivia).

² Nee *Muscicapa olbicapilla* Vieillot, *Hist. Nat. Ois. Amér. sept.* i, p. 66, pl. xxxvii ("1807"—"Saint Domingue"); = *Elaenia martinica martinica* (Linn.) 1766.

³ *Zur Ornith. Bras.* ii, p. 179 (1868—Engenho do Gama, Rio Guaporé, western Mattogrosso; Borba, Rio Madeira, etc.—type from Engenho do Gama, ♂ ad. July 12, 1826, No. 19477, Vienna Museum coll.).

⁴ *Sylvia subcristata* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 11, p. 229 (1817—ex Azara, No. 160; Paraguay).

⁵ *Serpophaga munda* Berlepsch, *Ornith. Monatsber.* i, p. 12 (1893—Bolivia alta: Samaipata, Valle Grande, Olguin).

The Corrientes specimen is absolutely indistinguishable from *S. s. subcristata*, of which I have examined a large series from Buenos Aires, Paraguay (topotypical), prov. Santa Fé (Ocampo), Tucumán (city of Tucumán and Rio Salí), and S.E. Brazil (São Paulo). This form has the back, contrasting to the grey pileum, conspicuously washed with brownish olive; the feathers of the crown are white at the base and striped with black on their apical portion; breast and abdomen clear yellow; axillaries, under wing-coverts, and narrow edge along inner web of remiges white, sometimes very slightly tinged with yellowish. Birds from the north-western parts of Argentine (Tucumán) do not differ in any way from more southern examples, as far as I can see.

Serpophaga verticata Burmeister¹ is a pure synonym of *S. subcristata*, although in a later communication,² under the name *S. subcristata*, two different species, viz. *S. subcristata* (from Paraná) and *S. munda* (from Mendoza), were mixed up by that author, as I have convinced myself by examination of his specimens in the Halle Museum. The bird from Paraná, No. 1556c, an ultra-typical *subcristata* with yellow abdomen and brownish back, must be regarded as the type, since Paraná is the only locality mentioned in the original description.¹

In eastern Bolivia *S. s. subcristata* is replaced by the nearly allied *S. subcristata inornata* Salvad.,³ which differs chiefly by its longer and somewhat slenderer bill; less crested pileum without any white and with mere traces of blackish striping; bright yellow (not whitish) axillaries, under wing-coverts and quill lining; finally by having the rump decidedly tinged with greenish. Of this (not very strongly marked) northern race I have examined two of the typical examples from S. Francisco, both ♂♂, kindly lent by Count Salvadori from the Turin Museum, and two females secured by J. Steinbach at Santa Cruz de la Sierra, resp. Puerto Suarez, E. Bolivia, belonging to the Carnegie Museum, Pittsburgh. There is no difference in size between the two races except for the longer bill of the Bolivian bird.

The second specimen of d'Orbigny's, from Chiquitos, which corresponds to the characters of the female, "ventre presque blanc," is a typical *S. munda* Berl., described from E. Bolivia, and agrees perfectly with the type in the Berlepsch collection. This species is immediately recognisable by the uniform dark-grey back and white (not yellow) abdomen.⁴ It is no doubt specifically distinct from *S. subcristata*, for in certain districts it occurs together with a representative of the latter species. Besides the typical series in Count Berlepsch's collection, I have examined specimens from various Argentine localities at Tring,⁵ two females from Mendoza, coll. Burmeister, in the Halle Museum, an adult bird from Santa Cruz de la Sierra, E. Bolivia, belonging to the Carnegie Museum, and an adult female procured by J. Natterer at Estiva, Matto Grosso,⁶ on July 4, 1826, in the Vienna Collection. This last-named extends the known range of *S. munda* to Brazil.

¹ Journ. f. Ornith. 8, p. 246 (1860—"Bei Paraná").

² Burmeister, Reise La Plata, St. ii, 1861, p. 454.

³ *Serpophaga inornata* Salvadori, Boll. Mus. Zool. Torino, 12, No. 292, p. 13 (1897—S. Francisco, S.E. Bolivia).

⁴ Its distinguishing characters have been well pointed out by Salvadori (Boll. Mus. Zool. Torino, 12, No. 292, 1897, p. 14).

⁵ *S. munda* Hartert & Venturi, Nov. Zool. 16, 1909, p. 197.

⁶ = *Serpophaga subcristata* Pelzeln, Zur Orn. Bras. ii, 1868, p. 103 (part).

Muscicapa leucophrys = Mecocerculus leucophrys leucophrys (Lafr. & Orb.).

Muscicapa leucophrys Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 53 (1837—"in Bolivia"; descr. orig.).

Muscicapa leucophrys d'Orbigny, *Voy.*, Ois., p. 327 (village de Yanacaché, prov. Yungas).

No. 1, adult (skin): "No. 142. *Muscicapa leucophrys* Nob. d'Orbigny, 1834. D. 229. Bolivie."—Wing, 62 $\frac{3}{4}$; tail, 63; bill, 11 mm.

In addition, I have examined a series from various localities in the western Yungas of Bolivia (San Cristobal, Cocapata, San Antonio). Specimens from the Sierras of Tucumán and Salta in the Tring and Munich collections agree exactly with the Bolivian ones.

Muscicapa stramineoventris Lafr. & Orb. = Habrura pectoralis pectoralis (Vieill.).¹

Muscicapa stramineo-ventris Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 53 (1837—Chiquitos (Bolivia); descr. orig.).

Muscicapa stramineo-ventris d'Orbigny, *Voy.*, Ois., p. 327 (Santa Ana, Chiquitos).

The type of this species is unfortunately lost,² or at least I could not find it among the skins in the Paris Museum in spite of repeated researches. The description fits fairly well the young of *H. pectoralis*, without white in the crown and without black about the upper throat and sides of the head; but the tail (33 mm.) is rather short for this species, while the ochraceous-brown colour of the flanks is not mentioned either. That *H. p. pectoralis* is found in eastern Bolivia is proved by an adult male in the Carnegie Museum, procured by J. Steinbach at Santa Cruz de la Sierra on September 15, 1909. It is well to remember that the species was also met with in the adjacent portion of the Brazilian state of Mattogrosso, at Cuyabá by Natterer, and on the Chapada plateau by H. H. Smith.

It may be mentioned here that *Pachyrhamphus minimus* Gould³ is not a distinct race as suggested by Allen,⁴ but merely the adult male in high plumage of *H. p. pectoralis*. Although adult males always show a certain amount of black on the upper throat and cheeks this feature is much exaggerated in Gould's figure and description. A male from the type locality (Montevideo) in the Berlin Museum does not differ in that respect from the Bolivian bird of the Carnegie Museum; while of two males from Paysandú, Uruguay, one has a number of black spots on the upper throat and malar region, the other none at all, like several manifestly immature birds from Mattogrosso.

¹ *Sylvia pectoralis* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 11, p. 210 (1817—ex Azara, No. 165; Paraguay).

² In the Lafresnaye collection (cf. Catalogue, p. 251) there are two specimens, Nos. 8416, 8417, marked as "*Leptopogon stramineoventris*. Type." Mr. Bangs, who, at my request, examined them, tells me that they do not at all agree with the description of *M. stramineoventris*, but are both referable to *Myiopitis semifusca* (Sc.) [= *Phaeomyias incomta* (Cab. & Heine)]. My correspondent further adds: "They had no original labels that I can find and were marked as the types by Cory (evidently following Verreaux's entry in the Catalogue) when he did the whole Lafresnaye Collection." This instance once more shows that ornithologists ought to be extremely cautious to admit the claims of any so-called "type" in that collection before thoroughly investigating every particular case.

³ In Darwin, *Zool. "Beagle," Birds*, p. 51, pl. xv (July 1839—Montevideo).

⁴ *Bull. Amer. Nat. Hist.* ii, 1889, p. 146.

Muscicapa obsoleta = Camptostoma obsoletum cinerascens (Wied).¹

Muscicapa obsoleta (nec Temminck); ² L. & O., *Syn. Av.* i, p. 53 (Chiquitos, Cochabamba).

Muscicapara obsoleta, d'Orbigny, *Voy., Ois.*, p. 328 ("Chiquitos, un individu; Cochabamba, un individu").

No. 1, adult (skin): "No. 210. d'Orbigny, 1834. *Muscicapara obsoleta* D'Orb. D. 836. Chiquitos."—Wing, 54½; tail, 45; bill, 9 mm.

No. 2, juv. (skin): "D. 303. Cochabamba. *Muscicapara obsoleta* Nob No. 141. d'Orbigny, 1834."—Wing, 57; tail, 45; bill, [broken] mm.

The Chiquitos bird, No. 1, agrees well with specimens from Bahia and Goyaz as far as coloration is concerned, but has a slightly stronger bill. An adult male from Samaipata, E. Bolivia, in the Berlepsch collection is an extreme example of the form *cinerascens*, having the under-parts nearly uniform whitish.

The other specimen of d'Orbigny's from Cochabamba is a young bird in very poor condition. It is much darker above with the wing-bands decidedly rufescent, while the under surface lacks the yellow tinge which is more or less developed in the majority of the other specimens examined by me. Without adult birds from Cochabamba I cannot be certain if I am right in referring No. 2 to *C. o. cinerascens*.

Characters and range of *C. (olim Ornithion) o. obsoletum* and *C. o. cinerascens* are discussed at length in Nov. Zool. 15, 1908, pp. 43-45.

Muscicapa ventralis = Capsiempis flaveola flaveola (Licht.).³

Muscicapa ventralis (errore, nec Temminck); ⁴ L. & O., *Syn. Av.* i, p. 53 (Guarayos, Bolivia).

Muscicapara ventralis, d'Orbigny, *Voy., Ois.*, p. 328 (Guarayos).

Nos. 1, 2, adults (skin): "136. d'Orbigny, 1834. *Muscicapa ventralis* Temm. Guarayos, D. 448."—Wing, 50½, 50½; tail, 53, 56; bill, 11, 11 mm.

These birds are in every respect identical with others from Bahia and Goyaz.

C. f. flaveola ranges from southern Brazil, Paraguay, and eastern Bolivia (Guarayos) north to French Guiana and Venezuela. Closely allied forms are found in western Ecuador and southern Central America. Cf. *Abhandl. Bayer. Akad. Wiss.*, kl. ii., 22, No. 3, 1906, pp. 645-6.

Muscicapa olivacea Lafr. & Orb. = Tyranniscus bolivianus (d'Orb.).

Muscicapa olivacea (nec Vieillot ⁵) Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 54 (1837—Yungas, Bolivia; deser. orig.).

Muscicapara boliviana d'Orbigny, *Voy., Ois.*, p. 328 (1839—nom. emend.; Yungas).

Nos. 1, 2, adults (skins): "No. 158. d'Orbigny, 1834. de Yungas, *Muscicapara boliviana* D'Orb. D. 219."—Wing, 59, 59; tail, 52, 56; bill, 10 mm.

These specimens, to which the original labels with the inscriptions from d'Orbigny's own hand are still attached, answer exactly to the diagnosis in the

¹ *Hylophilus cinerascens* Wied, *Beitr. Naturg. Bras.* 3, ii, p. 723 (1831—Barra do Jucú on the Rio Espirito Santo, Espirito Santo).

² *Rec. Pl. col.*, livr. 46, pl. cclxxv, fig. 1 (1824—"Brésil," coll. Natterer; the type in the Vienna Museum is from Curytiba, state of Paraná, S.E. Brazil).

³ *Muscicapa flaveola* Lichtenstein, *Verz. Dubl. Berliner Mus.* p. 56 (1823—Bahia).

⁴ *Muscicapa ventralis* (Natterer MS.) Temminck, *Rec. Pl. col.*, livr. 46, pl. cclxxv, fig. 2 (1824—"Brésil, coll. Natterer," sc. Ypanema, S. Paulo, S.E. Brazil).

⁵ *Muscicapa olivacea* Vieillot, *Tabl. enc. méth.*, Ornith. ii, livr. 91, p. 817 (1822—ex Catesby, Carolina, i, pl. liv: Carolina).

"Synopsis," notably also with respect to the total length (13 cm.).¹ A series from various localities in the western Yungas (Songo, Chaco, Omeja) has been examined in the Munich and Berlepsch collections. This well-marked *Tyranniscus* inhabits the mountain forests of southern Peru and northern Bolivia.

***Alecturus tricolor* (Vieill.).**

Alecturus (sic) *tricolor* Vieill.;² L. & O., *Syn. Av. i*, p. 54 (Mojos, Guarayos, Bolivia; Corrientes, Argentina); d'Orbigny, *Voy., Ois.*, p. 341 (Corrientes, Guarayos, Moxos; descr. ♂).

No. 1, ♂ ad. (skin): "d'Orbigny, juillet 1829. No. 96. Corrientes. *Alecturus tricolor* Vieill."—Wing, 70; tail, 60; bill, 13½ mm.

No. 2, ♂ ad. (skin): "D. 112. *A. tricolor* V. Mojos. d'Orbigny, 1834. No. 131."—Wing, 70; tail, 60; bill, 13 mm.

No. 3, ♂ juv. (skin): "D. 112. *A. tricolor* V. Mojos. d'Orbigny, 1834. No. 131."—Wing, 70; tail, 44; bill, 13½ mm.

No. 4, ♂ imm. (skin): "D. 112. *A. tricolor* V. Guarayos. d'Orbigny 1834. No. 131."—Wing, 69; tail, 55; bill, 13 mm.

The two first-named are perfectly adult males with the peculiarly-shaped tail; in No. 4 this character is incompletely developed, while No. 3 has the rectrices short and rounded like the females.

The plains of eastern Bolivia (Mojos, Guarayos) and the adjacent Brazilian state of Mattogrosso (Chapada) are apparently the most northerly recorded localities of this species, which is rather widely diffused in southern Brazil, Uruguay, Paraguay, and eastern Argentine (Misiones, Corrientes).

***Alecturus guirayetapa* Lafr. & Orb. = *Alecturus risorus* (Vieill.).³**

Alecturus guirayetapa Lafresnaye & d'Orbigny, *Syn. Av. i*, in *Mag. Zool.* cl. ii, p. 54 (1837—based on "Le Guirayetapa" Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 12, 1817, p. 499: ex Azara, No. 226, Paraguay; Corrientes, Argentina); d'Orbigny, *Voy., Ois.*, p. 342 (Corrientes—"en hiver"; Banda oriental et près de Maldonado au printemps").

No. 1, ♂ ad. (mounted): "No. 3865. Maldonado, Uruguay, par d'Orbigny."

No. 2, ♀ ad. (mounted): "No. 3866. Maldonado, Uruguay, par d'Orbigny."

This species inhabits chiefly the great Argentine campos, ranging south to Buenos Aires, west to San Luis, Cordoba, and Santiago del Estero. Besides, it has also been found in Uruguay, Rio Grande do Sul, Paraguay, and Mattogrosso (Pansecco, near Caiçara, not far from the Jaurú).

***Alecturus leucocephalus* = *Arundinicola leucocephala* (Linn.).⁴**

Alecturus leucocephalus ("Gm."); L. & O., *Syn. Av. i*, p. 54 (Corrientes, Arg.; Chiquitos, Bolivia; wing-form of ♂ described).

Arundinicola leucocephala d'Orbigny, *Voy., Ois.*, p. 334 (Rio de Janeiro; Corrientes; prov. Moxos et Chiquitos; descr. ♂♀).

No. 1, ♂ ad. (skin): "D. 78. Chiquitos, D'Orbigny, 1834. No. 157. *Fluvicola leucocephala* Nob."

¹ The specimen No. 4686 in the Lafresnaye Collection, which, Dr. Allen (*Bull. Amer. Mus. N.H.* ii, 1889, p. 206) tells us, is *Eluena o. obscura* (Lafr. & Orb.), is, of course, quite incorrectly marked as "type of *M. boliviana*." See also Ménégau & Hellmayr, *Auk*, 23, 1906, p. 481.

² *Gallita tricolor* Vieillot, *Analyse d'une nouv. Ornith. élém.* p. 68 (1816—"l'Amérique méridionale").

³ *Muscicapa risora* Vieillot, *Galerie des Ois.*, l. ii, p. 209, pl. cxxxi (circa 1824—"au Brésil"; descr. ♂).

⁴ *Pipra leucocephala* Linnaeus, *Mus. Ad. Frid.* ii, Prodr., p. 33 (1764—Surinam; vide *Syst. Nat.* 12, i, p., 340).

No. 2, ♀ (skin): "D. 78. Chiquitos. d'Orbigny, 1834. No. 155. *Fluvicola leucocephala* Nob."

Nos. 3, 4, ♂♀ (skin): "d'Orbigny, juillet 1829. No. 101. *Fluvicola leucocephala* Nob. Corrientes."

The birds from Corrientes agree well with Bolivian and Brazilian skins. Corrientes is the most southerly record for this widely diffused species.

***Alecturus flaviventris* = *Myiosympotes flaviventris* (Laf. & Orb.).**

Alecturus flaviventris Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 55 (1837—Corrientes; descr. orig.).

Arundinicola flaviventris, d'Orbigny, *Voy., Ois.*, p. 335, pl. xxxvi, fig. 1 (Montevideo; Corrientes).

No. 1, adult (skin): "d'Orbigny coll., without locality, but doubtless from Corrientes, *Alecturus flaviventris* L. & O. Type."—Wing (48); tail (49); bill, 13 mm.

The type is in worn plumage, with wing- and tail-feathers much abraded, but otherwise it agrees with specimens from Buenos Aires, Neuquen, and Santa Fé. Birds from Chili¹ are not different either, as far as I can see, from four examples in the Tring and Munich collections.

***Tachuris omnicolor* = *Tachuris rubrigastra rubrigastra* (Vieill.).²**

Tachuris omnicolor (Vieill.);³ L. & O., *Syn. Av.* i, p. 55 (Buenos Aires).

Tachuris rubrigastra, d'Orbigny, *Voy., Ois.*, p. 333 ("aux environs de Buenos Ayres, du côté de la Boea").

No specimen from d'Orbigny's travels in the Paris Museum.

This beautiful little bird inhabits marshy places in S. Brazil (Rio Grande do Sul, S. Paulo), Paraguay, Uruguay, Argentine (down to the Rio Negro, north to Tucumán⁴), and Chili, while in the *highlands* of central and southern Peru (from Junin to Lake Titicaca) a very well-marked race, *T. r. alticola* (Berl. & Stolzmann)⁵ takes its place.

***Tachuris nigricans* = *Serpophaga nigricans* (Vieill.).⁶**

Tachuris nigricans (Vieill.); L. & O., *Syn. Av.* i, p. 55 (Maldonado, rep. oriental del Uruguay); d'Orb., *Voy., Ois.*, p. 334 (Maldonado, Buenos Aires).

No. 1, "♂" ad. (skin): "de Maldonado. Mâle. No. 15 des Passer. Envoi de M. d'Orbigny, 13. jr. 1827. *Tachuris nigricans* Nob."—Wing, 55; tail, 53; bill, 10½ mm.

No. 2, adult (skin): Without original label and locality, coll. d'Orbigny.

Identical with South Brazilian skins.

This species ranges over the greater part of Argentine from the Rio Negro northwards, Uruguay, Paraguay, and southern Brazil as far north as Minas Geraes (Bagagem, Lagoa Santa, Congonhas).

¹ *Arundinicola citreola* Landbeck, *Arch. f. Naturg.* 30, i, p. 58 (1864—"im Thale des Mapocho, oberhalb von Santiago," Chili).

² *Sylvia rubrigastra* (sic) Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 11, p. 277 (1817—ex Azara, No. 161; Paraguay et Buenos Aires).—In *Tabl. enc. méth. Ornith.* ii, livr. 89, 1820, p. 480, the name is correctly spelt *Sylvia rubrigastra*.

³ *Regulus omnicolor* Vieillot, *Galerie des Ois.*, 1, ii, p. 271, pl. clxvi (circa 1824—Rio Grande [do Sul], S.E. Brazil; coll. A. de Saint Hilaire).

⁴ Lillo, *Revista letr. y cienc. soc. Tucumán*, iii, 1905, p. 49 (Lagunas de Malvina).

⁵ *Cyanotis rubrigastra alticola* Berlepsch & Stolzmann, *Proc. Zool. Soc. Lond.* 1896, p. 361 (1896—Ingapirca, Lake Junin, central Peru).

⁶ *Sylvia nigricans* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 11, p. 204 (1817—ex Azara, No. 167: "Paraguay et environs de la rivière de La Plata").

Culicivora bivittata = $\begin{cases} \text{Polioptila dumicola dumicola (Vieill.)}^1 \\ \text{Polioptila dumicola berlepschi Hellm.}^2 \end{cases}$

Culicivora bivittata (nee Lichtenstein);³ L. & O., *Syn. Av.* i. p. 56 (Corrientes, Buenos Ayres, rep. Argentina; Chiquitos, Moxos, rep. Boliviana).

Culicivora dumicola "Vieill."; d'Orbigny, *Voy.*, Ois., p. 331 (same localities).

No. 1 "♂" ad. (skin): "d'Orbigny, juillet 1829. No. 79-16. Corrientes, Mâle. *Culicivora dumicola* Nob."—Wing, 55; tail, 62; bill, 11 mm. = *P. dumicola dumicola* (Vieill.).

Nos. 2, 3 (♂♂) ad. (skins): "No. 208. d'Orbigny, 1834. Chiquitos, D. 336. *Culicivora dumicola* Nob."—Wing, 55, 55; tail, 56, 58; bill, 12 mm. = *P. dumicola berlepschi* Hellm.

No. 4 (♀) ad. (skin): "D. 80. Chiquitos. *Culicivora dumicola* Nob. No. 288. d'Orbigny, 1834."—Wing, 54; tail, —; bill, 12½ mm. = *P. dumicola berlepschi* Hellm.

No. 5 (♀) imm. (skin): "D. 336. Chiquitos. *Culicivora dumicola* Nob. No. 208. d'Orbigny, 1834."—Wing, 52; tail, —; bill, 10½ mm. = *P. dumicola berlepschi* Hellm.

The adult male from Corrientes, No. 1, agrees with average examples from Buenos Aires and Samaipata (Bolivia), and is no doubt typical *P. d. dumicola*, which is characterised by the broad black frontlet, deep slaty blue upper and dark bluish-grey lower parts. Birds from Cordoba (Cosquin), Tucumán (Laguna de Malvinas, Santa Ana), and Rio Grande do Sul (São Lourenço) are precisely similar.

The Chiquitos specimens are somewhat intermediate between *P. d. dumicola* and *P. d. berlepschi*, though much nearer the latter. Nos. 2 and 3, adult males in perfect plumage, but slightly stained underneath, resemble *P. d. berlepschi* in the narrow black frontal band, light cinereous upper parts, pure white cheeks and lower portion of auriculars, separated from the white eyelid by a narrow black streak only, as well as in the long white tip to the outermost rectrix. They differ, however, from the Brazilian skins by their longer, heavier bill, and by having the breast and sides conspicuously tinged with pale greyish. An adult male procured by Natterer on August 20, 1826, at Engenho do Gama, on the Rio Guaporé, W. Mattogrosso, close to the Bolivian frontier, is practically identical with the two males from Chiquitos.⁵

The females, while agreeing with *P. d. berlepschi* in the white colour of the nasal plumules, lores, eyelid, and cheeks, and in the possession of a distinct dull black auricular patch, approach *P. d. dumicola* by the greyish tinge of the chest and sides. The immature female (No. 5), moreover, is very nearly as bluish above as *P. d. dumicola*.

¹ *Sylvia dumicola* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., II, p. 170 (1817—ex Azara, No. 158; Paraguay).

² *Polioptila berlepschi* Hellmayr, *Nov. Zool.* 8, p. 356 (1901—northern São Paulo, Goyaz, Mattogrosso, C. Brazil; the types in the Vienna Museum are from the Rio Paraná, n. São Paulo, coll. J. Natterer).

³ *Sylvia bivittata* Lichtenstein (Verz. *Dubl. Berliner Mus.* 1823, p. 35) is simply a new name for *Sylvia caerulea* var. β of Latham (*Ind. Ornith.* ii, 1790, p. 540), which, in its turn, is exclusively based on Daubenton's *Pl. enl.* 704, fig. 1: Cayenne; = *Polioptila livida* (Gm.) 1789 ♂!

⁴ I am comparing 4 ♂♂ ad. from northern São Paulo (Rio Paraná, Itapurá, R. Tieté), including the type, 2 ♂♂ ad. from Cuyabá, Mattogrosso, and 2 ♂♂ from Agua Suja near Bagagem, W. Minas Gerais.

⁵ Two additional examples from "Bolivia. Bridges coll." I have examined in the British Museum.

The series from eastern Bolivia furnish the proof that *P. dumicola* and *P. berlepschi* can only be looked upon as geographic representatives of a single species.

It remains to say a few words about *Culicivora boliviana* Sel.,¹ based upon a skin obtained by Bridges in "Bolivia." The type, a male in good condition, formerly in coll. P. L. Selater, I have carefully compared in the British Museum, and found it to agree with an example from the Estancia d'Espartillar, south of Buenos Aires, both having the throat and chest slightly paler grey and the abdomen more whitish than is the rule in *P. d. dumicola*. Quite similar specimens I have seen from Santa Cruz de la Sierra, Bolivia,² and Corumbá, R. Paraguay, S.W. Mattogrosso.³ They are most certainly only individual variations of *P. d. dumicola* and do not constitute a distinct form inhabiting a particular geographic area.

The ranges of *P. d. dumicola* and *P. d. berlepschi* are given in Wytsman's *Genera Avium*, Part 17, 1912, p. 13.

***Culicivora budytoides* = *Stigmatura budytoides* (Laf. & Orb.).**

Culicivora budytoides Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 56 (1837—Valle Grande, rep. Boliviana; descr. orig.).

Setophaga budytoides d'Orbigny, *Voy., Ois.*, p. 330, pl. xxxvi, fig. 2 (dans la vallée de Chaluan, prov. Mizque).

No. 1 (♂) ad. (skin): "No. 212. d'Orbigny, 1834. *Setophaga budytoides* d'Orb. D. 308. Valle Grande."—Wing, 63; tail, 81; bill, 10 mm.

Besides the type, I have examined a second adult male from Mizque (S. José) and two ♂♂, one ♀ from the same general region, viz. Samaipata and Olgin, Bolivia. These five specimens agree among themselves in having the under-parts bright yellow with a decided buffy tinge across foreneck and along flanks; the lores and a broad superciliary stripe likewise bright yellow; the light markings on the upper wing-coverts and secondaries pure white; the inner web of the three (or four) outer rectrices crossed near the base by a broad continuous white band, which in its turn is separated from the white tip by a somewhat longer black interspace. The extent of this white cross-band is rather variable, measuring in different individuals from 11½ to 17 mm. on the outermost, from 10 to 16 mm. on the penultimate, from 10 to 15 mm. on the third rectrix. In one example, the fourth rectrix (from without) also shows a greyish-white lengthy patch.

Four specimens from eastern Peru (Ucayali) and Brazilian Amazonia (Rio Madeira; Urucurituba, left bank of R. Tapajóz) are smaller, lack the buffy tinge on foreneck and flanks, and have the white tips as well as the band across the inner web of the three outer rectrices yellowish instead of pure white. Six skins from eastern Brazil (Joazeiro, R. São Francisco, state of Bahia; Paranagua, southern Piahy)⁴ resemble the preceding ones in coloration of under-parts, but have somewhat slenderer, longer bills, and the *four* (in one case even five) external pairs of rectrices crossed by a wide band of *white* on the inner web. Unfortunately, most of the specimens are in moult, so that the pattern of the

¹ *Proc. Zool. Soc. Lond.* 20, "1852," p. 34, pl. xlvii (Dec. 1853—"Bolivia (Bridges, d'Orbigny)").

² Cf. *Nov. Zool.* 8, 1901, p. 357.

³ Allen, *Bull. Amer. Mus. N.H.* iii, 1891, p. 342.

⁴ *Stigmatura budytoides* Reiser, *Denkschr. math.-naturw. Kl. Akad. Wiss. Wien*, 76, 1910, p. 72.

tail cannot be made out with absolute certainty. Two examples from the Rio Seco, n. Salta, N.W. Argentine, differ from the Bolivian series in very slightly paler yellow under surface with very little buffy tinge, paler superciliary stripe, and in having the white tips as also the white cross-band on the three outer rectrices rather shorter (6 to 8 mm.). For the present I refer all the birds discussed in the foregoing lines to *S. b. budytoides*, although more ample material might lead to the creation of several local races.

The second member of this genus, *S. flavo-cinerea* (Burm.),¹ although generally treated as a full species, is most certainly but the southern representative of *S. budytoides*, as I am led to believe from the study of a very satisfactory series from various parts of Argentine (Mendoza; Cosquin, Sierra de Cordoba; Est. Isea Yacú, Santiago del Estero; Tapia, Rio Salí, Tucumán; Metán, Salta) in the Tring, Berlepsch, and Munich collections. Any of the twenty examples may be distinguished from *S. budytoides*, of Bolivia and Rio Seco, Salta, by the considerably paler as well as duller sulphur-yellow superciliary streak and under surface; by the greyish instead of pure white markings on the wings; by the smaller white tips to the tail; and by lacking the *continuous* white band across the inner web of the external rectrices.

Birds from Mendoza (topotype) and Cordoba have the under-parts pale dingy yellow, and the chest more or less washed with dull greyish; those from more northern localities are rather brighter underneath, with the greyish suffusion restricted to the sides of the breast. There is much variation in the development of the white spot near the base of the inner web of the lateral rectrices. Two adult males from Metán (prov. Salta) have on the *three* outer tail-feathers a well-defined white spot, about 3 to 4 mm. long, which, however, does not occupy the entire width of the vane; in an adult male from "Tucumán": and a female from Tapia (prov. Tucumán) this spot is present only on the *two* outer rectrices; the remaining examples (from Tapia, Tucumán; Metán, Salta; Santiago del Estero; Cordoba; Mendoza) show either mere traces of an obsolete whitish spot or none at all. The type of *S. flavo-cinerea*, from Mendoza, has the apical spots to the three lateral rectrices partly tinged with smoky-grey, while they are pure white in all other examples. Although the above-mentioned examples, in the tail-markings, manifest an unmistakable approach to *S. budytoides*, I still hesitate to "degrade" *S. flavo-cinerea* to subspecific rank, since the former species is recorded by various authors² from the provinces of Tucumán and Salta, i.e. the breeding area of *S. flavo-cinerea*. This statement certainly requires confirmation; but on the other hand, there can be no question that the ranges of the two forms run very close together; for as we have seen, *S. budytoides* was obtained at Rio Seco, Salta, while *S. flavo-cinerea* has been met with at Metán, in the eastern portion of the same province. Hence, more information about the distribution of these birds in N.W. Argentine appears desirable.

An adult male from the Rio Negro (Patagonia) very likely represents a distinct race. It has the chest even more greyish than the birds from Mendoza and Cordoba, the upper surface of a paler, more greyish olive hue, and the lateral rectrices but indistinctly tipped with dingy grey.

¹ *Phylloscartes flavo-cinereus* Burmeister, *Reise La Plata Staaten*, ii, p. 455 (1861—Sierra de Uspallata, Mendoza; types in the Halle Museum examined).

² This bird shows a slight buffish suffusion on the flanks, though much less pronounced than in the Rio Seco specimens of *S. budytoides*.

³ See Salvin, *Ibis*, 1880, p. 357; Dabbene, *Anal. Mus. Nac. Buenos Aires*, 18, 1910, p. 329.

In concluding, I append the measurements of the material upon which the above remarks were based.

<i>S. budytoides</i>			
	♂♂.	Wing.	Tail.
Four from Mizque, Bolivia . . .		59½, 60, 61, 63	74, 76, 76½, 81 mm.
One from Rio Seco, Salta . . .		59	72½ "
One from Rio Madeira, W. Brazil . . .		54	66 "
Four from Joazeiro, E. Brazil . . .		55, 56½, 57, 58	65, 69, 72 "
	♀♀.		
One from Mizque, Bolivia . . .		56½	72½ "
One from Rio Seco, Salta . . .		53	64 "
One from Rio Madeira, W. Brazil . . .		48	59 "
One from Rio Tapajóz . . .		52	59 "
Two from Joazeiro, E. Brazil . . .		55, 56	64, 70 "
<i>S. flavo-cinerea.</i>			
	♂♂.	Wing.	Tail.
One from Mendoza (type) . . .		62	74½ mm.
Six from Cordoba (Cosquin) . . .		58-61	74½-79½ "
One from Santiago del Estero . . .		59	75 "
Two from Tucumán (Tapia) . . .		59, 61	74-76 "
Two from Salta (Metan) . . .		60, 60	76½, 79 "
One from Rio Negro . . .		59½	77 "
	♀♀.		
Two from Cordoba (Cosquin) . . .		56, 56	69½, 72 "
One from Santiago del Estero . . .		56	73 "
Two from Tucumán (Tapia) . . .		55½, 59	74, 77½ "
Two from Salta (Metan) . . .		55, 56	73, 73 "

$$\text{Culicivora parulus} = \begin{cases} \text{Spizitornis flavirostris (Sel. \& Salv.).}^1 \\ \text{S. parulus parulus (Kittl.).}^2 \\ \text{S. parulus aequatorialis (Berl. \& Tacz.).}^3 \\ \text{S. parulus patagonicus Hellm.}^4 \end{cases}$$

Culicivora parulus (Kittl.); L. & O., *Syn. Av. i*, p. 57 (Chili); d'Orbigny, *Voyage*, Ois., p. 332 (Patagonie, au 41° degré sud non loin du Rio Negro; versant oriental des Andes; Valparaiso, Chili).

No. 1, adult (skin): "209, d'Orbigny, 1834. D. 143. Cochabamba."—Wing, 50; tail, 52; bill, 9¾ mm. = *Spizitornis flavirostris* (Sel. & Salv.).

No. 2, adult (skin): "d'Orbigny, Valparaiso, 1830. No. 11."—Wing, 49; tail, 50 mm. = *S. parulus parulus* (Kittl.).

No. 3, adult (skin): "D. 143. Sicasica, Bolivic, d'Orbigny, 1834. No. 209."—Wing, 48; tail, 47; bill, 10 mm. = *S. parulus aequatorialis* (Berl. & Tacz.).

Nos. 4-6, adults (skin): "de Patagonie, février 1831. d'Orbigny" = *S. parulus patagonicus* Hellm.

¹ *Proc. Zool. Soc. Lond.* 1876, Part ii, p. 355 (1876—Tiltilo, prov. Yungas, Bolivia; coll. Buckley).

² *Muscicapa parulus* Kittlitz, *Mém. Acad. Sci. St. Pétersb.* (sav. étr.), i, p. 190, pl. ix (1830—"bei La Concepcion, Valparaiso, Chili").

³ *Proc. Zool. Soc. Lond.* 1884, p. 296 (1884—Cechee, W. Ecuador; coll. J. do Siemiradzki).

⁴ *Arch. f. Naturg.* 85, A, Heft 10, p. 51 (Nov. 1920—Neuquen, W. Argentina).

As will be seen from this list, d'Orbigny in the " Voyage " united specimens of various forms under the heading of *C. parulus*.

The first-named example, from Cochabamba, Bolivia, belongs to the specifically distinct *S. flavirostris* which was founded upon a skin secured by C. Buckley in northern Bolivia. It differs from *S. parulus* at a glance by the more brownish back, much broader wing-bands, and by having the lower mandible for the greater part yellow (orange in life). Two adult males from Cuzco, S.E. Peru, except in being larger (which may be sexual), agree well with the Bolivian bird. Two specimens from northern Peru (Succha, Huamachuco) in the Tring Museum are smaller and paler; but their abraded condition makes them hardly fit for comparative purposes. A small series from Tucumán, N.W. Argentine, differs from the Peruvian and Bolivian skins in shorter crest, lighter-brown back without dusky spotting, narrower black streaks on the lower parts, and decidedly buffy flanks. An adult male from Cordoba (Cosquin) and two from Neuquen (Rio Limay) are again somewhat different. Larger series from various localities are required to satisfactorily establish the geographic races of *S. flavirostris*.

The five other examples obtained by d'Orbigny are referable to the black-billed *S. parulus*, though representing three different subspecies.

The Chili bird is topotypical of *S. parulus parulus*, and agrees with examples from Valdivia in the Munich Museum. Ten skins from various Chilean localities are fairly uniform as regards size and coloration. Birds from western Ecuador (Cechce, Cumbaya, Quito), Peru (Cutervo; Tarma; Ollachea near Macuzani, Carabaya), and Bolivia (Iquico, Chaco, Sicasica, Vacas) differ in having the back more brownish, the black striping of the lower parts broader, the white admixture on the nape much less pronounced, and the median as well as the greater upper wing-coverts tipped with whitish or buff, so that there are two bands across the wing instead of only one as in *S. p. parulus* from Chili; besides, the bill is somewhat stouter. This Andean form is entitled to the name *S. parulus aequatorialis* (Berl. & Tacz.), originally based upon two specimens from Cechce, Ecuador.

Birds from Patagonia (d'Orbigny; Hudson) and Neuquen (Arroytos, city of Neuquen), while agreeing with *S. p. aequatorialis* in the broad black striping below and in the double-banded wings, nevertheless differ by having, like the Chilean *S. p. parulus*, a distinct white nuchal patch, by their more greyish or ashy upper parts, and by the pure white ground colour of the belly. In both *S. p. parulus* and *S. p. aequatorialis* the breast and abdomen are sulphur yellow, thus contrasting abruptly with the white of the throat. I therefore separated the white-bellied Patagonian race as *Spizitornis parulus patagonicus* Hellm.¹

¹ Adult males from different localities measure as follows :

<i>S. parulus parulus</i> .					
		Wing.	Tail.	Bill.	
Six from Chili	.	47-49	46½-53	9-9½	mm.
<i>S. parulus aequatorialis</i> .					
Two from W. Ecuador	.	48, 48	50, 53	10½, 11	„
One from N. Peru (Cutervo)	.	48	47	9½	„
Two from S.E. Peru (Carabaya)	.	47, 50½	50, 54	9, 9½	„
Two from W. Bolivia (Iquico)	.	49, 49	49, 53	9, 9½	„
<i>S. parulus patagonicus</i> .					
Two from Rio Negro	.	48, 48	50, 52	8½, 8½	„
One from Neuquen	.	48	52	8½	„

Culicivora reguloides = Spizitornis reguloides (Lafr. & Orb.).¹

Culicivora reguloides Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 57 (1837—Tacna, Peruvia; descr. orig. ad. et jun.); d'Orbigny, *Voy.*, Ois., p. 332, pl. xxxvii, fig. 1 (Tacna).

No. 1, "♂" ad. (skin): "d'Orbigny; janvier 1831, de Tacna. Mâle. No. 179, de d'Orbigny. *Culicivora reguloides* Nob."—Wing, $53\frac{1}{2}$; tail, 50; bill, 10 mm.

This is an adult male, exactly like another from Lima in the Berlepsch collection, and corresponds well to the original description of the adult in the "Synopsis," whereas the figure is barely recognisable.

The type differs from a series of the allied *S. nigrocristatus* (Tacz.)² in its smaller size, particularly much shorter tail; shorter as well as slenderer bill with nearly the whole of the lower mandible pale horn yellow; almost entirely black throat; much shorter crest-feathers which, instead of being uniform black, have only a broad median stripe of that colour, bordered with white on either side; much larger white patch on the crown; much less white on the lateral rectrices, etc. etc.

S. reguloides inhabits the lowlands (in winter only?) and western slopes of the Cordillera de la Costa in western Peru, from Lima (Callao, Lima), Ica, and southern Ayacucho (Pauza, Coracora) to Arequipa (Arequipa) and N.W. Chili (vicinity of Tacna). Its presumed occurrence at Paucartambo, s.e. of Cuzco, S.E. Peru³ is most certainly due to an erroneous transcription of one of Whitely's labels.

S. nigrocristatus (Tacz.) is only found in northern Peru (prov. Cajamarca, Pataz) at high elevations of from 8,000 to 11,000 feet.⁴

N.B.—The so-called "femina aut junior" with dusky back, white throat and chest, etc., I have not been able to discover in the Paris Museum, unless it be the specimen of *S. flavirostris* discussed in the preceding article.

¹ It is difficult to understand how *Tyrannulus albo-cristatus* Vigors (*Zool. Journ.* v, No. 18, 1830, p. 273: "in Brasiliâ") could ever be associated with the above species. Both description and locality clearly indicate *Serpophaga suberistata* (Vieill.), a well-known denizen of S.E. Brazil. *Vermivora elegans* Lesson (in Bougainville, *Journal de la Navigation autour du globe de la frég. Thétis et Corr. Espérance*, ii, 1837, p. 323: "dans la partie méridionale du Chili"), quoted by some authors as referring to *S. reguloides*, is undoubtedly a mere synonym of *S. p. parulus* (Kittl.), as may be easily conceived from several passages in the description, viz. "bec noir . . . le devant du cou est gris-blanc, ponctué ou guilloché de noir." The name is said to have been first published in "*L'Institut*, No. 72, 1834, p. 316," a periodical which I have not been able to consult.

² *Anacretes nigrocristatus* Taczanowski, *Ornith. Pérou*, ii, p. 555 (1884—Chota, dept. Cajamarca, 8,000 ft., N. Peru, J. Stolzmann).

³ *A. albocristatus* (errore), Selater, *P.Z.S. Lond.* 1873, p. 780.

⁴ Seven adult males measure: wing, 58–61; tail, 62–68; bill, $11\frac{1}{2}$ –12 mm.

(To be continued)

CRITICAL LIST OF THE COLLECTION OF ALGERIAN LEPIDOPTERA OF THE LATE CAPTAIN N. J. E. HOLL.

By LORD ROTHSCILD, F.R.S., Ph.D.

(PART I.)

THE collection hereafter enumerated was purchased for the Tring Museum from the family of the late Captain Holl towards the end of 1919. It consists for the most part of specimens collected in the Tell country of the Province of Alger, especially in the environs of Alger itself and the neighbourhood of Blida les Glacières. There are also a number of specimens collected by Captain Holl's son in Biskra and Ghardaia and the country to the south. There are also many specimens exchanged from Dr. H. Chr. Nissen and others.

Captain Nicholas Joseph Eugène Holl was of Alsatian parentage, but was born in France at Provins in December 1855. He was a Captain of Engineers and lived at Fort l'Empereur, El Biar, and Hussein Dey, suburbs of Alger.

RHOPALOCERA.

1. *Papilio machaon mauretanica* Verity.

Papilio machaon mauretanica Verity, *Rhopalocera Palaearctica*, p. 12, pl. ii, f. 5 (1905) (Alger).

3 ♂♂, 4 ♀♀ El Biar, June–Aug. 1904–1915; 1 ♂ Bouzarea, April 1904; 1 ♀ Hydra, July 1908; 1 ♂ Maison Carrée, March 1908; 6 ♂♂, 2 ♀♀ Fort l'Empereur, May–Sept. 1900–1910; 1 ♀ Bastion X, May 1904; 23 ♂♂, 26 ♀♀ Hussein Dey, July–Oct. 1908–1912; 1 ♂, 1 ♀ no locality.

In this series of 70 specimens (35 ♂♂, 35 ♀♀) there are several very distinct individuals, but I can only treat them as individual aberrations. 1 ♀ Hussein Dey has all the yellow marginal lunules on hindwings stained with red; 7 ♂♂, 3 ♀♀ Hussein Dey are dwarfs. 1 ♂ of these has an almost entirely black abdomen and a black spot in the basad quadrate yellow patch in cell; 1 ♂♂, 1 ♀ have the black band of hindwings unusually broad, and 1 ♂ has the submarginal black bands of both wings reduced to one-fourth the normal width; the ♂ from Bouzarea has an almost black abdomen.

The spring generation has the black dorsal band extended over the whole upper surface of abdomen, while in the summer generation it is much narrower and forms a central dorsal line only.

2. *Papilio podalirius feisthameli* Dup.

Papilio feisthameli Duponchel, in Godart's *Lépid. de France*, Suppl. I, p. 7, t. i, f. 1 (1832) (Perpignan) (loc. typ. fixed by Pierret).

Of the two generations gen. vern. *feisthameli* Dup. and gen. aest. *lotteri* Aust., the collection contains 51 specimens, 16 ♂♂, 9 ♀♀ of gen. vern. *feisthameli* and 21 ♂♂, 5 ♀♀ of gen. aest. *lotteri*. These are as follows:

5 ♂♂, 2 ♀♀ *feisthameli*, March–April 1912, 10 ♂♂, 2 ♀♀ *lotteri*, June–Sept.

1908–1911, Hussein Dey ; 1 ♂, 1 ♀ *feisthameli*, May 1914, 2 ♀♀ intermediate, July 1912, 5 ♂♂, 2 ♀ *lotteri*, June–Aug. 1914–1915, El Biar ; 1 ♂ *lotteri*, June 1912, El Kantara ; 1 ♀ *feisthameli*, April 1913, Batna ; 9 ♂♂, 1 ♀ *feisthameli*, June 1909–1914, Blida les Glacières ; Casba, Alger 1 ♀ *lotteri*, July 1904 ; Fort l'Empereur 1 ♂ *lotteri*, Aug. 1904 ; Kouba 1 ♀ *feisthameli*, March 1896 ; Maison Carrée 1 ♀ *feisthameli*, March 1910.

The series only contains 3 abnormal specimens, the 2 ♀♀ intermediates between *feisthameli* and *lotteri* and the ♀ *feisthameli* from Maison Carrée, which has the short cellular black band broken up into five spots on the right forewing. The types of ab. *asymetrica* Holl and var. *littoralis* are included in the above.

3. *Thais rumina mauretanica* Schultz.

Thais rumina mauretanica Schultz, *Int. Entom. Zeitschr. Stuttgart*, vol. xxi, p. 267 (1908) (Morocco, Algeria).

Of this species there are 161 specimens in the collection as follows :

Environs d'Alger 25 ♂♂, 26 ♀♀, March–May 1908–1913 ; El Biar 4 ♂♂, 4 ♀♀, March–May 1913–1914 ; Maison Carrée 4 ♂♂, 1 ♀, March–April 1906–1910 ; Pointe Pescade 2 ♂♂, 1 ♀, April 1901–1902 ; Kouba Alger 1 ♂, 1 ♀, March–April 1897–1898 (ab. *canteneri*) ; Hussein Dey 57 ♂♂, 48 ♀♀, March–May 1910–1913.

This series shows a good deal of variation. Besides the Kouba ♂ ♀, there are 2 ♀♀ from Hussein Dey of the ab. *canteneri* ; 1 ♂ from Maison Carrée has all the black markings replaced by dark and pale grey, and the yellow lunate submarginal marks bordered outwardly with red as on the underside, this is the type of ab. *nebulosa* Holl.

There are 16 specimens from diverse localities, exhibiting in various degrees that strange quadrangular distortion of the hindwing accompanied by coalescence and increase of the yellow margin and fringe between two or more of the excisions. There is a ♂ specimen from Hussein Dey with all red spots replaced by yellow, and several others where the disc of both wings is much more yellow owing to the reduction of the black markings. Several have the black much extended and the red spots reduced or absent altogether. Others, again, have the red spots very large and brilliant.

4. *Aporia crataegi mauretanica* Oberth.

Aporia crataegi mauretanica Oberthür, *Etud. Lépid. Comp.* fasc. iii, p. 120 (1909) (Algeria).

1 ♂ La Tarf, May 1903 ; 6 ♂♂, 2 ♀ Blida les Glacières, June 1907–1911.

The La Tarf ♂ has the nervures of the forewing broadly marked with brown, and veins 3 and 4 of the hindwing also on the distal half ; 1 ♂ from Blida (1911) has the veins of the forewing similarly marked, but to a less degree.

5. *Ganoris brassicae brassicae* (Linn.).

Papilio brassicae Linnaeus, *Syst. Nat.* i, p. 467, No. 58 (1758) (Sweden).

There are in Europe two distinct generations ; the spring generation with underside of hindwings more strongly dusted with black scales, size generally smaller = gen. vern. *brassicae* Linn. ; and the summer generation with underside of hindwings paler yellow almost without black powdering, size generally larger = gen. aest. *lepidii* Röb. (in Seitz, *Grossschmett. Erde*, vol. i, p. 45 (1907)). In

Algeria the generations are not so distinct, 3 and even 4 occurring in the year and consequently the colouring below is less sharply defined.

3 ♂♂, 3 ♀♀ Hussein Dey, 2 ♂♂ March 1912, 1 ♀ April 1908, 1 ♂ Oct. 1908, 1 ♀ Sept. 1909, 1 ♀ Dec. 1908; 2 ♂♂ Fort l'Empereur, April 1902; 1 ♂ El Biar Oct. 1912; Blida les Glacières, 1 ♂, 2 ♀♀ June 1911, 1 ♀ Sept. 1911; Casba, 1 ♂, 1 ♀ April 1907, 1 ♀ July 1907.

6. *Ganoris rapae mauretanica* (Verity).

Pieris rapae mauretanica Verity, *Rhopalocera Palaearctica*, p. 155, pl. xxiii, ff. 43, 44 (1908) (Algeria).

Dr. Verity's name was applied to the summer generation, the spring generation must receive the name f. temp. *barbara* nov. It differs from f. temp. *leucotera* Steff. in having the cellular streaks on underside of the hindwings much less distinct.

Hussein Dey, gen. aest. *mauretanica* 3 ♂♂, 7 ♀♀ May-Dec. 1908-1911, gen. vern. *barbara* 7 ♂♂, 3 ♀♀ Feb.-April 1908-1910; El Biar, 1 ♂ gen. vern. April 1900; Maison Carrée, 1 ♀ gen. aest. May 1908; Casba, 1 ♂ gen. aest. May 1905, 1 ♀ gen. vern. April 1904; Kouba, 1 ♂ gen. vern. April 1908; Fort l'Empereur, 1 ♀ gen. vern. Jan. 1902; Tala Rana, 1 ♀ gen. aest. July 1909; Blida les Glacières, 9 ♂♂, 10 ♀♀ gen. aest. June-Sept. 1911; Batna, 1 ♂ gen. vern. March, 2 ♂♂, gen. aest. June 1912; El Kantara, 1 ♀ gen. aest. Aug. 1911; Biskra, 6 ♀♀ gen. aest. May 1912; Touggourt, 7 ♂♂, 4 ♀♀ gen. vern. March 1912; Nefta, Tunisia, 1 ♀ gen. vern. Feb. 1904; 1 ♂, 1 ♀ C.C. June and July, gen. aest.

Of this series of 70 specimens only two call for special mention, the ♀ from Fort l'Empereur, which has the black apex of forewing replaced by sulphur yellow; and the ♀ from Nefta, in which this black apex is almost absent. In addition several dwarf specimens are contained in this series.

7. *Pieris napi maura* Verity.

Pieris napi var. *maura* Verity, *Rhopalocera Palaearctica*, Suppl. p. 332, pl. lix, ff. 18-20 (1911) (Algeria).

Pieris napi atlantica Rothsch. *Nov. Zool.* vol. xxiv, p. 75, No. 9 (1917) (Blida les Glacières).

When I was writing the article in which I described the Algerian form of *napi*, my copy of Dr. Verity's work was not bound, and so I completely overlooked his supplement in which he describes this insect. His name has six years priority over mine. There appears to be no genuine spring brood on Blida les Glacières, as I have only June specimens taken by ourselves and Captain Holl and September specimens from Captain Holl. The two La Tarfe specimens, however, are genuine spring brood, and have the nervures both above and below much more heavily marked. Of the summer brood the September examples are in the greater majority of examples considerably smaller than those taken in June, but two or three are almost as large.

As in the case of *rapae mauretanica*, Dr. Verity's name applies to the summer brood, and I therefore name the spring brood f. temp. *mauretanicae* nov.

La Tarfe, 1 ♂, 1 ♀ gen. vern. *mauretanicae* April 1904-1907; Blida les Glacières, 56 ♂♂, 33 ♀♀ gen. aest. *maura*.

8. *Leucochloe daplidice albidice* (Oberth.)

Pieris daplidice var. *albidice* Oberthür, *Etud. Entom.* fasc. vi, p. 47 (1881) (Algérie, Prov. Constantino Sud).

Mr. Oberthür gave the name of *albidice* to the summer generation, and as the spring generation has no name I propose that of gen. vern. *virescentior*; it differs from the gen. aest. *albidice* in the markings on the underside of the hindwings being much stronger, more definite, and almost entirely green. In the country north of the Atlas a very large proportion of the summer generation show full green markings though suffused with yellow, whereas in the central Sahara almost all the green is absent.

Hussein Dey, 1 ♂, 2 ♀♀ gen. vern. *virescentior*, Feb.–April 1910–1912, 58 ♂♂, 46 ♀♀ gen. aest. *albidice* May–Dec. 1907–1912; Casba, 1 ♂ gen. vern. *virescentior* March 1905, 1 ♂ gen. aest. *albidice* Aug. 1905; Kouba, 1 ♂ gen. aest. *albidice* Nov. 1908; Fort l'Empereur, 3 ♂♂, 3 ♀♀ gen. aest. *albidice* May–July 1897–1905; El Biar, 3 ♂♂, 1 ♀ gen. aest. *albidice* Aug.–Nov. 1897–1905; Maison Carrée, 2 ♂♂ gen. vern. *virescentior*, 3 ♂♂, 1 ♀ gen. aest. *albidice* Aug. 1908; Forêt de Bainen, 2 ♂♂ gen. aest. *albidice* June 1897; Blida les Glacières, 1 ♂, 3 ♀♀ gen. aest. *albidice*, June–July 1913; Tala Rana, 2 ♂♂, 1 ♀ gen. aest. *albidice*, July 1909; Batna, 2 ♂♂, 1 ♀ gen. vern. *virescentior*, March 1912; 7 ♂♂ gen. aest. *albidice*, June–Oct. 1911–1912; Col de Sfa, 2 ♂♂, 1 ♀ gen. aest. *albidice*, May 1913; Biskra, 2 ♂♂ gen. aest. *albidice*, June 1914; Touggourt, 1 ♀ gen. vern. *virescentior*, March 1912; Ghardaia, 3 ♂♂ gen. aest. *albidice* April 1913; 1 ♂, 1 ♀ gen. aest. *albidice*, no data.

9. *Euchloe belia* (Linn.).

Papilio belia Linnaeus, *Syst. Nat.* i, p. 761, No. 84 (1767) (Barbaria).

15 ♂♂, 15 ♀♀, Hussein Dey, March–April 1910–1912; 11 ♂♂, 9 ♀♀ Maison Carrée, March–April 1908–1911; 1 ♂, 3 ♀♀ Fort l'Empereur, March–April 1900–1901; 5 ♂♂, 5 ♀♀ Bastion X, March–April 1905; 1 ♂, 1 ♀ Berakoun, Alger, April 1899; 1 ♂ El Biar, April 1913; 1 ♀ Blida les Glacières, June 1909; 1 ♀ Gué, April; 1 ♀ L'Arbe, May; 1 ♀ Méner, May 1910; 1 ♂, 3 ♀♀ Batna, March–April 1912; 1 ♀ Bouzarea, April 1909; 47 ♂♂, 20 ♀♀ no data.

This series of 82 ♂♂, 60 ♀♀ shows a considerable range of variation both in size and marking. The smallest ♂ measures 25 mm. in expanse, and largest 44 mm. The orange apex in the ♂ does not vary in extent, always reaching the discocellular stigma, but the black inner margin is at times almost absent, while in one ♂ from Bastion X it is so wide as to have reduced the orange by one-third. A second ♂ from Bastion X has the orange suffused with pink. In the ♀♀ the orange apex varies much in width, in some specimens reaching the discocellular stigma, while in others it is reduced to one-half that width; this orange apex also is very variable in respect to the amount of black scaling on the orange patch; in some instances completely suffusing the orange apex, while in others hardly any black scaling is visible. Most of the ♀♀ have the hindwings white, but several have them pale yellow, and the ♀ from d'Arbe has them orange buff. The smallest ♀ expands 26 mm., and the largest 53 mm.

10. *Euchloe charlonia* (Douzel).

Anthocharis charlonia Douzel, *Ann. Soc. Entom. France*, vol. ii, p. 197, pl. viii, f. 1 (1842) (Emsilah, Algeria).

3 ♂♂, 1 ♀ Batna, April–May 1912; 1 ♂ Col de Sfa, March 1914; 3 ♂♂ Biskra, March 1914; 1 ♂ Mraier, March 1912; 3 ♂♂ El Amri, Feb. 1913; 6 ♂♂ Seb-Seb, March 1913; 11 ♂♂ Ghardaia, April 1911–1913; 1 ♂ Laghouat, April 1911; 2 ♀♀ Fort l'Empereur, Alger, May 1898.

There is nothing remarkable about this series, except the 2 ♀♀ caught at Alger; these 2 ♀♀ and a ♂ recorded by Monsieur Oberthür as having been taken in 1885 are the only RECORDED specimens I can trace as having been taken north of the Atlas in Algeria.

11. *Euchloe tagis pechi* (Stdgr.).

Anthocharis pechi Standinger, *Entom. Nach.* vol. xi, p. 10 (1885) (Lambessa).

1 ♂ Batna, March 1912 (René Holl); 5 ♂♂, 4 ♀♀ Guelt-es-Stel, April 1913.

The Batna ♂ is the only specimen in the Tring Museum from the Aurés Mts.

12. *Euchloe ausonia crameri* Butl.

Euchloe crameri Butler, *Entom. Month. Mag.* vol. v, p. 271, No. 2 (1869) (South Europe !).

Fort l'Empereur, 5 ♂♂ gen. vern. *crameri*, Jan.–April 1897–1902, 1 ♀ gen. aest. *esperii*, May 1899; Kaddous, Alger, 1 ♀ gen. vern. *crameri*, April 1905; Hydra, Alger, 1 ♂ gen. aest. *esperii*, May 1905; El Biar, 1 ♂ gen. vern. *crameri*, Jan. 1913, 1 ♂ gen. aest. *esperii*, June 1914; Méner, 2 ♂♂ gen. vern. *crameri*, May 1910, 2 ♂♂, 1 ♀ gen. aest. *esperii*, May 1910; Blida les Glacières, 2 ♂♂ gen. vern. *crameri*, June 1907–1908, 7 ♂♂, 9 ♀♀ gen. aest. *esperii*, June 1907–1909; Bône, 3 ♂♂ gen. aest. *esperii*, Sept. 1914.

I unfortunately came to the conclusion that Kirby's var. *esperii* was synonymous with *crameri* Butl., and so renamed the summer brood of *E. ausonia crameri* Butl. *butleri*. However, *esperii* is the correct name for the summer brood and was NOT given to a spring brood example. Therefore the subspecies of *Euchloe ausonia* Hübn. from Spain and N.W. Africa must stand as follows:

Euchloe ausonia crameri Butl.

gen. vern. *crameri* Butl.

gen. aest. *esperii* Kirby.

Several of the dates in this series will no doubt astonish some people, but the fact is undoubted that in May in Algeria early second brood individuals make their appearance occasionally, while well on into June late pupae of the first brood still hatch out.

13. *Euchloe ausonia algerica* (Oberth.).

Anthocharis tagis var. *algerica* Oberthür, *Etud. Lépid. Comp.* fasc. iii, p. 145 (1909) (Mecheria).

In vol. x of the *Etudes de Lepidopterologie Comparée*, Mr. Oberthür, on pp. 47–49, strongly upholds his *tagis algerica* as distinctly a form of *tagis* and not of *ausonia*, treating *pechi* Stdgr. as a distinct species. In Nov. Zool. xxiv,

p. 80 (1917), I give my reasons for considering *pechi* as the Algerian form of *tagis*, and also for treating *algerica* Oberth. as an aberration of the southern Algerian form of *ausonia*. As the type of *algerica* according to Mr. Oberthür had remained unique, and I had no material in 1917 from the topotypical locality of Mecheria, it might have been argued that I was too bold in my treatment of *algerica*. However, since 1917 matters have changed. I sent Victor Faroult to Mecheria in 1919, and he collected a big series of white *Euchloe*, and they fully bear out my contention that *algerica* is not a *tagis* form, but belongs to *ausonia*. Now as *algerica* antedates *melanochloros*, Rüb., this name must be used for the S. Algerian form of *ausonia* (see Nov. Zool., as above, p. 82).

Incidentally Mr. Oberthür is of opinion that the single-brooded high mountain races of the group I include under *ausonia* Hbnr. form a distinct species from double-brooded races of the plains, which he would call *Euchloe crameri* Butl. A careful examination of the genitalia both of the Old and New World forms, and a comparison of the biology of the single- and double-brooded forms, can alone settle this question; but for the present, it is best, in view of our lack of knowledge of both these points, to keep all these insects under one specific entity, for which the name *ausonia* is the oldest applicable. At the same time it is perfectly clear and indisputable that Hübner gave the name of *ausonia* to and figured the insect afterwards named by Freyer *simplonia*; which is the single-brooded Alpine insect.

Batna, 14 ♂♂, 5 ♀♀ gen. vern. *algerica*, March–April 1912, 1 ♀ gen. aest. *pseudonymus*, May 1912; Guelts-es-Stel, 6 ♂♂, 2 ♀♀ gen. vern. *algerica*, March–April 1913; Ghardaia, 3 ♂♂ gen. vern. *algerica*, April 1913; Kef-el-Dor, 2 ♂♂ gen. vern. *algerica*, March 1912.

14. *Euchloe falloui falloui* (Allard).

Anthocharis falloui Gaston Allard, *Ann. Soc. Entom. France*, ser. iv, vol. vii, pp. 312 and 318 (1867) (Biskra).

3 ♂♂, 1 ♀ El Outaya, April 1910; 3 ♂♂, 3 ♀♀ Col de Sfa, Feb. 1914; 2 ♂♂ Biskra, March 1914; 1 ♂ Ahmar-Kaddou, Dec. 1912.

The only one in this series which calls for any notice is the ♂ from the Djebel Ahmar-Kaddou. All the green bands on the underside are replaced by olive-grey ones. Should this prove constant the specimens from this mountain will have to be separated as a new race. This is very likely, for the Djebel Ahmar-Kaddou, although only some 35 kilometres east of the Col de Sfa, is very different both in formation and aspect.

14a. *Euchloe falloui* (form. trans.).

1 ♂, 1 ♀ Bou Saada, May 1912.

15. *Euchloe falloui obsolescens* Rothschild.

Euchloe falloui obsolescens Rothschild, *Nor. Zool.* vol. xx, p. 112, No. 6 (1913) (South Oued Mya).

14 ♂♂ Ghardaia, April 1913; 1 ♂ Seb-Seb, April 1913; 1 ♂ El Amri, Feb. 1914.

All this series are more heavily banded than those we took ourselves, being intermediate between first and second broods.

16. *Euchloe belemia* (Esper).

Papilio belemia Esper, *Die Schmett.* vol. i, pt. ii, pl. ex, f. 2 (1792) (?).

Hussein Dey, 34 ♂♂, 5 ♀♀ gen. vern. *belemia*, Jan.–April 1908–1912. 21 ♂♂, 11 ♀♀ gen. aest. *glauce*, April–June 1910–1912; Maison Carrée, 7 ♂♂, 3 ♀♀ gen. vern. *belemia*, March–April 1908–1912, 4 ♂♂, 1 ♀ gen. aest. *glauce*, April–June 1908–1912; Fort l'Empereur, 2 ♂♂, 1 ♀ gen. vern. *belemia*, Jan.–Feb. 1899–1905, 1 ♂, 2 ♀♀ gen. aest. *glauce*, April–May 1898; El Biar, 1 ♂ gen. vern. *belemia*, Feb. 1905, 2 ♂♂ gen. aest. *glauce*, May 1904–1914; Kouba, 2 ♂♂ gen. vern. *belemia*, March–April 1907, 1 ♂, 1 ♀ gen. aest. *glauce*, April 1908–1909; Mèner, 9 ♂♂ gen. aest. *glauce*, May 1910; Batna, 5 ♂♂, 3 ♀♀ gen. vern. *belemia*, March–April 1912, 2 ♂♂ gen. aest. *glauce*, May 1912; El Amri, 4 ♂♂ gen. vern. *belemia*, Feb. 1914; Col de Sfa, gen. vern. *belemia*, Feb. 1914; Biskra, 3 ♂♂ gen. vern. *belemia*, March 1914; Oran, 1 ♂ gen. vern. *belemia*, March 1909; Bône, 2 ♂♂ gen. aest. *glauce*, May 1914; 1 ♀ gen. aest. *glauce*, no data.

17. *Teracolus evagore nouna* (Luc.).

Anthocharis nouna Lucas, *Expl. Scient. de l'Alg. Zool. III. Lépid.* p. 350, pl. i, ff. 2a, b, etc. (1849) (Oran).

2 ♂♂, 2 ♀♀ Batna, Nov. 1910 (V. Faroult); 10 ♂♂, 4 ♀♀ El Kantara, June and Aug. 1911–1912; 1 ♂, 1 ♀ Col de Sfa; 2 ♂♂, 6 ♀♀ Ghardaia, April–May 1911–1913; 5 ♂♂, 6 ♀♀ no data.

18. *Colias electo croceus* (Geoff.).

Papilio croceus Geoffroy in Fourcroy's *Entom. Par.* vol. ii, p. 250 (1785) (Paris).

18 ♂♂, 26 ♀♀, 28 ♀♀ formæ *helice* and *helicina* Hussein Dey, March–Oct. 1907–1910; 2 ♂♂, 1 ♀, 2 ♀♀ formæ. *helice* Maison Carrée, March–Oct. 1908–1911; 2 ♂♂ Fort l'Empereur, March 1899 and Sept. 1910; 1 ♀ Hydra, Alger, June 1905; 3 ♀♀ formæ. *helice* El Biar, March–Oct. 1897–1914; 2 ♀♀ formæ. *helice* Bouzarea, May–June 1904–1905; 2 ♀♀ formæ. *helice* and *helicina*, Oct. 1897–1898; 1 ♂ Blida les Glacières, Sept. 1911; 1 ♀ formæ. *helice* Le Tarf, June 1907; 1 ♂, 1 ♀, 1 ♀ formæ. *helice* Batna, March–May 1912; 1 ♀ formæ. *helice* Lambessa, June 1912; 1 ♂ Biskra; 8 ♂♂, 5 ♀♀, 1 ♀ formæ. *helice*, no data.

19. *Gonepteryx rhamni meridionalis* Rüb.

Gonepteryx rhamni meridionalis Röber, in Seitz, *Grossschmett. Erde*, vol. i, p. 67 (1907) (Algeria and S. Asia Minor).

2 ♂♂, 2 ♀♀ Hussein Dey, Jan.–Oct. 1908–1910; 1 ♂, 1 ♀ El Biar, June 1913 and July 1915; 1 ♀ Maison Carrée, March 1910; 1 ♂ Alger, Oct. 1912.

20. *Gonepteryx cleopatra* (Linn.).

Papilio cleopatra Linnaeus, *Syst. Nat.* edit. xii, vol. i, pt. ii, p. 765, No. 105 (1767) (Barbaria).

23 ♂♂, 11 ♀♀, 1 gynandromorph Hussein Dey, Feb.–Aug. 1908–1912; 1 ♂, 1 ♀ Maison Carrée, March 1910–1911; 2 ♂♂, 1 ♀, 1 gynandromorph Forêt de Bainen, May–June 1899–1904; 1 ♂ Jardin d'Essai, July 1909; 1 ♂ El Biar, May 1904; 5 ♂♂ C.C., June 1908–1909; 2 ♂♂, 2 ♀♀ Blida les Glacières, June–July 1908–1909; 3 ♂♂, 2 ♀♀ no data.

21. *Charaxes jason* (Linn.).

Papilio jason Linnaeus *Syst. Nat.* edit. xii, pt. i, p. 749, No. 26 (1767) (Barbaria).

2 ♂♂, 1 ♀ El Biar, June 1897–1911; 1 ♂, 2 ♀♀ Casba, Oct.–Nov. 1906; 1 ♀ Bainen, June 1904; 1 ♂ Fort l'Empereur, Sept. 1904; 1 ♂ Blida les Glacières, June 1911; 1 ♂ no data.

22. *Pyrameis atalanta* (Linn.).

Papilio atalanta Linnaeus, *Syst. Nat.* edit. x, vol. i, p. 473, No. 119 (1758) (Sweden).

3 ♂♂, 3 ♀♀ Hussein Dey, March–Dec. 1908–1912; 2 ♂♂ Alger, May 1904–1913; 1 ♂ Environs d'Alger, Nov. 1907; 1 ♀ Bouzarea, April 1913; 1 ♂ Forêt de Bainen, June 1904; 1 ♀ Tala Rana, Kabylie, July 1909; 1 ♂ Blida les Glacières, June; 1 ♂ Tolga, Feb. 1914.

23. *Pyrameis cardui cardui* (Linn.).

Papilio cardui Linnaeus, *Syst. Nat.* edit. x, vol. i, p. 475, No. 107 (1758) (Sweden).

4 ♂♂, 3 ♀♀ Hussein Dey, Jan.–Oct. 1908–1911; 7 ♂♂ Alger, Jan.–Nov. 1913; 1 ♂ Casba, May 1905; 1 ♂ El Biar, Nov. 1904; 1 ♂ Tala Rana, Kabylie, July 1909.

Of this series of 17 specimens three call for special mention: 1 ♂ Hussein Dey has the dusky markings of the hindwings absent; 1 ♂ Alger has nearly all dark markings of the disc of both pairs of wings absent; and 1 ♂ Casba has the cinnamon pink of the hindwings replaced by dirty white.

24. *Vanessa polychloros erythromelas* Aust.

Vanessa polychloros var. *erythromelas* Austaut, *Le Naturaliste*, vol. vii, p. 142 (1885) (Sebdou).

1 ♂, 2 ♀♀ Hussein Dey, May 1912; 1 ♂ C.C., June; 2 ♂♂ El Biar, May 1905–1912; 1 ♀ Hydra, Alger, May 1915; 1 ♂, 2 ♀♀ Tala Rana, July 1909; 12 ♂♂, 10 ♀♀ no data (bred from Environs d'Alger?).

25. *Polygonia c. album* (Linn.).

Papilio c. album Linnaeus, *Syst. Nat.* edit. x, vol. i, p. 477, No. 115 (1758) (Sweden).

1 ♂, 1 ♀ Hussein Dey, Oct. 1909 and Feb. 1911; 2 ♂♂, 1 ♀ El Biar, Feb.–June 1905–1910; 1 ♀ Alger, Oct. 1903; 2 ♀♀ Camp des Chênes, June 1908 and 1911; 1 ♂ Casba, Feb. 1905; 1 ♀ Dellys, June 1907; 2 ♂♂, 2 ♀♀ Blida les Glacières, June 1909; 1 ♂, 1 ♀ Tala Rana, Kabylie, July 1909.

26. *Polygonia egea* (Cram.).

Papilio egea Cramer, *Pap. Exot.* vol. i, pt. vii, p. 124, pl. lxxviii, ff. C, D (1775) (Constantinople, Symrna).

1 ♀ Maison Carrée, July.

27. *Argynnis maia seitzi* Fruhst.

Argynnis maia seitzi Fruhstorfer, *Intern. Entom. Zeitschr. Guben*, vol. ii, p. 69 (1908) (Alger!!!).

2 ♀♀ Forêt de Bainen, June 1904; 1 ♀ Col de Chréa, July 1905; 5 ♂♂, 2 ♀♀ Blida les Glacières, June–July 1906–1911; 1 ♂ Lella Kredidja, July 1907.

In Nov. Zool., vol. xxiv, p. 96, I stated that so far this insect had not been taken nearer to Alger than Blida les Glacières and Hammam Rihra; but this series proves that it occurs actually in the environs of the town.

28. *Argynnis paphia dives* Oberth.

Argynnis paphia var. *dives* Oberthür, *Bull. Soc. Entom. France*, p. 26 (1908) (Kabylie, Yakouren).

8 ♂♂, 2 ♀♀ Tala Rana, Kabylie, July 1909; 1 ♂, 1 ♀ Mezarir, July 1906; 1 ♂ Lambessa, July 1912.

29. *Argynnis auresiana* Fruhst.

Argynnis adippe auresiana Fruhstorfer, *Intern. Entom. Zeitschr. Guben*, vol. ii, p. 69 (1908) (Aurès Mts.).

2 ♂♂, 2 ♀♀ Tala Rana, July 1909; 1 ♂ Lella Kredidja, Mezarir, July 1907; 3 ♂♂, 2 ♀♀ Lambessa, June–July 1912.

In spite of the green on underside of hindwings this insect is much more closely allied to *A. adippe* than to *A. aglaia*; but until the genitalia have been examined and compared with both species I prefer to consider it as a distinct species.

30. *Argynnis lathonia* (Linn.)

Papilio lathonia Linnaeus, *Syst. Nat.* vol. i, p. 481, No. 141 (1758) (Sweden).

1 ♂ Tala Rana, July 1909; 1 ♂ Blida les Glacières, Sept. 1911; 1 ♀ Lambessa, June 1912.

31. *Melitaea aetherie algerica* Rühl.

Melitaea aetherie var. *algerica* Rühl, *Palaearkt. Gross-schm.* p. 389 (1892–1895) (Algeria).

14 ♂♂, 7 ♀♀ El Biar, May 1914–1915; 1 ♀ El Kettar, Alger, May 1904; 1 ♂, 2 ♀♀ Baïnen, May 1901; 1 ♂ Mascara, May 1910; 2 ♂♂ Batna, May 1912; 2 ♂♂ Tala Rana, July 1909.

Some ♀♀ from El Biar are coloured more or less like the ♂♂, while two have the forewings and inner area of hindwings olive grey as in European examples.

32. *Melitaea dejone nitida* Oberth.

Melitaea dejone forma *nitida* Oberthür, *Etud. Lépid. Comp.* fasc. iii, p. 254 (1909) (Tlemecou, Sebdlou).

1 ♂ Baïnen, May 1904.

This ♂, which is an extremely brilliantly coloured specimen, appears to be the only one hitherto taken in the Central Province of Algeria, all the rest being from the Province of Oran. It is the only specimen in the Tring Museum.

33. *Melitaea phoebe punica* Oberth.

Melitaea phoebe var. *punica* Oberthür, *Etud. Entom.* fasc. i, p. 25, pl. i, f. 3 (1876) (Lambèzo).

10 ♂♂, 4 ♀♀ Batna, May 1910–1912.

One ♀ has the black markings more extended and stronger and the fulvous more clouded.

34. *Melitaea didyma mauretanica* Oberth.

Melitaea didyma forma *mauretanica* Oberthür, *Etud. Lépid. Comp.* fasc. iii, p. 243 (1909) (Algeria).

13 ♂♂, 7 ♀♀ Hussein Dey, July 1909–1910; 2 ♂♂, 3 ♀♀ Maison Carrée, July–Sept. 1908–1909; 1 ♂ Ravin de la Femme Sauvage, June 1910; 7 ♂♂, 3 ♀♀ C. des Chênes, June–July 1906–1912; 1 ♂ Fort l'Empereur, May 1899; 1 ♀

Beni Salah; Alger, June 1906 ; 3 ♂♂, 5 ♀♀ Blida les Glacières, May-June 1906-1909 ; 1 ♂ Tala Rana, June 1909.

1 ♀ from Maison Carrée has the black markings very strongly developed, and 1 ♀ from Blida les Glacières has the disc of forewings almost entirely black ; 1 ♀ from Maison Carrée and 1 ♂ from Blida les Glacières are almost similar to *M. didyma deserticola*.

35. *Melitaea didyma interposita* Rothschild.

Melitaea didyma interposita Rothschild, *Nov. Zool.* vol. xx, p. 115 (1913) (Batna).

2 ♂♂ Lambessa, June 1912.

36. *Melitaea didyma deserticola* Oberth.

Melitaea didyma var. *deserticola* Oberthür, *Etud. d'Entom.* fasc. i, p. 25, pl. iii, f. 1 (1876) (Biskra).

12 ♂♂, 3 ♀♀ Col de Sfa, May 1913 ; 2 ♂♂ Laghouat, April 1887-1888.

One ♂ has all the dark markings on the forewings absent except the 3 spots in cell, the black ring below cell, and the terminal row of black dots.

37. *Melitaea didyma harterti* Rothschild.

Melitaea didyma harterti Rothschild, *Nov. Zool.* vol. xx, p. 115, No. 13 (1913) (El Hadadra).

The 4 specimens which, according to the localities, belong to this race are very puzzling. They agree exactly with *M. d. deserticola* in colour and marking. This is especially so with the 2 ♂♂ from El Hadadra, the topotypical locality. Mr. Hartert's series collected in 1912 and 1914 are much paler and less heavily marked, with the exception of one from El Arieu and two from Ghardaia, which are intermediate.

I had also noted the fact that the *M. d. deserticola* collected by Mr. Hartert in 1912 were much darker than those caught by us in other years. The probable reason is that in years of plentiful rainfall, owing to the richer and more succulent vegetation, both *deserticola* and *harterti* assume a warmer colour.

1 ♂, 1 ♀ Seb-Seb, April 1913 ; 2 ♂♂ El Hadadra, south of Ghardaia, April 1913.

38. *Satyrus (Nytha) ellena* Oberth.

Satyrus alcyone var. *ellena* Oberthür, *Etud. d'Entom.* fasc. xix, p. 19, pl. vii, f. 57 (1894) (Bône).

11 ♂♂, 7 ♀♀ Blida les Glacières, July-Aug. 1905-1908 ; 1 ♂, 1 ♀ Lambessa, July 1912 ; 2 ♂♂ no data.

39. *Satyrus (Chazara) briseis major* Oberth.

Satyrus briseis var. *major* Oberthür, *Etud. d'Entom.* fasc. i, p. 27 (1876) (Boghari).

1 ♂ Tala Rana, Kabylie, July 1909 ; 1 ♂, 1 ♀ Teniet el Had, July 1905.

40. *Satyrus (Chazara) prieuri* Pierret.

Satyrus prieuri Pierret, *Ann. Soc. Entom. France*, vol. vi, p. 304 (1837) (Bougie).

3 ♂♂, 2 ♀♀ Géryville, July-Sept. 1910.

41. *Satyrus* (*Eumenis*) *semele algerica* Oberth.

Satyrus semele var. *algerica* Oberthür, *Etud. d'Entom.* fasc. i, p. 27 (1876) (Daya, etc.).

1 ♀ Hussein Dey, June 1908; 1 ♂ Col de Chréa, June 1906; 1 ♂, 5 ♀♀ Blida les Glacières, June–July 1905–1908.

42. *Satyrus* (*Satyrus*) *powelli* Oberth.

Satyrus powelli Oberthür, *Bull. Soc. Entom. France*, p. 333 (1910) (Djebel Amour).

8 ♂♂, 1 ♀ Gélyville, Sept. 1910.

43. *Satyrus* (*Satyrus*) *sylicola sylicola* Aust.

Satyrus sylicola Austaut, *Le Naturaliste*, vol. ii, p. 284 (1880) (Sebdou).

1 ♂, 5 ♀♀ Bouderga Oranais, Sept. 1910; 1 ♂ Djebel Diouane, Sept. 1909; 2 ♂♂, 2 ♀♀ Gélyville, Sept. 1910.

44. *Satyrus* (*Satyrus*) *sylicola oberthuri* Rothsch.

Satyrus (*Satyrus*) *sylicola oberthuri* Rothschild, *Nov. Zool.* vol. xxiv, p. 105, No. 49a (1917) (Lambessa).

11 ♂♂, 8 ♀♀ Lambessa, July 1912.

45. *Satyrus* (*Satyrus*) *sylicola holli* Oberth.

Satyrus sylicola var. *holli* Oberthür, *Etud. de Lépid. Comp.* fasc. iii, p. 275, pl. xvi, ff. 36, 37 (1909) (Blida les Glacières).

68 ♂♂, 27 ♀♀ Blida les Glacières, July–Aug. 1906–1911.

Both ♂♂ and ♀♀ vary much above in the size and distinctness of the four ocellate spots on the forewing. In one ♀ the apical ocellate spot on the right forewing is absent above.

46. *Satyrus* (*Satyrus*) *fidia fidia* (Linn.).

Papilio fidia Linnaeus, *Syst. Nat.* edit. xii, vol. i, pt. ii, p. 770, No. 138 (1767) (Barbary).

3 ♂♂, 1 ♀ Forêt de Baïnen, Aug.–Sept. 1904–1913; 1 ♂ Bouzarea, Aug. 1904; 1 ♂ Djebel Zaccar, Sept. 1909; 2 ♀♀ Blida les Glacières, Sept. 1911; 2 ♀♀ Sidi ben Nour, Sept. 1906.

The two ♀♀ from Sidi ben Nour are very dark.

47. *Satyrus* (*Satyrus*) *fidia hebetis* Rothsch.

Satyrus (*Satyrus*) *fidia hebetis* Rothschild, *Nov. Zool.* vol. xxiv, p. 106, No. 50a (1917) (Guelt-es-Stel).

5 ♀♀ Gélyville, Sept. 1910.

48. *Satyrus* (*Cercyonis*) *abdelkader abdelkader* Pierret.

Satyrus abdelkader Pierret *Ann. Soc. Entom. France*, vol. vi, p. 19, pl. i, ff. 5, 6 (1837) (Oran).

1 ♂, 1 ♀ Voisinage de Sebdou, Sept. 1910; 2 ♂♂, 2 ♀♀ Gélyville, Sept. 1912; 1 ♂, 1 ♀ no data; 1 ♂ Ain Boukrouf, Aug. 1911.

49. *Satyrus (Cercyonis) abdelkader lambessanus* Stdgr.

Satyrus abdelkader var. *lambessanus* Staudinger, in Stdgr. and Rebel, *Cat. Lépid. Palaear. Fauneng.* p. 58, No. 377a (1901) (Lambessa).

1 ♂ Lambessa, June 1905; 5 ♂♂, 2 ♀♀ Batna, June 1912–1913.

50. *Melanargia galathea lucasi* (Ramb.).

Arge lucasi Rambur, *Cat. Syst. Lépid. Andal.* p. 20, footnote (1858) (Bongie).

6 ♂♂, 3 ♀♀ Blida les Glacières, June–July 1905–1907; 1 ♀ Tala Rana, Kabylie, July 1909; 7 ♂♂, 1 ♀ Lambessa, June 1912; 3 ♂♂, 4 ♀♀ Batna, June 1912.

51. *Melanargia ines ines* (Hoffm.).

Papilio ines Hoffmannsegg, *Ill. Mag.* vol. iii, p. 205 (1804) (nom. nov. pro *Papilio thetis* Hübner, *Samml. Eur. Schmett.* vol. i, pl. xlvii, ff. 196, 197 (1779)), (nom. prece. *Papilio thetis* Rottenburg, *Naturf.* vol. vi, p. 24, No. 11 (1775)).

5 ♂♂, 1 ♀ Lavarande, May 1908; 4 ♂♂ Batna, May 1912; 2 ♂♂ Sta. Cruz, Oran, April 1910; 1 ♀ Djebel El Hamel, May 1905.

52. *Pararge megera megera* (Linn.).

Papilio megera, Linnaeus, *Syst. Nat.* edit. xii, vol. i, pt. ii, p. 771, No. 142 (1767) (Austria, Denmark).

3 ♂♂, 4 ♀♀ Hussein Dey, April–Dec. 1910–1912; 4 ♂♂, 3 ♀♀ El Biar, March–Sept. 1910–1913; 1 ♂ Maison Carrée, Feb. 1910; 1 ♀ Kouba, Feb. 1908; 1 ♂, 5 ♀♀ Fort l'Empereur, Sept. 1904–1907; 1 ♀ Blida les Glacières, July 1908; 1 ♂, 1 ♀ Batna, June 1912.

53. *Pararge aegeria meone* (Cram.).

Papilio meone Cramer, *Pap. Erot.* vol. iv, pt. xxvi, p. 51, t. ceexiv, ff. E, F (1780) (Alger).

16 ♂♂, 7 ♀♀ Hussein Dey, Feb.–Dec. 1907–1912; 1 ♂, 1 ♀ Maison Carrée, March 1910 and Aug. 1908; 1 ♂ El Biar, Jan. 1904; 1 ♀ Casba, July 1904.

54. *Epinephele lycaon mauretanica* (Oberth.).

Satyrus eudora var. *mauretanica* Oberthür, *Etud. d'Entom.* livr. vi, p. 58 (1881) (Sebdou, Lambéze).

3 ♂♂ Tala Rana, Kabylie, July 1909; 10 ♂♂, 8 ♀♀ Batna, May–June 1912–1913; 1 ♂ Lambessa, June 1912; 3 ♂♂ Aurés Mts., 1912.

55. *Epinephele jurtina jurtina* (Linn.).

Papilio jurtina Linnaeus, *Syst. Nat.* edit. x, vol. i, p. 475, No. 104 (1758) (Europe, Africa, type Africa).

1 ♂, 2 ♀♀ Hussein Dey, May–June 1910; 3 ♂♂, 12 ♀♀ El Biar, May–Sept. 1903–1913; 1 ♂ Ravin de la Femme Sauvage, May 1904 (Dr. Nissen); 1 ♂ Alger, May 1907; 2 ♂♂, 1 ♀ Bastion X, June 1906; 1 ♀ Fort l'Empereur, May 1902; 1 ♂ Hydra, Alger, May 1905; 1 ♂ Beni Messous, May 1906; 1 ♀ Monzaïa, June; 3 ♂♂, 2 ♀♀ Tala Rana, Kabylie, July 1909; 1 ♂, 1 ♀ Batna, May 1912; 4 ♂♂, 3 ♀♀ no data.

56. *Epinephele janiroides* Herr.-Schaeff.

Epinephele janiroides Herrich-Schaeffer, *Schmett. Europ.* vol. i, tab. iii, ff. 533, 534 (1851) (?).

5 ♂♂, 4 ♀♀ Forêt de Baïnen, May-June 1898-1906; 1 ♂ Tala Rana, Kabylie, July 1909; 1 ♂ Dellys, June 1907.

57. *Epinephele pasiphaë philippina* Aust.

Epinephele pasiphaë var. *philippina* Austaut, *Pet. Nouv. Entom.* vol. ii, p. 119 (1877) (Nemours).

1 ♂ Nemours, May 1914; 2 ♂♂ Sta. Cruz, Oran, May 1910; 2 ♂♂ Rovigo, May 1911; 1 ♂, 1 ♀ Beni Messous, May 1905; 9 ♂♂ Forêt de Baïnen, May 1904.

58. *Epinephele ida* (Esper).

Papilio ida Esper, *Schmett.* vol. i, pt. ii, (passim) t. 92, f. 2 (1777).

2 ♂♂, 3 ♀♀ Hussein Dey, July-Aug. 1910; 1 ♀ El Biar, July 1905; 1 ♂ Bouzareca, July 1904; 1 ♂ Mouzaïa, l.m., June; 1 ♀ Draria, June 1906; 1 ♂ Col de Chréa, Aug. 1910; 1 ♂ Forêt de Baïnen, June 1905; 5 ♂♂ Bône, June 1911-1912; 1 ♂ Tala Rana, Kabylie, July 1909; 1 ♂ Batna, June 1912.

59. *Coenonympha arcanioides* (Pierret).

Satyrus arcanioides Pierret, *Ann. Soc. Entom. France*, vol. vi, p. 306 (1837) (Oran).

In 1917 Nov. ZOOL., vol. xxiv, p. 117, No. 65, I retained the name *holli*, both for the summer brood of *arcanioides* and for the East Algerian subspecies of *fettigii*, not being quite clear in my mind how the names of seasonal forms were affected by the law of priority under the International Rules of Nomenclature. I have since come to the conclusion that, although not specifically treated of under the International Code, they ought to be treated as coming under the law of priority. Therefore *holli* must stand for the summer brood of *arcanioides*, and the East Algerian form of *fettigii* requires a new name.

gen. vern. arcanioides.

24 ♂♂, 6 ♀♀ Hussein Dey, April-May 1910; 4 ♂♂ Maison Carrée, April-May, 1908-1911; 4 ♂♂ L'Arba, May 1907; 1 ♂ Dellys, June 1907; 6 ♂♂ Gué, April-May 1909; 3 ♂♂, 4 ♀♀ Rovigo, May 1903-1911; 1 ♂ Blida les Glacières, June 1909.

gen. aest. holli Oberth.

37 ♂♂, 15 ♀♀ Hussein Dey, July-Sept. 1909-1911; 38 ♂♂, 10 ♀♀ Maison Carrée, July-Sept. 1908-1909; 1 ♀ Col de Chênes, June 1906; 1 ♂, 2 ♀♀ Col de Chréa, June 1910; 7 ♂♂, 3 ♀♀ Blida les Glacières, July-Sept. 1906-1911.

In addition to these 53 spring and 113 summer brood examples there are 7 ♂♂, 2 ♀♀ without any data.

60. *Coenonympha dorus austauti* Oberth.

Coenonympha dorus var. *austauti* Oberthür, *Etud. d'Entom.* livr. vi, p. 59 (1881) (Nemours).

1 ♂ Nemours, June 1914; 2 ♂♂, 1 ♀ Lalla Marnia, July 1914.

61. *Coenonympha fettigii nicholasi* nom. nov.

Coenonympha fettigii var. *holli* Oberthür, *Etud. Lépid. Comp.* fasc. iv, p. 42, pl. xlvii, ff. 396, 397 (1910) (Blida les Glacières).

As I have already mentioned under *C. arcanioides*, I have come to the conclusion that names applied to seasonal forms must come under the law of priority. Now the name *holli* as applied to the summer generation of *arcanioides* appears on page 20 *Etud. Lépid. Comp.*, fasc. iv, whereas the name *holli*, applied to the East Algerian race of *fettigii* only, appears on page 42; it is therefore clear that this name can only be employed for the summer generation of *arcanioides*. I therefore apply Captain Holl's Christian name of Nicholas, to replace *holli*, to the eastern subspecies of *fettigii*.

22 ♂♂, 20 ♀♀ Blida les Glacières, July 1906; 21 ♂♂, 3 ♀♀ no data, but undoubtedly the same place and date.

The ♂♂ vary much in the extent of dark suffusion of forewings, one having shown no fulvous at all except a trace below the ocellus of forewing. 1 ♂ below has the right forewing dirty cream-white instead of fulvous. 1 ♀ above is almost like *C. p. lyllus*.

62. *Coenonympha pamphilus lyllus* (Esper).

Papilio lyllus Esper, *Schmett.* vol. i, pt. ii, t. 122, f. I (1777).

1 ♀ Maison Carrée, March 1908; 1 ♀ Fort l'Empereur, June 1901; 2 ♂♂ L'Arba, May 1907; 2 ♀♀ El Biar, May 1897 and June 1903; 1 ♂ Lavarande, May 1908; 1 ♂ Mouzaia, June; 5 ♂♂, 5 ♀♀ Tala Rana Kabylie, July 1909; 2 ♂♂, 4 ♀♀ Blida les Glacières, June–July 1905–1906; 12 ♂♂, 8 ♀♀ March–July 1912.

One or two ♀♀ are very pale.

63. *Libythea celtis* (Füessly).

Papilio celtis Füessly, *Arch. Insectengesch.* pt. ii, sect. 2, pp. 1–3, pl. ii, ff. 1–3 (1782) (Unterazwang, Tyrol).

Mr. Oberthür, in *Etud. Lépid. Comp.*, fasc. x, p. 365, says Captain Holl found this insect in June and July at Blida les Glacières; but makes no mention of its being taken in the Grande Kabylie by Dr. Nissen.

2 ♂♂, 3 ♀♀ Tala Rana, Kabylie, July 1909; 2 ♂♂, 1 ♀ Blida les Glacières, June–Sept. 1905–1911.

The nomenclature and identification of the *Lycaenidae*, other than the *Theclinae*, *Thestor*, *Cigaritis*, and *Polyommatus*, is only provisional, till Mr. Bethune Baker's revision is finished; for probably, as in the case of what was recorded as *Tarucus theophrastus*, but which the examination of the genitalia proved to include three totally distinct species, several of the insects treated as one species will prove to consist of several.

64. *Zephyrus quercus iberica* Stdgr.

Zephyrus quercus var. *iberica* Staudinger, *Cat. Lépid. Pal. Fauneng.* p. 71, No. 482b (1901) (Iberian Peninsula, Mauretania).

4 ♂♂, 2 ♀♀ Blida les Glacières, July–Aug. 1905–1906.

65. *Thecla esculi mauretanica* Stdgr.

Thecla ilicis var. *mauretanica* Staudinger, *Iris*, vol. v, p. 279, No. 11 (1892) (Tunis).

Mr. Oberthür, *Etud. Lépid. Comp.*, fasc. iv, p. 75, declares that *esculi* Hbn. is a distinct species from *ilicis*, of which most lepidopterists have considered it a form. Examination of the genitalia alone can settle this question; but for the present I keep them separate. There are in Algeria two forms of this insect; one unicolorous above in the ♂, while in the other the ♂ has dull rufescent patches on the forewings as in the ♀; the former = form. *powelli* Oberth.

4 ♀♀, 1 ♂ Col des Chênes, July 1911; 1 ♂ Deux Cédres, July 1906, forma *mauretanica*; 1 ♂, 1 ♀ forma *powelli*, 2 ♂♂, 5 ♀♀ forma *mauretanica*, Blida les Glacières, June–July 1905–1906; 2 ♂♂ forma *mauretanica*, 3 ♂♂ forma *powelli* no data; 1 ♂ forma *powelli*, Lambessa, June 1912; 5 ♂♂, 2 ♀♀ forma *powelli*, Tala Rana, Kabylie, July 1909; 1 ♂ Batna, June 1912; 1 forma *powelli*, El Biar, June 1904; 1 ♂ forma *mauretanica*, 1 ♂, 2 ♀♀ forma *powelli*, Forêt de Baïnen, June 1904.

66. *Callophrys avis* Chapman.

Callophrys avis Chapman, *Entom. Rec.* vol. xxi, p. 130 (1909) (Southern France).

5 ♂♂, 5 ♀♀ Maison Carrée, April–May 1908–1910; 1 ♂, 1 ♀ El Biar, May 1913; 1 ♂, 1 ♀ Birmandreis, April 1911; 1 ♀ Bouzarea, May 1912; 1 ♀ Ben Aknoun, April 1904.

The ♂ androconial patch is sometimes grey and sometimes white.

67. *Callophrys rubi fervida* Stdgr.

Callophrys rubi var. (gen. aest. ?) *fervida* Staudinger, *Cat. Lépid. Palaear. Fauneng.* p. 70, No. 476b (1901) (Iberian Peninsula, Mauretania).

Staudinger was doubtful as to the status of his *fervida*, and I am also rather puzzled, but the fact remains that only in Spain, Portugal, and Mauretania are there such bright rufous *rubi* to be found, so I shall treat it as a subspecies, though a considerable number of individuals are coloured like Northern and Central European examples.

15 ♂♂, 3 ♀♀ Bouzarea, April 1904–1912; 1 ♂ Ben Aknoun, April 1904; 1 ♂ Batna, March 1912; 1 ♂ Zeralda, March 1906; 2 ♂♂ Environs d'Alger, April 1907; 1 ♀ El Biar, March 1910.

The row of white dots below varies from a complete row to a single spot and can even be entirely absent.

68. *Thestor ballus* (Fabr.).

Papilio lallus Fabricius, *Mant. Ins.* vol. ii, p. 80, No. 729 (1787) (Spain).

The ♀♀ vary very much in the extent of the orange fulvous on the hindwings. In some it covers almost the entire wing, in others it forms a broad marginal band, while in one specimen from Maison Carrée it is reduced to a small patch (ab. *weberi* Holl). Some ♂♂ above are entirely dark, while others show varying degrees of an orange marginal patch towards the tornus. One male has a silvery sheen all over above and is very pale both below and above. Several males have the orange disc of the forewings below more or less suffused with the sooty purple brown of the margins, one even showing hardly any orange at all. One

♀ from Bastion XI has the rufous or fulvous orange above pale bluish cream colour (ab. *oberthuri* Holl). One ♂ from Bastion X is a dwarf.

17 ♂♂, 23 ♀♀ Maison Carrée, Feb.–March 1908–1911; 2 ♂♂, 7 ♀♀ Hussein Dey, Feb.–March 1909–1912; 1 ♀ El Biar, March 1901–1907; 6 ♂♂, 2 ♀♀ Bastion X, Alger, Feb.–March 1904–1907; 1 ♀ Bastion XI, Alger, March 1907; 1 ♂, 2 ♀♀ Fort l'Empereur, Jan.–Feb. 1902; 1 ♂, 1 ♀ Bouzareah, April 1906 and 1912; 1 ♂, 2 ♀♀ Kouba, March–April 1904–1909; 1 ♂, 2 ♀♀ Ravin de la Femme Sauvage, Alger, Feb.–March 1906–1912; 1 ♂ Batna, March 1912; 1 ♂ Gué de Constantine, March 1908; 1 ♂, 3 ♀♀ no data.

69. *Thestor mauritanicus* (Luc.).

Polyommatus mauritanicus Lucas, *Expl. Scient. de l'Alg. Zoologie*, vol. iii, p. 360, No. 39, pl. i, f. 3 (1849) (Bongie, Alger).

As in *Th. ballus*, there is a considerable amount of variation in both sexes. Three aberrations of the ♂ have been described: ab. *undulatus* Gerh. with a large subternal fulvous orange patch on the hindwing above, ab. *boisduvalii* Oberth. with a smaller such patch on hindwing and a more or less conspicuous post-discal band of orange on forewing, and ab. *sabulosus* Oberth. in which the ♂ above is similar to the ♀.

Of the last no specimens are in Captain Holl's collection, or among those collected between 1908 and 1914 by ourselves. One ♂ ab. *boisduvalii* from Kouba is in the Holl collection, and two typical *undulatus*, one from Maison Carrée, and one no data, but many intermediate specimens. Two ♀♀ have the rufous orange replaced by straw colour and 1 ♀ is intermediate, all three from Maison Carrée. Several ♂♂ on the forewing below have the orange disc obscured more or less strongly with black brown, one from Maison Carrée almost completely. One ♀ from Maison Carrée has the orange above and below replaced by dark rufous brown, and all the margins, except termen of left forewing, wood grey.

56 ♂♂, 23 ♀♀ Maison Carrée, Feb.–March 1908–1911; 2 ♂♂, 2 ♀♀ Ravin de la Femme Sauvage, Feb. 1902–1906; 1 ♀ Birmandreïs, Feb. 1908; 4 ♂♂ Kouba, Feb.–March 1905–1908; 7 ♂♂, 3 ♀♀ no data.

70. *Cigaritis siphax* Luc.

Cigaritis siphax Lucas, *Expl. Scient. de l'Alg. Zoologie*, vol. iii, p. 362, No. 48, pl. i, f. 8 (1849) (Constantine, Lacalle).

8 ♂♂, 2 ♀♀ Bône, May–June 1910–1912; 1 ♂ Collo, 1908 (3 ♂♂ are ab. *erythrea* Staud.).

71. *Cigaritis zohra* Donzel.

Cigaritis zohra Donzel, *Ann. Soc. Entom. France*, ser. II, vol. v, p. 528, pl. viii, No. 1, ff. 5, 6 (1847) (Barbarie).

5 ♀♀ Gélyville, Aug. 1910.

All 5 are ab. *confusa* Oberth.

72. *Cigaritis allardi* Oberth.

Cigaritis allardi Oberthür, *Etud. Lépid. Comp.* fasc. iii, p. 401 (1909) (Sebdou).

Cigaritis zohra Oberthür (nec Donzel), *Etud. d'Entom.* livr. ix, pp. 35, 36, pl. iii, ff. 8, 9 (1884) (Sebdou).

1 ♂, 1 ♀ Djebel Mekter near Ain Sefra, May 1913.

73. *Chrysophanus phlaeas* (Linn.).

Papilio phlaeas Linnaeus, *Faun. Succ.* p. 285, No. 1078 (1761) (Sweden).

This species has two distinct broods, but in Algeria it appears to be on the wing throughout the year, and in June and Sept.–Oct. often specimens occur of all intergradations between the two.

The spring brood from end of Oct.–June must be called *C. phlaeas* gen. vern. *phlaeas*, and the summer brood from end of June to commencement of Oct. must be called *C. phlaeas* gen. aest. *eleus* Fabr.

gen. vern. *phlaeas*.

4 ♂♂, 4 ♀♀ Hussein Dey, Jan.–March and Oct. 1907–1911; 3 ♂♂, 1 ♀ Maison Carrée, March and Dec. 1904–1911; 1 ♂ L'Arba, May 1907; 1 ♀ Konba, March 1900; 1 ♀ Bastion X, Feb. 1906; 2 ♂♂, 2 ♀♀ El Biar, Feb.–May, 1904–1913; 1 ♂ Alger, May 1904; 1 ♀ Casba, Oct. 1904; 2 ♂♂, 4 ♀♀ Fort l'Empereur, Jan.–May and Oct. 1901–1904; 1 ♂, 1 ♀ no data.

gen. aest. *eleus*.

7 ♂♂, 5 ♀♀ Hussein Dey, June–Aug. 1908–1912; 6 ♂♂, 6 ♀♀ Maison Carrée, Aug.–Oct. 1908–1909; 5 ♂♂, 2 ♀♀ Fort l'Empereur, July–Oct. 1898–1905; 1 ♂, 3 ♀♀ El Biar, June–Aug. 1897–1915; 1 ♂ Alger, July 1908; 1 ♂ Tala Rana, July 1909; 3 ♂♂, 1 ♀ Blida les Glacières, June–Sept. 1906–1911; 1 ♂ Col de Sfa, May 1913; 1 ♂ Biskra, June 1914; 2 ♂♂, 5 ♀♀ no data.

In Algeria the spring brood is very brilliant coppery, orange-red with small black spots and narrow dark margin. The summer brood is duller orange red, generally more or less clouded with blackish, the black spots are very large and the dark margin very broad. Also most specimens have pronounced tails. In both broods many individuals have a post-median row of blue spots on the hindwings. Among the gen. vern. *phlaeas* only one ♀ from El Biar is noticeable; it has very small black spots, the dark portions of hindwings are very pale and the coppery outer band of the hindwings is very much wider than usual. Among the gen. aest. *eleus* are many notable specimens: 1 abnormally large ♀ from Hussein Dey is ab. *schmidtii* Gerh.; 1 ♂ from El Biar; 1 ♂ from Fort l'Empereur and 1 from Blida les Glacières have the outer half of forewing entirely dark, 1 ♂ Alger has white blotches, etc., etc.

74. *Polyommatus boeticus* (Linn.).

Papilio boeticus Linnaeus, *Syst. Nat.* edit. xii, vol. i, pt. ii, p. 789, No. 226 (1767) (Algeria).

2 ♂♂, 4 ♀♀ Hussein Dey, May–Oct. 1909–1910; 1 ♂, 1 ♀ Maison Carrée, Sept. 1904 and Oct. 1908; 1 ♂, 1 ♀ Fort l'Empereur, Aug.–Sept. 1904; 3 ♀♀ Casba, June–Sept. 1904–1905; 2 ♀♀ Bouzarea, April 1912 and Aug. 1904; 2 ♂♂ no data.

This insect varies much in size, the smallest ♀ in the Holl collection expands 31 mm. and the largest 44 mm. The smallest ♀ expands 24 mm. and the largest 46 mm.

75. *Tarucus telicanus* (Lang).

Papilio telicanus Lang, *Verz. s. Schmelt.*, edit. ii, p. 47 (1789) (Augsburg?).

4 ♂♂, 4 ♀♀ Hussein Dey, April–Sept. 1910; 1 ♂, 1 ♀ Bouzarea, Aug. 1904; 2 ♂♂ Casba, Sept. 1904 and Aug. 1906; 1 ♂ El Biar, Aug. 1900; 1 ♀ Fort l'Empereur, Oct. 1904; 1 ♀ Forêt de Baïnen, Aug. 1904.

The ♀ from Fort l'Empereur has the dark markings of the underside much reduced. This insect also varies much in size. The smallest ♀ expands 24 mm., and the largest 34 mm. The smallest ♂ expands 26 mm., and the largest 35 mm.

76. *Tarucus theophrastus* (Fabr.).

Hesperia theophrastus Fabricius, *Entom. Syst.*, vol. iii, pt. i, p. 281 No. 82 (1793) (Morocco).

Apparently all 3 species of *Tarucus* hitherto mixed under *theophrastus* are among this series, but until I have critically treated all the Algerian *Lycaenidae* I leave them under the old composite name.

1 ♀ Rovigo, May 1908; 8 ♂♂, 2 ♀♀ Ghardaia, April 1913; 3 ♂♂, 4 ♀♀ Col de Sfa, May 1913; 2 ♂♂ El Kantara, Aug. 1911; 1 ♀ Biskra, June 1914.

77. *Lycaena martini* Allard.

Lycaena martini Allard, *Ann. Soc. Entom. France*, ser. iv, vol. vii, p. 319, pl. vi, f. 2.

9 ♂♂, 6 ♀♀ Rovigo, May 1907–1911; 3 ♂♂, 1 ♀ Batna, May 1912; 1 ♂ Aurès, June 1913; 1 ♂ no data.

78. *Lycaena icarus* (Rott.).

Papilio icarus Rottemburg, *Naturf.*, vol. vi, p. 21, No. 8 (1775) (Halle).

This is a widespread insect and apparently forms very few races, the most distinct being that from Ireland. It extends from England in the west to Japan in the east, and from Norway in the north to the Canaries in the south. In the long series in the Holl collection there is only 1 ♀ ab. *rufina* Oberth., but 7 ♂♂ of ab. *rosina* Holl, in which the orange submarginal spots on hindwing below come through above in the form of pink spots. There are many dwarf specimens, the two smallest of which expand ♂ 18 mm., ♀ 16 mm. Out of 65 ♀♀, 35 are ♀ form, dimorph. *coerulea*. One ♂ below has no orange submarginal spots. The entire series numbers 83 ♂♂, 65 ♀♀.

37 ♂♂ (6 ab. *rosina*), 23 ♀♀ (11 ab. *coerulea*) Hussein Dey, May–Oct. 1908–1911; 19 ♂♂, 23 ♀♀ (13 ab. *coerulea*), Maison Carrée, Feb.–Sept. 1908–1911; 3 ♂♂ (1 ab. *rosina*), 8 ♀♀ (2 ab. *coerulea*) Fort l'Empereur, Feb.–Sept. 1900–1907; 1 ♂ Col de Chréa, July 1905 (minute dwarf); 1 ♂ Kouba, April 1908; 1 ♂ Méner, May 1910; 1 ♀ (ab. *rufina*) Bastion IX, June 1906; 1 ♀ (ab. *coerulea*) Bastion X, March 1905; 4 ♀♀ Environs d'Alger, April 1903–1907 (ab. *coerulea*); 2 ♀♀ (1 ab. *coerulea*) El Biar, May 1904 and 1914; 1 ♂ Bouzarea, Aug. 1904; 2 ♂♂ Forêt de Baïnen, July–Sept. 1904; 1 ♂ Tala Rana, Kabylie, July 1909; 6 ♂♂, 2 ♀♀ Blida les Glacières, June–Sept. 1908–1911; 6 ♂♂, 1 ♀ (ab. *coerulea*) Batna, March–June 1912; 5 ♂♂ no data.

79. *Lycaena alexis* (Scop.).

Papilio alexis (var. i) Scopoli, *Entom. Carn.* p. 179 (1763) (Carniolia).

Mr. Oberthür, of course, accepts the name of *agestis* Schiff. & Den. as it was figured under that name by Hübner. Staudinger accepts Bergsträsser's name of *astrarche*, having quite omitted any mention of *alexis* Scopoli, only quoting *alexis* Hbn. and *alexis* Frr. under *icarus*.

I consider Kirby quite right in applying Scopoli's name to this species. But even if some critics might consider Scopoli's name as denoting a mixture of the ♀ *icarus* and the present species owing to one or other of his four varieties being *icarus*, the names *agestis* (1775) and *astrarche* (1779) would have to sink before Hufnagel's name of *medon*, dating from 1766. I, however, am decidedly of opinion that Scopoli's *Variat* I is really the present insect. The names *calida* Bellier and *cramera* Eschl. have been variously applied to the Mediterranean forms of *alexis* as denoting local races, but in this series as well as those taken by ourselves and Faroult there are many specimens indistinguishable from typical *alexis* and also intermediates in all grades.

8 ♂♂, 5 ♀♀ Hussein Dey, March–Aug. 1909–1910 ; 1 ♂, 2 ♀♀ (ab. *cramera*) Maison Carrée, March–Aug. 1908–1910 ; 1 ♂ Fort l'Empereur, July 1900 ; 1 ♂ Bouzarea, April 1914 ; 1 ♂ Forêt de Bâinen, Aug. 1904 ; 1 ♀ (ab. *cramera*) Casba, May 1905 ; 1 ♀ (ab. *cramera*) Ben Aknoun, May 1905 ; 1 ♂ Alger, July 1906 ; 7 ♂♂, 6 ♀♀ (3 ab. *cramera*), Blida les Glacières, June–July 1905–1911 ; 2 ♂♂ Col de Sfa, May 1913 ; 1 ♂ El Biar, Aug. 1915.

80. *Lycaena bellargus punctifera* Oberth.

Lycaena bellargus punctifera Oberthür, *Etud. d'Entom.* livr. i, p. 23 (1876) (Lambessa).

All the ♀♀ in this series are of the blue *ceronus* form.

3 ♂♂, 1 ♀ Lambessa, June 1912 ; 4 ♂♂, 4 ♀♀ Batna, May–June 1912 ; 1 ♂ (ab. *rubromaculata*), Guelt-es-Stel, Oct. 1912.

81. *Lycaena melanops algerica* Heyne-Rühl.

Lycaena melanops algerica Heyne in Rühl, *Palaeark. Grossschmett.* vol. i, p. 768 (1895) (Nemours, etc.).

6 ♂♂, 3 ♀♀ Kouba, March 1900–1906 ; 1 ♂, 1 ♀ Blida les Glacières, June 1907 ; 2 ♂♂, 1 ♀ Batna, June 1912.

The ♀ from Blida has the row of black spots below much reduced, the two first on forewing are absent, and the three others much in size and their white wings enlarged.

82. *Lycaena iolaus powelli* Oberth.

Lycaena iolaus var. *powelli* Oberthür *Bull. Soc. Entom. France*, 1911, p. 263 (Géryville).

1 ♂ chrysalis, Géryville, emerged Hussein Dey, May 7, 1911.

83. *Lycaena abencerragus* (Pier.).

Argus abencerragus Pierret, *Ann. Soc. Entom. France*, vol. vi, p. 21, pl. i, f. 7 (1837) (Oran).

Dr. Seitz describes a dwarf form caught by him on the southern slopes of the Atlas in hot arid localities under the name of *famelica*. Dwarf forms certainly occur more frequently in the south than in the north, but *famelica* all the same can only stand as an aberration.

1 ♀ Hussein Dey, April 1912; 1 ♂ Maison Carrée, March 1911; 1 ♀ Kaddous, April 1905; 2 ♀♀ El Biar, April 1910 and 1914; 1 ♀ Kouba, March 1899; 2 ♂♂ Bouzarea, March and April 1904; 1 ♀ Bastion X, March 1904; 1 ♀ Gué de Constantine, April; 3 ♂♂, 11 ♀♀ (1 ♂, 2 ♀♀ ab. *famelica*) Batna, March–May 1912; 1 ♂ Col de Sfa, May 1913.

Staudinger and Seitz place *abencerragus* as a subspecies of *baton* Bergstr., but the differences are so constant that I prefer to follow Mr. Oberthür and keep it distinct till the matter can be finally settled by dissection.

84. *Lycaena fatma* Oberth.

Lycaena bavius var. *fatma* Oberthür, *Etud. d'Entom.* livr. xiii, sect. ii, p. 19, pl. vii, ff. 50, 51 (1890) (Lambessa).

Here again both Staudinger and Seitz uphold Oberthür's original view that *fatma* is a subspecies of *bavius*. I, however, adopt for the present Oberthür's later opinion that this, although a representative, is yet a quite distinct species.

1 ♂, 2 ♀♀ Aurés, June 1913.

85. *Zizera lysimon* (Hübner).

Papilio lysimon Hübner, *Samml. Europ. Schmett.* vol. i, ff. 534, 535 (1799).

2 ♂♂ Tozeur, Tunisia, Nov. 1906; 1 ♀ Kebeli, Tunisia, June 1907; 4 ♂♂, 2 ♀♀ Biskra, June 1914; 1 ♀ Oumach near Biskra, April.

86. *Zizera lorquini* (Herr.-Sch.).

Lycaena lorquini Herrich-Schäffer, *Syst. Bearb. Schmett. Europ.* Suppl. vol. i, p. 25, pl. xcii, ff. 442–444, (1856) (Europe).

6 ♂♂, 4 ♀♀ Maison Carrée, April 1910–1911; 1 ♂, 1 ♀ L'Arba, May 1907; 1 ♂ Kouba, April 1899.

87. *Lycaena argiolus mauretanica* nom. nov.

I rename this form, as two forms in the same genus cannot have one and the same name; therefore Mr. Oberthür's *algirica* cannot stand both for a *melanops* form and for a form of *argiolus*.

4 ♂♂, 3 ♀♀ Hussein Dey, Aug. 1908–1911; 2 ♂♂, 2 ♀♀ Maison Carrée, April 1909 and Aug. 1908; 1 ♂ Fort l'Empereur, July 1908; 2 ♂♂, 2 ♀♀ Baïnen, Feb.–July 1900–1911; 1 ♂, 1 ♀ El Biar, Aug. 1904 and May 1913; 4 ♀♀ Alger, Feb. 1907–Oct. 1913; 2 ♀♀ Blida les Glacières, June 1908 and 1911; 1 ♂, 1 ♀ no data.

88. *Adopaea lineola semicolon* (Stdgr.).

Thymelicus lineola var. *semicolon* Staudinger, *Iris*, v, p. 282, No. 28 (1892) (Lambessa, Constantine).

2 ♂♂, 3 ♀♀ Lambessa, June 1912; 3 ♂♂, 1 ♀ Tala Rana, Kabylia, July 1909; 1 ♀ Teniet el Had, July 1905.

89. *Adopaea hamza* (Oberth.).

Hesperia hamza Oberthür, *Etud. Entom.* livr. i, p. 28, pl. iii, ff. 2a, b, c (1876) (Oran).

6 ♂♂ Hussein Dey, May–June 1910–1912; 2 ♂♂, 3 ♀♀, Col des Chênes, June 1911–1914; 2 ♂♂, 2 ♀♀ Bastion XI, Alger, June 1906; 2 ♂♂ Blida les

Glacières ; 1 ♂ Tala Rana, Kabylia, July 1909 ; 1 ♀ Lambessa, June 1912 ; 1 ♂, 1 ♀ Sebdon, June 1881 (Dr. Codet ex coll. Oberthür) ; 2 ♂♂ Mz, June ; 24 ♂♂, 12 ♀♀ no data.

90. *Adopaea acteon* (Rott.).

Papilio acteon Rottenburg, *Naturf.* pt. vi, p. 30, No. 18 (1775) (Landsberg an der Warthe).

11 ♂♂, 4 ♀♀ Hussein Dey, April-May and Nov. 1910-1912 ; 3 ♂♂ Bouzarea, May 1910 ; 3 ♂♂, 2 ♀♀ Bastion XI, Alger, June 1906 ; 1 ♀ Batna, June 1912 ; 1 ♂ La Tarf, June 1904 (Daniel Lucas) ; 1 ♀ Mz, June ; 22 ♂♂, 2 ♀♀ no data.

91. *Augiades benuncas* Oberth.

Augiades benuncas Oberthür, *Bull. Soc. Entom. France*, 1912, p. 349 (Lambessa).

Mr. Oberthür draws special attention (*Etud. Lepid. Comp.*, fasc. x, p. 405) to the white nervulation of the underside of the hindwing as constituting the most obvious difference between this and the European *A. comma*. Dr. Jordan has examined for me the genitalia of these two insects, and finds in the ♂ genital characters also abundant differences. Moreover, when Mr. Oberthür in 1915 published the above, he was unaware of the occurrence of true *comma* in Algeria.

2 ♂♂ Batna, Aug. 1912 ; 2 ♀♀ Lambessa, July 1912 ; 4 ♂♂, 2 ♀♀ Aurés Mts., July 1913.

92. *Augiades comma* (Linn.).

Papilio plebejus urbicola comma Linnaeus, *Syst. Nat.* edit. x, p. 484, No. 162 (1758) (Europe, Sweden).

This specimen was examined by Dr. Jordan, who says that compared with British *comma* the genitalia are slightly different, but being unable at the moment to compare it with *comma* from other parts of Europe and Asia, it would be most reprehensible to found a new subspecies on minute differences in the genital armature of a single specimen. It and all British specimens, however, have very distinct genitalia from those of *benuncas*.

1 ♂ La Tarf, July 1905 (Daniel Lucas).

93. *Parnara borbonica holli* (Oberth.).

Pamphila borbonica var. *holli* Oberthür, *Etud. Lépid. Comp.* fasc. iv, pp. 363-365 (1910) (Hussein Dey).

28 ♂♂, 24 ♀♀ Hussein Dey, Oct. 1908-1910.

94. *Gegenes nostrodamus* (Fabr.).

Hesperia nostrodamus Fabricius, *Entom. Syst.* vol. iii, pt. i, p. 328, No. 246 (1794) (Barbaria).

7 ♂♂, 9 ♀♀ Hussein Dey, May-Oct. 1909-1911 ; 2 ♀♀ Maison Carrée, May-June 1912 ; 2 ♀♀ Fort l'Empereur, Sept. 1905 ; 1 ♂ Gué, Oct. 1909 ; 1 ♂ Biskra, July 1914.

95. *Gegenes lefeburii* (Ramb.).

Hesperia lefeburii Rambur, *Cat. Syst. Lépid. Andal.* p. 90, footnote (1858) (Sicily).

The name *pygmaeus* given to this insect by Cyrillo, Esper, and Hübner cannot stand as *Papilio plebejus urbicola pygmaeus* is a homonym of Fabricius' name.

9 ♂♂, 5 ♀♀ Hussein Dey, Feb.-Oct. 1909-1910 ; 1 ♂ El Biar, Oct. 1912 ; 1 ♂ Maison Carrée, Oct. 1908 ; 1 ♂, 1 ♀ Fort l'Empereur, Alger, Sept. 1904-1905.

96. *Carcharodus lavaterae rufescens* Oberth.

Carcharodus lavaterae var. *rufescens* Oberthür, *Etud. Lépid. Comp.* fasc. x, p. 407, pl. cccxvi, f. 4433 (1915) (Sebdou).

1 ♀ Lambessa, June 1912.

97. *Carcharodus stauderi* Rev.

Carcharodus stauderi Reverdin, *Bull. Soc. Lépid. Genève*, vol. ii, pt. iv, pp. 225-237, pl. xxi, ff. 5 and 12 (1913) (Syria, Algeria).

1 ♂ Casba, Alger, Sept. 1904 ; 1 ♀ Blida les Glacières, July 1906 ; 1 ♀ Tala Rana, Kabylia, July 1909 ; 1 ♂ Thala, Tunisia, June 1907 ; 1 ♀ Dernaïo Ferioug, Tunisia, July 1908 (Daniel Lucas).

98. *Carcharodus alceae australis* Zell.

Hesperia Malvarum var. *australis* Zeller, *Isis*, 1847, p. 285 (Sicily).

3 ♂♂ Hussein Dey, June-Oct. 1908-1911 ; 2 ♂♂, 2 ♀♀ Fort l'Empereur, Alger, Sept.-Nov. 1901-1906 (1 ♂ is a dwarf) ; 4 ♀♀ Maison Carrée, Mareh-April 1909-1911 ; 1 ♂ Bouzarea, May 1910, small ; 1 ♂ El Biar, May 1906 ; 1 ♀ Environs d'Alger, April 1907 ; 1 ♀ Tala Rana, Kabylie, July 1909 ; 1 ♂, 1 ♀ Batna, Mareh 1912 ; 1 ♂ Biskra, July 1914 ; 14 ♂♂, 1 ♀ no data.

99. *Hesperia proto* (Esper).

Papilio plebejus urbicola proto Esper, *Schmett. Suppl.* pt. ii, p. 32, No. 249, pl. cxxiii, Suppl. 78, ff. 5, 6 (1805) (Portugal).

Blida les Glacières, Aug. 1906 and 1912 ; 3 ♀♀ Tala Rana, Kabylie, July 1909.

100. *Hesperia mohammed* (Oberth.).

Syrichthus mohammed Oberthür, *Bull. Soc. Entom. France*, 1878, p. 48, No. 1 (Sebdou, Lambessa).

2 ♂♂ Aflou, Oct. 1911.

101. *Hesperia ahmed* (Oberth.).

Syrichthus ahmed Oberthür, *Etud. Lépid. Comp.* fasc. vi, p. 108, pl. cxi, ff. 1259, 1260 (1912) (Lambessa).

5 ♂♂ Tala Rana, July 1909.

Mr. Oberthür records 3 ♂♂ from Lambessa. These 5 appear to be the only other specimens on record.

102. *Hesperia leuzae* (Oberth.).

Syrichthus leuzae Oberthür, *Etud. Entom.* fasc. vi, p. 60, pl. iii, f. 10 (1881) (Mascara).

4 ♂♂, 4 ♀♀ Blida les Glacières, June 1907-1909.

Mr. Oberthür has only 6 specimens, the type ♂ from Mascara ; 3 ♂♂, 1 ♀ Sebdou ; and 1 ♂ from the Djurjura ; so that these 8 specimens appear to be the only others on record.

103. *Hesperia numida* (Oberth.).

Syrichthys alveus numida Oberthür, *Etud. Lépid. Comp.* fasc. ivi, p. 404, pl. iv, ff. 484-486 (1910) (Lambessa).

4 ♂♂ Aurès Mts., June 1913 (H. Powell); 2 ♀♀ Lambessa, June 1912; 1 ♂, 2 ♀♀ Batna, June 1912; 1 ♀ Blida les Glacières, June 1908; 1 ♀ Ben Akoun, Alger, May 1905.

Mr. Oberthür, when describing this insect, considered it to be a variety of *alveus*, but the researches of Dr. Reverdin and the examination of the genitalia prove this and many other *Hesperias* to be good species.

104. *Hesperia onopordi* Ramb.

Hesperia onopordi Rambur, *Faun. Entom. Andal.* ii, p. 319, No. 4, pl. viii, f. 13p (1842) (Grenada).

4 ♂♂, 6 ♀♀ Hussein Dey, April-Oct. 1908-1910; 3 ♀♀ Maison Carrée, April-Sept. 1908-1909; 1 ♂ Bouzarea, June 1902; 1 ♀ Fort l'Empereur, Alger, Sept. 1905; 1 ♂ Blida les Glacières, July 1905; 1 ♂, 1 ♀ Batna, May 1912; 4 ♂♂ Lambessa, June-July 1912; 4 ♂♂, 1 ♀ no data.

105. *Hesperia ali* (Oberth.).

Syrichthys ali Oberthür, *Etud. Entom.* fasc. vi, p. 61, pl. ii, f. 3 (1881) (Algeria).

8 ♂♂, 2 ♀♀ Hussein Dey, April-Oct. 1909-1913; 1 ♂, 3 ♀♀ El Biar, Sept. 1911-1914; 1 ♀ Fort l'Empereur, Alger, Sept. 1905; 1 ♂, 1 ♀ Bâinen, July 1910 and June 1913; 2 ♂♂ Maison Carrée, Mareh 1910 and Sept. 1912; 1 ♀ L'Arba, May 1907; 1 ♂ Alger, July 1913; 1 ♂ Blida les Glacières, Sept. 1913; 1 ♂ Tala Rana, Kabylia, July 1909; 1 ♂, 2 ♀♀ Batna, March 1912

HETEROCERA.106. *Herse convolvuli* (Linn.).

Sphinx convolvuli Linnaeus, *Syst. Nat.* edit. x, p. 490, No. 6 (1758) (Sweden).

2 ♂♂, 1 ♀ El Biar, Oct. 1895.

The same remarks apply to this species as to the following. We have only taken it once at Biskra in 1908.

106a. *Acherontia atropos* (Linn.).

Sphinx atropos Linnaeus, *Syst. Nat.* edit. xi, p. 490, No. 8 (1758) (Europe).

1 ♀ Alger, Nov. 1915; 1 ♀ Fort l'Empereur, Alger, Oct. 1901; 1 ♂ El Biar, Oct. 1895.

The "Death's Head Moth," though widely spread in Algeria, appears to be scarce, and only found singly. I myself have only come across two specimens on the seven occasions I have visited Algeria; once at Ain Sefra in May we caught the perfect insect, and secondly in Sept. 1920 when a larva of the green phase was given me by the postmaster at Yakouren in the Kabylie, which produced a fine specimen at Tring.

107. *Smerinthus ocellatus atlanticus* Aust.

Smerinthus atlanticus Austaut, *Le Natural.* vol. xii, p. 190 (1890) (Oudja) (Oudjda ? recte R.).

5 ♂♂, 8 ♀♀ Hussein Dey, April–Sept. 1901–1909.

One of the 8 ♀♀ is by far the largest of any of the 220 specimens now in the Tring Museum.

108. *Amorpha populi austauti* (Stdgr.).

Smerinthus austauti Staudinger, *Pct. Nouv. Entom.* vol. ii, p. 190 (1877) (Algiers).

The ♂♂ from Birtraria and El Biar are ab. *mirabilis*; the ♀♀ from Mustapha and Isly are typical *austauti*; the Batna ♀ and one ♀ from Hussein Dey are ab. *staudingeri*; the ♂ and second ♀ from Hussein Dey are dwarfs (♂ expands 80 mm., the ♀ 92 mm.; while Birtraria ♂ expands 120 mm., and the Isly ♀ 150 mm.). The dwarf ♂ is ab. *mirabilis* and the ♀ intermediate between ab. *austauti* and ab. *staudingeri*.

1 ♀ Mustapha, Alger, June 1890; 1 ♀ Batna; 1 ♂, 2 ♀♀ Hussein Dey, April–July 1909; 1 ♂ Birtraria, Alger, June 1900; 1 ♂ El Biar, Sept. 1914; 1 ♀ Village D'Isly, Alger, June 1905.

109. *Macroglossum stellatarum* (Linn.).

Sphinx stellatarum Linnaeus, *Syst. Nat.*, edit. x, p. 493, No. 26 (1758).

1 ♀ Marières, Aug. 1909; 1 ♂ El Biar, 1896.

110. *Celerio euphorbiae mauretanica* (Stdgr.).

Deilephila mauretanica Staudinger in Staudinger and Wocke's *Catal. Lépid. Eur. Fauneng.* p. 36, No. 466 (1871) (Mauretania, Madagascar).

The series both of this and the following subspecies have evidently been carefully picked from much larger series, as they consist almost entirely of exceptional or abnormal specimens. The Fort l'Empereur specimen is exceptionally dark.

18 ♂♂, 14 ♀♀ Casba, Alger, June 1905–1906; 5 ♂♂, 11 ♀♀ Hussein Dey, March–Oct. 1909; 1 ♂ El Biar, June 1899; 2 ♂♂, 1 ♀ Alger, June 1896–1905; 1 ♀ Fort l'Empereur, Alger, June 1903; 5 ♂♂ Bône, March–Sept. 1911; 18 ♂♂, 17 ♀♀ Environs d'Alger, March–April 1907; 2 ♂♂ Batna, Aug. 1912.

111. *Celerio euphorbiae deserticola* (Bartel).

Deilephila mauretanica ab. *deserticola* Bartel in Rühl, *Palaeark. Grossschm.* vol. ii, p. 79 (1899) (loc. typ. restr. Biskra R.).

14 ♂♂, 10 ♀♀ Biskra, March–Sept. 1909; 4 ♂♂, 9 ♀♀ El Golea, 1913.

(In addition there were in the collection 19 ♂♂, 26 ♀♀ with no data, mixed *mauretanica* and *deserticola*.)

112. *Celerio nicaea castissima* (Aust.).

Deilephila nicaea var. *castissima* Austaut, *Le Natural.* vol. v, p. 360 (1889) (Sebdou).

1 ♂, 1 ♀ Laghouat, April 1888 and Aug. 1911; 1 ♂, 1 ♀ Aflou, Aug. 1911.

113. *Celerio lineata livornica* (Esp.).

Sphinx livornica Esper, *Schmett.* vol. ii, p. 88 (1779) (Verona); (id. l.e. pl. viii, f. 4, as *Sphinx celerio* var.).

1 ♂, 1 ♀ Casba, Alger, July 1906; 5 ♂♂, 3 ♀♀ El Hadadra, April 1913; 1 ♂ El Golea, Mareh 1913.

114. *Pergesa porcellus colossus* (Bang-Haas).

Metopsilus porcellus var. *colossus* Bang-Haas, *Iris*, vol. xix, p. 129 (1906) (Téniet-el-Had).

4 ♂♂ Blida les Glacières, June 1907–1911.

These specimens and our own single ♂ from the same locality agree perfectly with the large series of over 70 sent me in 1919 by Faroult from La Mahouna near Guelma.

115. *Hippotion celerio* (Linn.).

Sphinx celerio Linnaeus, *Syst. Nat.* edit. x, p. 491, No. 10 (1758).

1 ♂ Hydra, Alger, Sept. 1905; 1 ♀ El Biar, Sept. 1896.

116. *Zygaena zuleima* Pierret.

Zygaena zuleima Pierret, *Ann. Soc. Entom. France*, vol. vi, p. 22, pl. i, f. 8 (1837) (Bône).

3 ♂♂ Oran, April 1910; 1 ♀ Sta. Cruz, Oran, April 1910; 2 ♂♂, 1 ♀ (1 ♂ yellowish) Maison Carrée, March 1909; 2 ♂♂, 1 ♀ Ben Aknoun, Alger, March 1905; 1 ♂ El Biar, March 1902; 1 ♂ Bastion X, Alger, Mareh 1903; 1 ♂ Bonzarea, April 1906; 1 ♀ Hussein Dey, Mareh 1908; 1 ♀ Kouba, Mareh 1909; 2 ♂♂ no data.

117. *Zygaena loyselii* Oberth.

Zygaena loyselii Oberthür, *Etud. Entom.* livr. i, p. 34, pl. iv, f. 4 (1876) (Lambessa).

4 ♂♂, 5 ♀♀ Batna, May 1912; 1 ♀ Lambessa, June 1912.

118. *Zygaena favonia favonia* Fr.

Zygaena favonia Freyer, *Neue Beitr. Schmett.* vol. v, p. 76, pl. ccccxviii, f. 1 (1845) (Turkey!).

1 ♀ Baïnen, June 1899; 2 ♂♂, 5 ♀♀ Bonzarea, June 1904–1910; 1 ♂, 1 ♀ Drariah, Alger, June 1904; 1 ♂ Beni Messous, Alger, May 1905; 1 ♀ Mourzaïa; 1 ♀ El Biar, May 1893; 1 ♀ Maison Carrée, June 1912; 9 ♂♂, 3 ♀♀ Batna, May–June 1912; 4 ♂♂, Lambessa, June 1912; 2 ♀♀ no data.

119. *Zygaena thevestis* Stdgr.

Zygaena thevestis Staudinger, *Berl. Entom. Zeitschr.* vol. xxxi, p. 33 (1887) (Lambessa, Tébessa).

This *Zygaena* is at once distinguishable from *Z. favonia* and its subspecies by its long and pointed wings, which in *favonia* are shorter and rounded at the apices.

3 ♂♂, 2 ♀♀ Batna, June 1912; ? 1 ♀ Lambessa, June 1912. (This is much worn.)

120. *Zygaena serizati* Oberth.

Zygaena serizati Oberthür, *Etud. Entom.* livr. i, p. 33 (1876) (Collo).

1 ♂, 1 ♀ Lella Kredidja, July 1907 (Dr. Nissen); 1 ♂, 3 ♀♀ Tala Rana, July 1909.

121. *Zygaena syracusia* Zell.

Zygaena syracusia Zeller, *Isis*, vol. xl, col. 301, No. 68 (3) (1847) (Sicily).

10 ♂♂, 2 ♀♀ Batna, May 1912; 6 ♂♂, 7 ♀♀ Lambessa, June 1912; 2 ♂♂, 1 ♀ Gué, Oct. 1909; 9 ♂♂, 14 ♀♀ Hussein Dey, May–June 1910–1914.

There are both blue and green examples in the Batna–Lambessa series, but all the Gué–Hussein Dey specimens are green.

122. *Zygaena algira algira* Dup.

Zygaena algira Duponchel in Godart's *Pap. France*, vol. iii, Suppl. ii, p. 86, No. xxxiii (1835 (Alger)).

The Holl collection series of 100 specimens contains a number of striking aberrations. There are 6 ♂♂, 9 ♀♀ with the black markings much reduced; 1 ♀ is entirely red, with two buff spots in each forewing and a narrow black margin; 1 ♀ almost similar, but with two black dots in forewings and a broad black margin. Several ♂♂ and ♀♀ have the black markings much enlarged.

7 ♂♂, 4 ♀♀ El Biar, Feb.–March 1907–1912; 10 ♂♂, 11 ♀♀ Maison Carrée, March–Nov. 1902–1912; 6 ♂♂, 10 ♀♀ Hussein Dey, Jan.–July 1910–1913; 4 ♂♂, 4 ♀♀ Birmandreis, Jan.–March 1907, 1908; 9 ♂♂, 8 ♀♀ Kouba, Alger, Jan.–March 1905–1912; 2 ♂♂, 1 ♀ Hydra, Alger, May 1905; 6 ♂♂, 8 ♀♀ (♀ ab. *totorubra*) Baïnen, Alger, June–July 1904–1912; 3 ♂♂, 6 ♀♀ Environs d'Alger, March–June 1905–1909; 1 ♂ El Harrach, June 1910; 1 ♂, 1 ♀ R. A., March 1912; 1 ♂ Bône, Sept. 1908; 2 ♀♀ no data.

123. *Zygaena algira exigua* Seitz.

Zygaena algira ab. *exigua* Seitz, *Gross-schm. Erde*, vol. ii, p. 29, pl. viii, row a (1909) (High Atlas Algeria).

1 ♂, 1 ♀ Batna, May–June 1912; 7 ♂♂, 3 ♀♀ Lambessa, June 1912.

124. *Zygaena felix* Oberth.

Zygaena felix, Oberthur *Etud. Entom.* livr. i, p. 36 (1876) (Boghari, Lambessa).

18 ♂♂, 23 ♀♀ Batna, June 1912; 1 ♂, 1 ♀ Lambessa, June 1912; 3 ♂♂, 1 ♀ no data.

125. *Zygaena orana limitans* Rothsch.

Zygaena carniolica limitans Rothschild, *Nor. Zool.* vol. xxiv, p. 341, No. 36 (1917) (Philippeville, Tunis, coastline).

88 ♂♂, 33 ♀♀ Bône, May–June 1911–1914.

A few ♀♀ resemble more *orana* and *lahajei* on account of their larger size and paler coloration; but out of the 121 specimens here enumerated only 8 are not typical *c. limitans*.

125a. *Zygaena theryi* de Joan.

Zygaena theryi de Joannis, *Bull. Soc. Entom. France*, 1908, p. 203 (Environs de Philippeville).

1 ♂, 2 ♀♀ Hammam Rhira, May 1908 (Dr. Nissen).

126. *Procris globulariae notata* (Zell.).

Atychia notata Zeller, *Isis*, vol. xl, col. 294, No. 64 (2) (1847) (Syracuse, Sicily).

1 ♂ Lavarande, May 1908.

127. *Procris cirtana cirtana* Lucas.

Procris cirtana Lucas, *Expl. Scient. d'Alg. Anim. Artic.* vol. iii, p. 373, No. 76, pl. iii, f. 2 (1849) (Constantine, Koudiat-Ati).

10 ♂♂, 3 ♀♀ Blida les Glacières, June 1909–1911 ; 1 ♂, 1 ♀ Fort l'Empereur, Alger, May 1901–1904.

128. *Procris orana algerica* Rothschild.

Procris orana algerica Rothschild, *Nov. Zool.* vol. xxiv, p. 345, No. 43 (1917) (Province of Constantine).

8 ♂♂, 3 ♀♀ Batna, May–June 1912 ; 1 ♂, 3 ♀♀ Lambessa, June 1912.

Both blue and green specimens of both sexes are in this series.

AMATIDAE.**128a. *Dysauxes punctata servula* (Berce).**

Naclia servula Berce, *Ann. Soc. Entom. France*, ser. iv, vol. ii, p. 386 (1862) (Hyères).

1 ♀ Camp des Cliènes, June 1906 ; 2 ♂♂, 1 ♀ Blida les Glacières, Aug. 1906–1907.

HETEROGYNIDAE.**128b. *Heterogynis affinis* Ramb.**

Heterogynis affinis Rambur, *Ann. Soc. Entom. France*, vol. v, p. 586 (1836) (S. Spain).

Heterogynis canalensis Chapman, *Trans. Entom. Soc. London*, 1904, p. 71 (Canales de la Sierra).

15 ♂♂, 2 ♀♀ Blida les Glacières, June 1911.

LIMACODIDAE.**129. *Cochlidion codeti* (Oberth.).**

Limacodes codeti Oberthür, *Bull. Soc. Entom. France*, 1883, p. 48 (Sebdou).

3 ♂♂ El Biar, July–Sept. 1897–1912 ; 1 ♀ Baïnen, Alger, June 1901.

130. *Cerura bifida interspersa* Rothsch.

Cerura bifida interspersa Rothschild, *Nov. Zool.* vol. xxiv, p. 348, No. 48 (1917) (Algeria ; Tunisia ?).

2 ♂♂, 1 ♀ Hussein Dey, April–Oct. 1910 ; 1 ♂, 1 ♀ Maison Carrée, April–May 1909–1910.

131. *Dicranura vinula delavoiei* Gasch.

Dicranura vinula var. *delavoiei* Gaschet, *Ann. Soc. Entom. France*, ser. v, vol. vi, p. 522 (1876) (El Esmou, Algeria).

1 ♂ Hussein Dey, March 1908 ; 1 ♀ Ben Aknoun, Alger, March 1905.

132. *Hybocampa powelli* Oberth.

Hybocampa powelli Oberthür, *Bull. Soc. Entom. France*, 1912, p. 339 (Lambessa).

1 ♂ El Biar, June 1907.

133. *Phalera bucephala bucephalina* Stdgr.

Phalera bucephala var. *bucephalina* Staudinger, *Cat. Lépid. Palaear. Fauneng.* pt. i, p. 111, No. 858b, (1901) (Tangier).

1 ♀ Blida les Glacières, May 1912.

This specimen is almost similar to typical *b. bucephala*, as the stigma on forewing is small.

134. *Ichthyura pigra powelli* (Oberth.).

Pygaera powelli Oberthür (?).

2 ♀♀ Hussein Dey, May–Sept. 1910–1911 ; 1 ♂ Batua, April 1913 ; 1 ♀ Lambessa, Aug. 1913.

135. *Thaumetopoea pityocampa* (Schiff.).

Phalaena pityocampa Schiffermüller & Denis, *Ank. Syst. Werk. Schmeltz. Wien.* p. 53 (1775) (Vienna).

25 ♂♂, 2 ♀♀ El Biar, Sept. 1912 ; 1 ♀ Casba, Alger, Oct. 1905 ; 3 ♂♂, 1 ♀ Blida les Glacières, July–Aug. 1905–1907.

136. *Thaumetopoea herculeana* (Ramb.).

Cnethocampa herculeana Rambur, *Faune Andal.* pl. xiv, ff. 5, 6 (1839) (Cadiz).

5 ♂♂ Géryville, Sept.–Oct. 1910–1912.

LIPARIDAE.

137. *Notolophus algerica* (Lucas).

Trichosoma algericum Lucas, *Expl. Scient. d'Alg. Anim. Art.* vol. iii, p. 376, No. 82, pl. iii, f. 6 (1849) (Environs d'Alger).

1 ♂, 1 ♀ Bouzarea, Alger, June–July 1905–1906 ; 1 ♂ Hussein Dey, May.

138. *Notolophus dubia umbripennis* (Strand).

Orgyia dubia ab. *umbripennis* Strand in Seitz, *Grossschm. Erde*, vol. ii, p. 119, pl. xix, row c (1910) (Batna).

3 ♂♂ Batna.

139. *Notolophus splendida isolatella* (Strand).

Orgyia dubia forma *isolatella* Strand in Seitz, *Grossschm. Erde*, vol. ii, p. 119, pl. xix, row c (1910) (Batna).

The series from Blida, Tala Rana, and Camp de Chênes are all abnormal, except 1 from Blida, culminating in a specimen which has all the golden yellow replaced by dark smoky brown ; of the 7 others 6 are all much more obscured and darker than normal specimens.

4 ♂♂, 1 ♀ Blida les Glacières, June–Aug. 1905–1906 ; 2 ♂♂ Camp des Chênes, July 1910 ; 2 ♂♂ Tala Rana, July 1909 ; 1 parasite and cocoon, Laghouat, Feb. 1912.

140. *Notolophus trigotephras transiens* (Stdgr.).

Orgyia trigotephras var. *transiens* Staudinger in *Cat. Lépid. Palaearc. Fauneng.* Staud. & Rebel, p. 114, No. 888b (1901) (Mauretania).

Although none of the series has quite so much white and grey sealing as the type of *t. holli* figured by Oberthür, several are intermediate, so I feel sure *t. holli* can only stand as *tr. transiens* ab. *holli*.

9 ♂♂ Camp des Chênes, June–July 1909–1910; 1 ♂, 1 ♀ Bonzarea, Alger, June 1905; 1 ♂ Birtraria, Alger, June 1906 (dwarf); 1 ♂ Batna, June 1912; 10 ♂♂ no data (labelled “*O. trigotephras anceps* Oberth.” in error).

141. *Nygmia phaeorrhoea xanthorroea* (Oberth.).

Euproctis chrysorrhoea forma *xanthorroea* Oberthür, *Etud. Lépidop. Comp.* fasc. xii, p. 282 (1916) (Algeria, Tunisia).

1 ♂ Casba, Alger, June 1904; 2 ♀♀ Camp des Chênes, Alger, July 1909; 1 ♀ Fort l'Empereur, Alger, June 1902; 4 ♂♂, 2 ♀♀ Blida les Glacières, July 1908.

142. *Nygmia charmetanti* (Mab. & Vuill.).

Artaxa charmetanti Mabille & Vuillot, *Bull. Soc. Entom. France*, 1890, p. 204 (Hassi-bou-Kouba).

This specimen disagrees with the original description and also with the subsequently published figure (*Nov. Lepid.* pl. xi, fig. 2) in so far that the hindwings as well as the forewings have a yellow ground colour. The darker margin of the hindwings as well as the fact that several tropical species vary in the same way proves it, however, to be only a slight aberration.

1 ♂ Biskra July 1914.

143. *Liparis atlantica* Ramb.

Liparis atlantica Rambur, *Faun. Entom. Andal.* pl. xv, f. 7 (1842) (Andalusia).

In this series are 2 ♂♂, one of which agrees well with Oberthür's figure of *atlantica maura*, while the other agrees perfectly with his figure of *mus*. I am now quite convinced that my doubt as to *mus* being anything more than an extreme aberration of *atlantica* (expressed *Nov. Zool.* xxiv, p. 358) is confirmed, as several other ♂♂ in this series are intermediate.

23 ♂♂, 34 ♀♀ El Biar, May–Sept. 1912–1914; 1 ♀ Hydra, Alger, Aug. 1905.

144. *Porthetria dispar* (Linn.).

Phalaena bombyx dispar Linnaeus, *Syst. Nat.* edit. x, vol. i, p. 501, No. 27 (1758) (Europe).

2 ♂♂ Blida les Glacières, July 1906 and 1908.

145. *Ocneria rubea* (Schiff. & Den.).

Bombyx rubea Sebiffermüller & Denis, *Ank. Syst. Werk. Schmett. Wien*, p. 51, No. 2 (1775) (Vienna).

2 ♀♀ Hydra, Alger, Nov. 1905.

LASIOCAMPIDAE.

146. *Chonderostega powelli* Oberth.

Chonderostega powelli Oberthür, *Etud. Lépid. Comp.* fasc. vi, p. 336, pl. cxxxii, ff. 1162-1164 (1912) (Géryville).

2 ♂♂ Afrou, Oct. 1911.

147. *Diplura loti algeriensis* (B. Baker).

Bombyx loti var. *algeriensis* Bethune Baker, *Entom. Month. Mag.* vol. xxi, p. 242 (1885) (Guelma).

1 ♂ Maison Carrée, March 1906 ; 1 ♀ Rovigo, July 1911.

148. *Pachygastris trifolii cocles* (Hübner).

Bombyx cocles Hübner, *Samm. Europ. Schmett.* Lepid. III, Bomb. II, Nos. 332-335 (1831) (?).

2 ♂♂, 4 ♀♀ Casba, Alger, Oct. 1904-1905 ; 3 ♂♂, 4 ♀♀ Hussein Dey, Sept.-Oct. 1908-1909 ; 1 ♂ El Biar, Oct. 1912 ; 1 ♂ St. Eugène, Alger, Sept. 1899 ; 2 ♂♂ Alger, Oct. 1904 and 1909.

149. *Pachygastris trifolii mauretanica* (Stålgr.).

Bombyx trifolii var. *mauretanica* Staudinger, *Iris*, vol. iv, p. 262 (1891) (Lambessa).

1 ♂ Afrou, Oct. 1911.

150. *Lambessa declorata sordidior* Rothschild.

Lambessa declorata sordidior Rothschild, *Nov. Zool.* vol. xxi, p. 314, No. 51 (1914) (Guel-es-Stel).

3 ♂♂, Guel-es-Stel, Sept. 1912.

151. *Lambessa staudingeri staudingeri* (B. Baker).

Bombyx staudingeri Bethune Baker, *Entom. Month. Mag.* vol. xxi, p. 242 (1885) (Lambessa).

3 ♂♂, 2 ♀♀ Batna, Sept. 1912.

152. *Epicnaptera suberifolia* (Dup.).

Lasiocampa suberifolia Duponchel in Godart, *Pap. France*, Suppl. IV, p. 79, No. cclxxxix, pl. lvii, f. 3 (1842) (Digne, Andalusia).

These two specimens are exactly alike and bright rufous brown in colour. They are quite unlike my West Algerian example from Masser Mines. They may prove to be *tremulifolia* Hübner. (= *betulifolia* Ochs.) ; though Mr. Harold Powell considered them to be only extreme varieties of *suberifolia*.

2 ♂♂ Blida les Glacières, June 1911.

153. *Pachypasa limosa intermedia* Rothschild.

Pachypasa limosa intermedia Rothschild, *Nov. Zool.* vol. xxiv, p. 370, No. 101 (1917) (Alger).

3 ♂♂, 2 ♀♀ Hussein Dey, Feb.-Nov. 1911 ; 1 ♂ Fort l'Empereur, Alger, Sept. 1898 ; 1 ♂ El Biar, Oct. 1910 ; 3 Hymenopterous parasites, Jardin d'Essai, Alger, Oct. 1911.

154. *Taragama repanda repanda* (Hübner).

Bombyx repanda Hübner, *Samml. Europ. Schmett. Lépid.* III. Bomb. II, Nos. 274, 275, 346 (1827) (Spain).

1 ♂ Hussein Dey, Sept. 1911; 1 ♂ Hydra, Alger, Sept. 1905; 1 ♂ no data; 1 ♀ Kouba, Alger, March 1897; 1 ♀ El Biar, Aug. 1914; 1 ♀ Bône, Aug. 1911.

LEMONIIDAE.

155. *Lemonia vallantini* (Oberth.).

Bombyx vallantini, Oberthür, *Etud. Entom.* livr. xii, p. 28, pl. vi, f. 33 (1890) (Bône).

This series is rather variable (normal type orange stramineus with post-median sooty shadow band); several of the ♂♂ are washed with grey, and others are pale stramineus without post-median bands, one of the latter also has discocellular stigma obsolete.

11 ♂♂ Alger, Dec. 1907–1914; 1 ♂, 1 ♀ Environs d'Alger, Dec. 1912; 7 ♂♂, 1 ♀ (crippled) El Biar, Dec. 1907–1912; 2 ♂♂ Casba, Alger, Dec. 1906.

156. *Lemonia philopalus* (Donzel).

Bombyx philopalus Donzel, *Ann. Soc. Entom. France*, vol. xi, p. 198, t. viii, f. 2 (1842) (Constantine).

4 ♂♂, 1 ♀ Guelt-es-Stel, Nov. 1913–1914; 2 ♂♂ Sebdou, Dec.

Saturnidae.

157. *Saturnia atlantica* Luc.

Saturnia atlantica Lucas, *Explor. Scient. Alg. Zool. Anim. Art.* vol. iii, p. 379, pl. iii, f. 4 (1848) (Lao Tonga, Lacalle).

1 ♂ Casba, Alger, 1 ♂, 5 ♀♀ Alger, April 1905.

Drepanidae.

158. *Drepana binaria uncinula* (Borkh.).

Phalaena uncinula Borkhausen, *Syst. Besch. Europ. Schmett.* vol. iii, p. 461 (1790) (Italy).

1 ♂ Hydra, Alger, June 1905; 2 ♂♂, 2 ♀♀ Blida les Glacières, June–July 1905–1907; 2 ♂♂ Tala Rana, July 1909.

159. *Cilix glaucata glaucata* (Scop.).

Phalaena glaucata Scopoli, *Entom. Carn.* p. 221 (1763) (Carniola).

This series, curiously enough of the same number of specimens as previously recorded by me (Nov. Zool. xxiv, p. 393, No. 110), is the exact antithesis to my own, for all 6 specimens lack the glaucous smear of the typical form. Although identical in marking with Strand's *gl. asiatica* they have a pure white, not cream-coloured ground colour.

1 ♂, 1 ♀ Hydra, Alger, Sept. 1905–1906; 1 ♂ El Biar, July 1900; 1 ♂, 2 ♀♀ Blida les Glacières, June–Sept. 1911.

SOMABRACHYDAE.

Since Dr. Jordan's article in 1916 (Nov. Zool. xxiii, pp. 350-358) nothing new has been discovered, in connection with these most curious and interesting insects, to upset his conclusions that there are only 3 species, NOT 18 as Mr. Oberthür believed.

160. *Somabrachys aegrota* (Klug).

Gastropacha aegrota Klug, *Symb. Phys.* Gastropacha, No. 5, pl. xx, f. 5 (1832) (Alexandria).

14 ♂♂, 1 ♀ El Biar, Sept.-Oct. 1912-1913; 12 ♂♂, 18 ♀♀ Hussein Dey, Sept.-Oct. 1910-1911; 2 ♂♂, 8 ♀♀ Gué de Chênes, Oct. 1910-1911; 2 ♀♀ Casba, Alger, Sept. 1905 and 1906; 19 ♂♂, 2 ♀♀ Blida les Glacières, Sept. 1911; 3 ♂♂ Dira (Aumale), Sept.; 1 ♂ Medea, Sept.; 2 ♂♂ Lambessa, Sept. 1913; 2 ♂♂ Guelt-es-Stel, Sept. 1912; 1 ♂ Aflou, Oct. 1911; 1 ♀ Rovigo, Oct. 1911; 1 ♂ 14 Oct. 1908.

161. *Somabrachys infusata* (Klug).

Gastropacha infusata Klug, *Symb. Phys.* Gastropacha, No. 6, pl. xx, f. 6 (1832) (Alexandria).

1 ♂ Casba, Alger, Sept. 1905; 2 ♂♂ Blida les Glacières, Sept. 1911; 3 ♂♂ Boukhoub, Sept. 1910; 1 ♂ Guelt-es-Stel, Sept. 1912; 1 ♂ Géryville, Aug. 1910.

162. *Somabrachys chretieni* Oberth.

Somabrachys chretieni Oberthür, *Bull. Soc. Entom. France*, 1908, p. 48 (Zehoh).

1 ♂ Batna, Sept. 1912.

ARCTIIDAE.

Arctiinae.

163. *Ocnogyna boetica albescens* (Oberth.).

Trichosoma boetica ab. *albescens* Oberthür, *Etud. Lépid. Comp.* fasc. xiii, p. 8, pl. cdxxxv, f. 3745 (1917) (Lambessa).

13 ♂♂, 16 ♀♀ Hussein Dey, Nov.-Dec. 1910-1912; 1 ♀ Maison Carrée, Oct. 1913; 1 ♀ Batna, Nov. 1911; 2 ♀♀ Tunis, May 1908 and Oct. 1911.

164. *Ocnogyna adaena huegenini* (Oberth.).

Trichosoma huegenini Oberthür, *Etud. Entom.* livr. iii, p. 42 (1878) (Alger).

There are in this series 2 ♂♂ with greyish white, replacing the yellow or orange.

237 ♂♂, 25 ♀♀ El Biar, March-April 1914 (222 ♂♂ have no original data, but are from the same place and brood as the other 15 ♂♂); 2 ♂♂ Maison Carrée, Feb. 1910; 1 ♂ pale form, no data; 6 ♂♂, 1 ♀ Casba, Alger, Feb.-March 1905-1906 (the ♂♂ all picked aberrations); 2 ♂♂ Kouba, Feb. 1914; 1 ♂, 1 ♀ Littré, March 1908 (♂ pale form); 1 ♂ Fort l'Empereur, Alger, March 1908; 2 ♂♂ Bouzarea, March 1914; 3 ♂♂ Alger, Feb. 1914; 4 ♂♂, 3 ♀♀ Hussein Dey, March 1911-1912; 1 ♀ Oran; 1 ♀ no data.

165. *Ocnogyna pudens* (Luc.).

Trichosoma pudens Lucas, *Ann. Soc. Entom. France*, ser. III, vol. i, p. 410, pl. xxxiii, f. 1 (1853) (Spain).

9 ♂♂, 2 ♀♀ Blida les Glacières, June 1905–1914; 1 ♂ no data; 7 ♂♂ Camp des Chênes, April–May 1907–1914.

166. *Phragmatobia breveti* (Oberth.).

Trichosoma breveti Oberthür, *Bull. Soc. Entom. France*, 1882, p. elxxiv (Tlemcen).

1 ♂ Laghouat, March 1888; 2 ♂♂ Bou Saada, April 1912 (Faroult).

167. *Phragmatobia fuliginosa kroumira* Oberth.

Phragmatobia fuliginosa form. *kroumira* Oberthür, *Etud. Lépid. Comp.* fasc. xiii, p. 11, pl. cdxxxv, f. 3751 (1917) (Aïn Draham).

2 ♂♂ Bône, Sept. 1911.

168. *Apantesis fasciata oberthuri* (Oberth.).

Chelonia oberthuri Oberthür (ex Staudinger in litt.), *Etud. Entom.* livr. xiii, p. 27, pl. vii, ff. 47–48 (1890) (Lambessa).

This form varies chiefly in size and shape of the yellow markings on the forewings. June specimens appear to have these much extended, and the red of the hindwings paler and more mixed with yellow. The 3 Aurés ♂♂ show this very conspicuously. 1 May ♀ has the abdomen almost entirely black.

29 ♂♂, 23 ♀♀ Blida les Glacières, May–June 1905–1914; 1 ♀ Hussein Dey, July 1902; 2 ♂♂ Lambessa, 1 ♂ Aurés Mts., June 1913; 9 ♂♂ no data.

167. *Apantesis fasciata dido* (Wagn.).

Euprepia dido Wagner, *Reisen Regent. Algier*, vol. iii, p. 209, pl. ix (1841) (Algeria).

1 ♂ Bône, June; 1 ♂, 1 ♀ La Colle, June.

168. *Arctia villica arabum* (Oberth.).

Chelonia villica arabum Oberthür, *Etud. Lépid. Comp.* fasc. iv, p. 678, No. 447, pl. liii, f. 447 (1910) (Bougie).

30 ♂♂, 13 ♀♀ Blida les Glacières, June 1911–1914.

169. *Cymbalophora pudica* (Esper).

Bombyx pudica Esper, *Schmett.* vol. iii, p. 177, pl. xxxiii, f. 4 (1784) (Lyons).

2 ♂♂ Blida les Glacières, Sept. 1911; 1 ♂ Fort l'Empereur, Alger, Oct. 1904; 1 ♀ Hussein Dey, Oct. 1910; 12 ♂♂, 1 ♀ El Biar, Oct. 1897–1912; 1 ♀ Vialar, Oct. 1910.

170. *Cymbalophora powelli* Oberth.

Cymbalophora powelli Oberthür, *Bull. Soc. Entom. France*, 1910, p. 333 (Géryville).

1 ♂ Guelt-es-Stel, Sept. 1913 (Dr. Nissen).

171. *Cymbalophora haroldi* Oberth.

Cymbalophora haroldi Oberthür, *Etud. Lépid. Comp.* fasc. v₂, p. 123 (1911) (Aflou).

4 ♂♂, 4 ♀♀ Aflou, Sept.–Oct. 1911 (Harold Powell).

172. *Euprepia libyssa libyssa* Püngl.

Euprepia libyssa Püngler, *Societ. Entom.* xxii, p. 25 (1907) (Magenta).

1 ♂ Guelt-es-Stel, Oct. 1912 (Faroult); 1 ♂, 1 ♀ Aflou, Oct. 1911.

173. *Euprepia cribraria chrysocephala* (Hübner).

Bombyx chrysocephala Hübner, *Samml. Europ. Schmett.* vol. ii, Bomb. II, f. 251 (1827) (? Spain).

6 ♂♂ Hussein Dey, May–Sept. 1909–1910; 1 ♀ El Biar, May 1905; 1 ♂, 1 ♀ Casba, Alger, March and Oct. 1905; 1 ♀ Fort l'Empereur, Alger, May 1901; 1 ♂ St. Eugène, Oct. 1904; 1 ♂, 1 ♀ no data.

174. *Utetheisa pulchella* (Linn.).

Phalaena Tinea pulchella Linnaeus, *Syst. Nat.* edit. x, vol. i, p. 534, No. 238 (1758) (S. Europe, Mauritania).

2 ♀♀ Casba, Alger, Aug. 1904; 1 ♀ Fortifications de Tefemli, Nov. 1901; 1 ♀ Baïnen, June 1904; 15 ♂♂, 11 ♀♀ Hussein Dey, Jan.–Dec. 1901–1912; 1 ♂ El Golca, March 1913; 5 ♂♂, 2 ♀♀ Biskra, July 1914; 2 ♂♂, 8 ♀♀ no data.

1 ♂, 2 ♀♀ have the black spots enlarged and coalescing. 1 ♀ has both red and black spots enlarged and coalescing, almost obliterating the white. Some have black spots almost absent.

Lithosiinae.175. *Ilema uniola* (Rambur).

Lithosia uniola Rambur, *Cat. Syst. Lépid. d'Andal.* p. 209 (1866) (Andalusia).

1 ♀ Maison Carrée, Aug.; 1 ♀ Baïnen, Sept. 1914; 1 ♂ Alger, June 1913; 1 ♀ no data.

176. *Ilema caniola* (Hübner).

Bombyx caniola Hübner, *Samml. Europ. Schmett.* vol. ii, Bomb. II, f. 220 (1827).

1 ♂ St. Eugène, Alger, Oct. 1904; 1 ♀ Alger, May 1910; 2 ♂♂, 1 ♀ El Biar, May–Nov. 1912–1914; 1 ♂ Casba, Alger, April 1905; 1 ♂, 4 ♀♀ Blida les Glacières, June 1911.

177. *Ilema interposita* Rothschild.

Ilema interposita Rothschild, *Nov. Zool.* vol. xxi, p. 354, No. 314 (1914) (Guelt-es-Stel).

2 ♂♂, 1 ♀ Casba, Alger, April 1905; 1 ♂ Alger, June 1913.

178. *Ilema lutarella diluta* subsp. nov.

This form differs from most other forms of *lutarella* in the almost complete absence of yellow pigment in the wings; the latter, both fore- and hindwings, vary from pale stone grey to cream white. ♂ Kouba type.

5 ♀♀ El Biar, April and Aug. 1905–1914; 1 ♂, Blida les Glacières, Sept. 1911; 1 ♂ Kouba, July 1908 (type), Sept. 1912; 1 ♂ Hussein Dey, Sept. 1908; 1 ♂ Maison Carrée, Oct. 1908; 1 ♀ Fort l'Empereur, Oct. 1901.

179. *Paidia conjuncta* (Stdgr.).

Nudaria murina var. *conjuncta* Staudinger, *Iris*, vol. iv, p. 249 (1891) (Mardin).

3 ♂♂, 1 ♀ Blida les Glacières, Aug. 1906.

180. *Apaidia mesogona* (Godt.).

Callimorpha mesogona Godart, *Lépid. France*, vol. iv, p. 396, pl. xl, f. 6 (1822) (France).

The original figure shows the ground-colour pinkish grey, but all specimens I have seen and subsequent figures have the ground-colour fuscous brown.

1 ♀ El Biar, June 1906.

181. *Apaidia rufeola* (Ramb.).

Lithosia rufeola Rambur, *Ann. Soc. Entom. France*, vol. i, p. 271, pl. viii, f. 12 (1832) (Corsica).

2 ♂♂, 1 ♀ El Biar, June–Aug. 1904–1913; 1 ♂ Hussein Dey, May 1911.

182. *Celama chlamitulalis* (Hübner).

Pyralis chlamitulalis Hübner, *Samml. Europ. Schmett.* VI, Pyr. I, Nos. 160, 181 (1827) (Europe).

1 ♂, 1 ♀ Hydra, Alger, July 1905; 1 ♂ Hussein Dey, June 1912; 1 ♂ El Biar, July 1914; 1 ♀ no data.

183. *Roeselia togatulalis* (Hübner).

Pyralis togatulalis Hübner, *Samml. Europ. Schmett. Lépid.* VI, Pyr. II, III, p. 20, f. 130 (1827) (Europe).

1 ♂, 1 ♀ El Biar, May and Sept. 1905.

COSSIDAE.

184. *Dyspessa ulula pallida* Rothschild.

Dyspessa ulula pallida Rothschild, *Nov. Zool.* vol. xxiv, p. 407, No. 164 (1917).

1 ♀ Batna, June 1912.

185. *Dyspessa marmorata* (Ramb.).

Endagria marmorata Rambur, *Cat. Syst. Lépid. d'Andal.* p. 332, pl. v, f. 6 (1866) (Andalusia).

2 ♂ El Biar, May 1913; 3 ♂♂ Hussein Dey, May–June 1910; 1 ♂ Casba, Alger, May 1904; 3 ♂♂ Environs d'Alger, March 1907; 1 ♂ Fort de l'Eau, June 1904; 1 ♂ Blida les Glacières, July 1908; 1 ♂ May 1908 (name of place indecipherable).

The Blida ♂ is uniform dark brown all over.

186. *Zeuzera pyrina* (Linn.).

Phalaena bombyx pyrina Linnaeus, *Fauna Suecica*, edit. ii, p. 306 (1761) (Sweden).

1 ♂ Hussein Dey, May 1910; 1 ♂ El Biar, Aug. 1914; 2 ♂♂ Blida les Glacières, June 1911.

(To be continued.)

NEW ORIENTAL ZYGAENIDAE.

By DR. KARL JORDAN.

1. *Alophogaster ludius* spec. nov.

♂. Similar to *A. rubribasis* Hamps. (1892) from Assam. Antenna much more strongly pectinate, the longest branches about as long as three segments. Pleurum of abdominal segment VII with a flattened apical process, which is about three times as long as broad. On anal tergite a dorsal median spiniform subapical hook which is continued proximad by a carina, this hook farther away from apex than in *A. rubribasis*, at each side of the cariniform continuation of the hook a sharp carina extending farther basad and ending distally in a hook similar to, but smaller than, the subapical hook. Clasper ventrally much less dilated than in *A. rubribasis*, almost symmetrical in lateral aspect, recalling a slender-necked wine-bottle. Colour nearly as in *A. rubribasis*; breast, coxae, femora, and hindtibia almost entirely golden yellow like underside of abdomen. Wings much denuded, base of forewing orange; some orange colouring also on hindwing at base and before abdominal margin. Underside evidently more extended golden yellow than black, the golden tint visible from base to beyond cell on forewing and to termen on hindwing in spite of the bad state of preservation of the specimen.

♀. Like *A. rubribasis* ♀. Scaling of antenna entirely black, the apex not being greyish white. Legs somewhat more extended orange. Blue-black terminal patch of forewing broader at costal margin, the orange colour not extending so far distad at costal margin as in *A. rubribasis* ♀, extreme terminal edge orange from tornus to R¹, longer scales of fringe grey; as in ♂ the two median veins closer together than the upper median M¹ and lower radial R¹. Hindwing more extended orange than black from abdominal margin to upper submedian SM¹.

Hab. Tonkin: Mauson Mts., iv.-v., 2-3,000 ft. (H. Fruhstorfer), one pair, type ♂.

2. *Aphantocephala solitaria* Jord. 1907.

Described from a single ♂ from N. Georgia, Solomons. We have now a long series of both sexes from Feni I., New Ireland, and Manus, Admiralty Is. In all specimens inclusive of type the hindwing has some white scaling below the cell, which escaped my notice when writing the original description.

3. *Aphantocephala vicina* spec. nov.

♂. Like *A. moluccarum* Feld. (1861); branches of antenna shorter, underside of abdomen dark clayish grey with a blackish blue tint; wings less dull brown, more bluish black-brown (much rubbed in the unique specimen). Lateral horn of abdominal tergite VIII narrower than in *A. moluccarum*. On both fore- and hindwing M¹ midway between R¹ and M².

Length of forewing : ♂ 10 mm.

Hab. Oetakwa R. district, Snow Mts., Dutch New Guinea, up to 3,500 ft., x-xii.1910 (A. S. Meek); 1 ♂.

4. *Aphantocephala collaris* spec. nov.

♀. Likewise close to *A. moluccarum*. Collar inclusive of base of pronotum, and sides of abdomen orange-yellow, underside of abdomen transversely banded with the same colour; scaling of legs and frons purplish blue; upperside of antenna, thorax, and abdomen blue-black. Wings semi-transparent, bluish black, greenish in certain lights; M^1 of forewing farther from lower cell-angle than from M^2 , as in *A. moluccarum*.

Length of forewing : ♀ 10.5 mm.

Hab. New Hanover, iii.1923 (A. S. Meek's expedition); 1 ♀.

5. *Homophylotis aenea* spec. nov.

♂♀. Upperside of head, antenna, thorax, and forewing dark purple-blue, slightly glossy; abdomen above greenish blue, glossy. Hindwing black-brown, opaque, with a purple sheen; fringe greyish brown on forewing, white on hindwing. Antenna with white subapical spot. Underside of body, the palpus and legs white, tarsi more or less brown, base and apex of first segment and apices of the others more or less extended white. Wings, below, smoke-grey; hindwing washed with white, particularly in and before cell and along termen.

♂. Abdominal sternite VIII nearly as in *H. chalcosoma*, the median projection longer; inner process of clasper large, broad, turned straight cephalad.

Hab. Feni I., east of New Ireland, v-vi.1924 (A. F. Eichhorn); 1 ♂, 3 ♀♀.

In neuration the new species here described agrees with *H. albicilia*, all the veins arising from the cell in forewing and R^3 and M^1 of hindwing being stalked.

6. *Hemiscia meeki* vigens subsp. nov.

♂. Larger than the ♂♂ we have from Woodlark and New Guinea. Palpi, lower portion of frons, and anterior surface of procoxae orange like posterior margin of head. Forewing, above: veins in basal area metallic green like thorax, in outer two-thirds purple; dirty white band narrow, of nearly even width, 2 mm. wide in cell, subacuminate behind. Hindwing metallic blue from abdominal margin to cell, dirty white spot smaller than in the other subspecies.

On underside both wings with a white subapical spot; the white streak below cell of hindwing vestigial.

Length of forewing : 22 mm.

Hab. New Hanover, iv.1923 (A. S. Meek's expedition); 1 ♂.

HADRIONELLA gen. nov.

♂♀. Body more robust than in *Caprima* Walk. (1864). Frons oblong, strongly convex below the antennae. Branches of antenna longer than in *Caprima*. Forewing with 5 subcostals. Ventral margin of clasper of ♂ strongly chitinised, rod-like, sharply pointed, and curved in a semicircle towards the clasper of the other side.

Genotype: *H. spectabilis* Roths. (1899) (as *Caprima*).

7. *Hadrionella spectabilis chara* subsp. nov.

♂. Forewing above with a subbasal triangular orange spot, the apex of which is directed basad; discal band shorter than in *H. spect. spectabilis* and deeper orange, as is also the hindwing. Abdominal margin black only at extreme edge, the terminal band much less extended basad than in *H. s. spectabilis*. On underside the orange markings of forewing larger than above.

♀. Forewing without basal spot; discal band narrowing towards tornus. Marginal band of hindwing narrower at anal angle than in *H. s. spectabilis* ♀.

Hab. British New Guinea: Kumusi R., low elevation, vi. 1907 (A. S. Meek); one pair.

8. *Hadrionella ludia* spec. nov.

In colouring similar to several species of *Caprima*, but the structure places it here.

♂. Body black, glossy metallic blue in parts, collar, a small spot anteriorly on each side of frons, and the inside of forecoxae orange yellow, underside of tibiae and tarsi and a row of diffuse spots on venter more or less yellowish white; tip of abdomen white.

Upperside: forewing purplish black, blue at base, from near base to near middle orange, except extreme costal edge, this area not reaching to base of M^2 , its outer margin straight, oblique; in outer half a very large orange patch shaded with cinnamon-rufous and, therefore, appearing reddish, the black colouring surrounding this patch 1.5 mm. broad between patch and orange area, narrower at costal and distal margins. Hindwing for the greater part orange, base abdominal margin and termen black, the width of the black borders being at apex of wing 5 mm., before anal angle 0.5 mm., at abdominal margin 1.5 mm., and at base 2.0 mm.

On underside the orange more extended and paler than above; the outer patch of the forewing also orange, darker than the proximal area, from which it is separated by a narrow black band; from this band a thin black line below M^2 runs to termen. On hindwing the black colour at abdominal margin and at termen forward to M^2 almost restricted to the fringe.

♀. Larger than ♂, the orange of fore- and hindwing above replaced by chrome-yellow, the straight oblique black median band of forewing with a blue sheen. On underside the distal patch of forewing orange, contrasting with the yellow of fore and hindwing.

Length of forewing: ♂ 14.5 mm., ♀ 18–21 mm.

Hab. New Ireland, xi. 1923 to ii. 1924 (A. F. Eichhorn); 1 ♂ (type) and a series of ♀♀.

In a second, somewhat crippled, ♂ the proximal areas are smaller than in type and on upperside as pale yellow as in ♀, the tip of the abdomen, moreover, being more extended white.

CAPRIMA Walk. 1864.

Forewing with 4 subcostals, SC^2 being lost.

Genotype: *C. gelida* Walk. (1864).

9. *Caprima necopina* spec. nov.

♂. Blue-black; frons and apex of abdomen white; collar and a large ante-median patch on forewing continued across hindwing to SM^2 chrome-yellow. On

forewing the yellow patch irregularly rounded distally, separated by a black band of about 2 mm. width from a large rufous-red area, which is slightly indented at the veins, the black margins rather less than 1 mm. broad, the outer margins of the black transverse band cross cell at base of M^2 ; fringe black. Outer margin of yellow patch of hindwing rounded behind, crossing cell at base of M^1 , black abdominal margin about 1.3 mm. broad, fringe black.

Underside like upper, but hindwing with a small reddish subapical patch. In colouring similar to *C. albifrons* Roths. (1897), apart from the yellow collar, but the structure of the tail-end very different: eighth tergite normal, not cleft as in *C. albifrons*; on inner side of clasper a strong process directed straight cephalad, the two processes of the right and left claspers very far apart; in front of this process, i.e. more inside and nearer head, a very slender process directed distad; penis below these processes, somewhat curved downward.

Length of forewing: 12.5 mm.

Hab. New Hanover, ii-iii. 1923 (A. S. Meek's expedition); 1 ♂.

10. *Caprima albifrons* Roths. 1897.

A large series of both sexes from New Hanover and New Ireland prove this species to be very variable. The cadmium yellow colour of the hindwing and proximal area of forewing is frequently replaced by deep orange; the size of these areas as well as of the reddish discal patch of forewing inconstant, sometimes the hindwing nearly all black above. Crown of head white like frons; mesonotum with a small yellow spot near costa of forewing. The apex of the abdomen is either brownish black or white; this conspicuous difference deserves registration: *C. albifrons* f. *leucura* nov., white-tipped specimens.

The specimens from New Ireland do not vary so much in the wing-markings as those from New Hanover, the typical locality, but also on New Ireland both f. *leucura* and f. *albifrons* were obtained together as in New Hanover.

11. *Caprima plagiata casta* subsp. nov.

♀. White area of both wings larger than in other subspecies of *C. plagiata* Jord. (1912), that of hindwing extending to fringe before anal angle.

Hab. Hydrographer Mts., British New Guinea, 2,500 ft., ii. 1918 (Eichhorn Bros.); 2 ♀♀.

12. *Caprima cleora* spec. nov.

♀. Body metallic blue; frons white, collar *not* white, no lateral spot on mesonotum. Branches of antenna longer than in *C. plagiata*. Reddish discal patch of forewing divided by black vein-streaks as in *C. plagiata*; fringe entirely white; white are angulate below cell, here reaching (or nearly) to base of M^2 , 3 mm. broad at hindmargin of wing, continuous with the white area of hindwing, which area is as broad in middle of cell as before hindmargin, the latter black, about 1 mm. broad.

On underside the white areas broader than above, the reddish patch of forewing anguliform as in *C. plagiata*.

Length of forewing: ♀ 12 mm.

Hab. Rawlinson Mts., inland from Huon Gulf, E. New Guinea (Keysser); 1 ♀.

13. *Caprima selenis* spec. nov.

♀. Near *C. aurantiaca* Roths. (1899). Body black, with a purple and blue sheen, bluer beneath than above, frons blue, legs clayish brown. Markings of wings chrome-yellow: on forewing an oblong antemedian spot from hindmargin into cell, not quite 2 to 2.5 mm. broad, subaeuminate in cell, at right angle to hindmargin, extending across it on to hindwing, or separated from hindwing by the margin being black; discal spot slightly tinged with orange, elongate, curved, about 1.5 mm. broad and 5 to 5.7 mm. long, pointed behind. Patch of hindwing about 5 mm. long and 3 mm. broad, oblique, its basi-abdominal margin slightly rounded, its apici-costal margin incurved, and the terminal margin almost straight; width of black border at costal margin about 5 mm., from below R¹ and along abdominal margin 1 to 1.5 mm., slightly varying individually.

On underside the yellow patches very little larger than above.

Length of forewing: ♀ 12-13 mm.

Hab. Eastern New Guinea; two subspecies.

(a) *C. s. selenis*.

♀. Antemedian patch of forewing above 2 mm. broad, not separated from yellow patch of hindwing.

Hab. Hydrographer Mts., N.E. British New Guinea, i, iii, 1918 (Eichhorn Bros.); 3 ♀♀.

(b) *C. s. huonis* subsp. nov.

♀. Antemedian patch of forewing 2.5 mm. broad, separated from patch of hindwing by the narrowly black margin of forewing, discal spot less curved than in *C. s. selenis*.

Hab. Rawlinson Mts., inland from Huon Gulf, E. New Guinea (Keysser); 1 ♀.

CYANIDIA gen. nov.

♀. Near *Caprima* Walk. (1864); frons narrower and branches of distal segments of antenna longer. Forewing with only 3 subcostal, SC² and SC³ being missing.

Genotype: *C. thaumasta* Jord. (1907) (as *Caprima*).

14. *Cyanidia thaumasta valida* subsp. nov.

♀. Larger than *th. thaumasta* Jord. (1907), from Korrido, the white subapical spot of forewing elongate-ovate, narrowing behind, nearly 3 mm. broad and 6 mm. long; the metallic blue borders of this spot narrower: outer one vestigial, inner one interrupted in middle of discocellulars. On hindwing the blue submarginal band narrower, cell with blue streak.

Length of forewing: ♀ 17 mm. (*C. th. thaumasta* 13 mm.).

Hab. Oetakwa R. district, Snow Mts., Dutch N. Guinea, up to 3,000 ft., x-xi, 1910 (A. S. Meek); 1 ♀.

15. *Heteropan scintillans caesius* subsp. nov.

♂♀. More distinctly blue than *H. sc. scintillans* Walk. (1854), termen of forewing blue, the proximal border of the glossy metallic blue terminal line dark purple, not brass-colour; terminal margin not distinctly incurved below apex.

Underside of both wings without a whitish streak in ♂ and ♀; scent-fold of hindwing of ♂ present as in *H. sc. scintillans*.

Hab. Nicobar Islands: Central Group, ii-viii.1904 (G. Rogers); a series.

16. *Heteropan lycaenoides lepidus* subsp. nov.

♂♀. Brighter blue than *H. l. lycaenoides* Walk. (1864), less shaded with purple, particularly the terminal area; white patch of forewing, above, smaller, not extending to base, and the hindmargin washed with blue, terminal line deep blue or purple, narrow, more or less sharply defined, separated from fringe by a glossy metallic line, fringe also glossy. Hindwing blue, the whitish streak of underside faintly shining through. On underside the white patch of forewing somewhat larger than above, extending to hindmargin, at least in ♀. Hindwing of both sexes with whitish median streak shaded with blue.

Hab. British New Guinea: Hydrographer Mts., iv.1918 (Eichhorn), type; Angabunga R., affluent of St. Joseph R., 6,000 ft. and upwards, xi.1904 - ii.1905 (A. S. Meek); Upper Aroa R., ii.1903 (A. S. Meek); 3 ♂♂, 5♀♀.

17. *Heteropan lycaenoides apinus* subsp. nov.

♂. Forewing without white area on the upperside, being dull brownish blue nearly as in *H. anisus* Jord. (1908); at termen two glossy metallic blue lines, separated by a line which changes according to light from nearly black to copper colour, fringe similar to this line. Hindwing blue, purple at termen.

On underside the white areas on both wings as in *H. l. lepidus*, but better defined and on forewing smaller, the hindmargin of forewing blue.

Hab. New Ireland, i.1924 (A. F. Eichhorn); 1 ♂.

Easily distinguished from *H. anisus* ♂ by the hindwing beneath bearing a blue basal spot, and from *H. cyaneus* Jord. (1908) by the forewing having five subcostals.

18. *Eusphalera pernitens* spec. nov.

♂. Pro- and mesonotum dull greenish black with very few metallic scales; hindmargin of head red; rest of body, the upperside of hindwing, and the underside of both wings metallic green, very glossy on the wings. Forewing, dull greenish black on upper side, narrow, not quite thrice as long as broad. Hindwing: a white spot obliquely across apex of cell, about 5 mm. long and at the widest point 3 broad, its proximal margin nearly straight, crossing cell half-way between M¹ and M², its outer margin in front of M¹ not quite 3 mm. from termen; outside this spot some green scaling, otherwise the whole termen black.

Underside: on forewing an oblique band across cell from near costal margin to near tornus black, veins within this band more or less green, on proximal side of band and contiguous with it a narrow creamy-white line, interrupted at M, tapering behind, reaching from C to SM¹ and being a short distance proximal of base of M², apex of wing black, this colouring running along termen to near tornus. Creamy-white spot of hindwing longer than above; reaching from C to M², below it a small black spot, fringe and apical margin black.

Outer clasper (VIII. st.) very long, strongly curved inward-frontad, with a row of strong triangular teeth on the inside of the proximal portion and several such teeth also on the outside of the apical portion.

♀. Similar to ♂; forewing somewhat narrower, white line on underside of forewing somewhat broader.

Length of forewing: ♂ 21 mm., ♀ 18 mm.

Hub. New Guinea: Rawlinson Mts., inland from Huon Gulf (Keysser); one pair.

19. *Eusphalera multicolor* spec. nov.

An amazingly variable species, the various forms being so different in colouring that they have the appearance of representing a dozen species. The forewing is marked with orange, or yellow, or white and blue, or white and orange and blue, or only with blue. The species agrees in the genitalia with *E. semiflava* Jord. (1904) from New Guinea, but differs in the branches of the antenna being longer, which is particularly noticeable in the ♂♂.

♂. Abdomen pale yellow beneath as in *E. semiflava*. According to colour we distinguish 9 principal forms, each represented in the collection by several specimens:

(a) Upperside: forewing with large orange area from near base to M^2 or not quite so far, almost as in *E. semiflava*, but not extending so far distad, a metallic blue subapical spot absent or present; on hindwing an orange or yellow median band from anterior margin of cell to tornus, the fringe of tornus remaining black, outer margin of band crossing cell at or near base of M^1 . Underside nearly as above, but the orange or yellow colouring paler, a subapical spot or short band on forewing (often absent) and a submarginal band on hindwing (sometimes reduced to a subapical spot) metallic blue.—f. *aurantia*.

(b) As before, but the orange colour replaced by yellow.—f. *flava*.

(c) Upperside: black base of forewing so extended that the orange area is reduced to an oblique band which is widest at costa, being here about as broad as the black basal area; on hindwing the band orange, shifted distad, its inner margin crossing cell at M^2 , the black termen about half as broad as in form (a). Underside: orange replaced by orange-yellow.—f. *fasciata*.

(d) Like (c), but the band of the forewing more oblique and that of the hindwing obsolescent, more or less shaded with black above and beneath and reduced to two or three partitions; blue markings of underside strongly developed.—f. *reducta*.

(e) Forewing with the orange band antemedian or even subbasal, distant from M^2 ; hindwing without trace of yellow or orange above and beneath. On underside band of forewing broader than above, orange-yellow; blue submarginal band of hindwing strongly developed.—f. *simplex*.

(f) Upperside: forewing with a white median band reaching neither costa nor tornus, more or less shaded with orange and strongly margined with metallic blue, short subapical blue band conspicuous; on hindwing an orange patch as in form (d). On underside the band of forewing not shaded with orange; metallic blue scaling strongly developed. Type of species.—f. *multicolor*.

(g) Like form (f), but the orange spot of hindwing absent.—f. *albifascia*.

(h) Like form (f), but the white band of forewing entirely replaced by a metallic blue one, at least on upperside; on underside the white band usually indicated. Hindwing with an orange spot as in form (f). On underside blue scaling strongly developed.—f. *tricolor*.

(i) Like (h), blue median and subapical band, usually very conspicuous,

sometimes much reduced ; hindwing without orange spot or at most with a slight trace of it.—f. *coerulea*.

In the specimens with much metallic scaling the abdomen also is often metallic on the upperside.

♀. Abdomen unicolorous, not yellow beneath.

(a) Corresponding to f. *aurantia* of ♂, the orange area of forewing above sometimes larger, in one specimen extending to lower angle of cell.—f. *aurantia* ; only two specimens of this form.

(b) Orange area of forewing above replaced by yellow slightly tinged with orange.—f. *flava* ; a series.

(c) Orange area invaded from inner margin of wing by a large black patch which sometimes reaches across cell, dividing the area into a variable basal spot and a median band ; on hindwing the orange band shifted distad as in ♂ f. *fasciata*, often the whole cell being black ; terminal black band usually reduced to a mere line from middle to anal angle. Evidently the commonest form of the ♀.—f. *fasciata* ; a series.

(d) Orange area of forewing above almost intact, the invasion by black being bounded by SM² ; hindwing without orange.—♀.—f. *seminigra* ; three specimens.

(e) Body and basal area of hindwing above and below metallic blue. Orange basal area of forewing above more reddish, less extending distad, not reaching to M² ; hindwing without orange or yellow.—♀.—f. *chalcosoma* ; one specimen.

(f) The Chinese-orange area reduced from base so as to form an antemedian band as in f. *simplex* of ♂ ; body and bases of wings metallic blue.—f. *simplex* ; one specimen.

(g) Upperside : on forewing an orange subbasal patch, a white median band edged with metallic blue and a short conspicuous subapical metallic band ; on hindwing a large band-like area placed as in ♀ f. *fasciata* ; body metallic blue. Underside : orange band of hindwing narrower than above.—f. *multicolor* ; one specimen.

(h) Like ♀ f. *multicolor* ; but hindwing without orange, its basal area blue above and beneath.—f. *albifascia* ; one specimen.

SC¹ of forewing often absent in both sexes, irrespective of colouring of wings, sometimes present on one wing only.

Hab. New Ireland, ix. 1923—iii. 1924 (A. F. Eichhorn) ; a long series.

20. *Agalope simplex* spec. nov.

♂. Similar to *A. hemileuca* Roths. (1904) from Owgarra, south side of the Owen Stanley range, New Guinea. Forewing more elongate, without a median band, the whitish colouring of the proximal half gradually shading into the blackish colouring of the distal half ; terminal margin distinctly incurved, the apex being produced, termen of hindwing less rounded than in *Ch. hemileuca*. Clasper broader, particularly at apex, its ventral margin not incurved.

Length of forewing : 29 mm.

Hab. Rawlinson Mts., inland from Huon Gulf, New Guinea (Keysser) ; 1 ♂.

A NEW SPECIES OF ANTHRIBIDAE FROM SUMATRA
COLLECTED BY E. JACOBSON.

By DR. KARL JORDAN.

Directarius brevis spec. nov.

♀. Niger, griseo-pubescent, antennis pedibusque pallide rufis. Caput gradatim convexum, medio parum deplanatum; rostrum planum, longitudine parum latius. Antenna oculo approximata. Elytra sparsim nigro-guttata, breviter, lata, convexa, basi denudata.

Long. 2.3 mm.

Hab. West Sumatra: Fort de Kock, 920 m., 1 ♀.

Occiput, frons, and base of proboscis convex together, the frons somewhat flattened, proboscis gradually flatter to apex, a little broader than long, the upper margin of the antennal groove angulate, space between this groove and eye about as broad as segment 1 of antenna, being much narrower than in *D. signatus* Jord, 1894. Antenna reaching to about middle of elytra, 3 a very little longer than 1 and 2 together, 3 to 8 gradually shortening, 8 about two-thirds of 3, club slender, 9 as long as 3, 10 somewhat shorter, 11 a little longer.

Pronotum almost twice as broad as long, granulose, coriaceous, with indications of less densely pubescent patches; carina distant from base, very slightly concave, but near sides rather strongly convex, lateral longitudinal carinula obsolescent, joining lateral carina from below as in *D. signatus*. Elytra convex, less than one-half longer than broad, somewhat depressed at basal margin, without distinct subbasal swelling, punctate-striate, alternate interspaces, especially the third, with some black dots, in between which the grey pubescence is somewhat condensed, forming inconspicuous whitish grey stripes. Pygidium almost semicircular. First tarsal segment much longer than the others together.

Directarius is close to *Zygaenodes*, but there is no trace of the eyes being stalked or conical.

The type, like all our own Anthribidae, will become the property of the British Museum.

FIVE NEW INDIAN ANTHRIBIDAE.

BY DR. KARL JORDAN.

I am indebted for the specimens here described to Dr. C. F. C. Beeson, of the Forest Research Institute, Dehra Dun.

1. *Litocerus phelus* spec. nov.

♀. *L. khasiano* Jord. (1903) colore simillimus, rostro uni-carinato, oculis minus approximatis, angulo carinae pronotalis magis rotundato, pygidio brevior.

Long. 7 mm.

Hab. Assam: Naga Hills, 5,000 ft., 10.iv.1924 (S. N. Chatterjee), 1 ♀.

Median stripe of pronotum broadly interrupted, spots of elytra less numerous than in *L. khasianus*. Proboscis punctate-rugate, medium carina very thin from near base to beyond middle, reaching neither to apical margin nor to frons, the deep dorso-lateral groove of *L. khasianus* slightly indicated, the proboscis being subcylindrical in basal half, and also apically less flattened than in *L. khasianus*. Frons as broad as segment 8 of antenna is long. Punctuation of pronotum somewhat more extended, carina medianly slightly convex, the lateral angle very strongly rounded. Antemedian depression of elytra deeper than in *L. khasianus*, the subbasal swelling therefore appearing higher. Pygidium a trifle shorter than broad.

2. *Tropideres vicens* spec. nov.

♀. Similitudo *T. signelli* Jord. (1912), rostro fortius carinato, antennis longioribus, vitta mediana pronoti haud constricta, carina ad angulum lateralem magis elevata.

Long. 7 mm.

Hab. Assam: Naga Hills, 5,000 ft., 10.iv.1924 (S. N. Chatterjee), 1 ♀.

Somewhat larger than *T. signellus* Jord. (1912), from Formosa, colouring almost the same, but on pronotum the median stripe of nearly even width throughout, the black lateral spots of the pronotum smaller, on elytra the black spot on subbasal swelling larger, the antemedian and median lateral spots separated from the dorsal band-like spot.

The three carina of the proboscis high, the median one extending to apical margin, the proboscis appearing curved in lateral aspect. Segment 9 of antenna as long as 3, longer than in *T. signellus* ♀, 10 a little longer than broad. The angle of the pronotal carina projecting laterad in a dorsal view. Third interspace of elytra less convex.

3. *Cedus valens* spec. nov.

♂. *C. guttulato* affinis, rostro a latere viso magis arcuato, fronte capitis latiore, antennarum segmento 2° longiore, pronoto et elytris multo fortius punctatis.

Long. 9 mm.

Hab. Assam: Jiri Forests, Cachar, 12.iv.1924 (S. N. Chatterjee), 1 ♂.

Spots of upperside ochraceous, slightly more numerous than in *C. guttulatus*

Motsch. (1874). Proboscis coarsely rugate, median carina high, bearing a minute median channel, from eye forward a deep curved groove, the dorsal margin of which is somewhat cariniform, but not sharp, between the groove and the median carina an indication of an irregular carina, no carina between the margin of the antennal groove and eye. Frons broader than the apex of segment 1 of the antennae, which are short. Segment 2 of antenna as long as in ♂ of *C. guttatus* Pasc. (1860), 10 short, less than twice as long as broad. Pronotum coarsely punctate, except apical margin, on each side 7 spots and in middle a row of 4, of which the one in front of scutellum is the largest. Elytra very coarsely punctate-striate to apex, the interspaces convex, subbasal swelling well marked, but not tuberculiform. Prosternum and sides of metasternum strongly punctate, process of mesosternum truncate, with the angles distinctly projecting, but rounded off, abdomen punctulate, flattened medianly. A median ring on tibiae and the apical two-thirds of first tarsal segment grey.

4. *Zygaenodes triangularis* spec. nov.

♀. *Z. horni* Jord. (1901) similis, oculis a fronte visis sessilibus, occipite brunneo-biplagiato cum fronte modice convexo, antennarum clava brevi sat compacta, segmento 11° nono parum longiore, pronoto duabus maculis dorsalibus brunneis obliquis pone carinam contiguas notato, elytris macula magna suturali atro-brunnea mediana antice acuminata postice truncata triangulari, tuberculo subbasali eodem colore atque macula basali suprahumerali postice gradatim obsoleta grisea ornatis.

Long. 3.3 mm.

Hab. N.W. India: Dehra Dun, 20.ix.1924 (Dr. C. F. C. Beeson), 1 ♀, ex *Pinus longifolia*.

Occiput and frons gradually convex together; frons and proboscis uneven, dull grey, mottled with brown. Eye circular, with very small sinus, with just a trace of a pedestal if seen from front, the pedestal distinct but very low if viewed from behind. Antenna pale rufous at base, segment 3 a little longer than club, 9 slightly shorter than 8, 10 as broad as long, 11 ovate, longer than 9. On pronotum two curved oblique spots from base across carina, and between them a subcentral rounded patch, brown, ill-defined, sides mottled with brown, derm at apex rufescent; carina medianly more incurved than in *Z. horni*. Scutellum luteous grey, not white. Elytra less depressed along suture than in *Z. horni*, more uniformly but not densely pubescent grey, with a black dot here and there, the grey pubescence sparser at the sides than above, between black subbasal crest and shoulder a luteous grey patch which posteriorly fades away, the black triangle rather well defined, extending posteriorly a little beyond line 3 of punctures and forward almost in between the subbasal swellings. Pygidium and underside with faint traces of brown markings. Tibiae without brown median spot, but extreme tips dark brown like segments 2 to 4 and apex of 1 of tarsi.

5. *Xylinades beelsoni* spec. nov.

♀. *X. joveati* vicinus, brunneo-niger, griseo-albo-pubescent, nigro-maculatus, supra a capite post elytrorum medium fascia mediana ante elytrorum medium constricta brunneo-nigra ornatus.

Long. 8 mm.

Hab. Madras : Nedungayam, Nilambur, 22.vii.1924, ex *Pterocarpus marsupium*, 2 ♀♀.

Quite different in colouring from all other known species, a dense greyish-white pubescence covering the head and proboscis (excepting a large triangular patch on occiput), the sides of the pronotum and elytra and a large portion of the underside ; on the elytra the greyish-white area widens before middle to second stripe of punctures extends across the suture before apical declivity, encloses an elongate brown-black median limbal spot and is sparsely dotted with black, the longer scale-hairs in the white area are yellowish and seriated on the elytra, the dark portion of the elytra with some diffuse yellowish-grey spots. On pronotum a thin, interrupted, ochraceous median line, and the greyish-white of the sides in the shape of a somewhat diffuse stripe which is narrowest anteriorly. In structure near *X. forcatus* Jord. (1895) ; antenna shorter, prothorax less rounded, with the grooves smaller, punctures of elytra likewise smaller, pubescence of tibiae as coarse as that of elytra, much finer on upperside of femora and on tarsi, but the hairs not quite so slender on first tarsal segment as on the other segments, the tibiae being greyish white from near base to or beyond middle like the sides of the elytra.

In type the pronotum a little more rounded than in paratype.

ANTHRIBIDAE FROM THE EASTERN HEMISPHERE.

BY DR. KARL JORDAN.

1. *Tophoderes atylus* spec. nov.

♂♀. *T. verrucosus* colore similis, major, processu mesosternali convexo.

Long. (cap. excl.) 10·5 to 13 mm.

Hab. Madagascar: Vohemar, 3 ♂♂, 2 ♀♀, received from Mons. E. le Mout.

More compact than *T. verrucosus* Oliv. (1795), in appearance not unlike small specimens of *T. ferrugatus* Klug (1833), but easily distinguished by the mesosternal process not being concave, with the angles tuberculiform, but apically convex transversely, with the angles non-projecting. Pubescence of upperside ferruginous brown, slightly mixed with grey, elytra somewhat indistinctly tessellated with black, behind middle of interspaces 3, 4, and 5 a grey spot, pronotum with indistinct black markings.

Proboscis rather coarsely punctate, with a rather feeble median carina, apical margin sinuate in middle. Eye elliptical, subtruncate anteriorly. Antenna reaching in ♂ beyond, in ♀ to base of elytra: in ♂ segment 3 a little longer than 4, 5 to 8 a little shorter than 4, 8 imperceptibly longer than 9, 7 and 8 flattened beneath, 8 beneath with long hairs nearly as 9, 10 as long as broad, 11 almost circular; in ♀ 3 to 10 shorter than in ♂. Frons punctate. Pronotum convex, just a trace of a tubercle in middle, dorsal carina nearly straight, slightly flexuose, lateral angle of carina obtuse and rounded off, no lateral tubercle, but the carina a little more elevate behind middle. Elytra without tubercles and pustules, the pubescence here and there slightly raised in the alternate interspaces.

Underside of proboscis coarsely punctate; prosternum with the exception of a posterior lateral area punctate; metasternum anteriorly at sides likewise punctate. Pubescence of underside nearly as above, but with much more black. Femora at base, in middle and near apex, tibiae at base and in middle, tarsal segments at extreme base brown-black.

2. *Tophoderes ferranti* spec. nov.

♂. *Praecedenti* similis, minus compactus, rostro tricarinato, antennis multo longioribus, pronoto griseo variegato, elytris macula magna postmediana grisea notatis.

Long. (cap. excl.) 10·5–13 mm.

Hab. Madagascar; 2 ♂♂ in Mus. Luxembourg (incl. of type), 1 ♂ in Mus. Tring.

Less broad in proportion to length than *T. atylus* spec. nov. Proboscis longer, a well-developed median carina accompanied by a groove, which is laterally bounded by a feebler carina. Punctures of frons minute. Antenna reaching beyond pygidium in larger ♂♂, beyond middle of elytra in smaller ♂, 11 longer than broad, 8 much longer than 9, 6 to 8 not flattened, on underside with apical tuft of short tawny hairs, 8 without long hairs. Pronotum centrally somewhat flattened, with a slightly raised median tubercle, which is black,

posteriorly edged with grey, at each side of depression a grey diffuse patch, in front of and behind which there is a grey dot; carina as in the preceding species, except that the angle is less obtuse and that the lateral carina viewed from above runs in an even curve to apex, not being subangulate behind middle. Elytra with distinct tufts in the alternate interspaces, pubescence of central and apical areas shorter than in basal area, behind middle a grey patch nearly as in *T. ferrugatus* Klug (1833).

Puncturation of underside less distinct than in *T. atylus*; underside of body black, sides of metasternite, and on abdomen a lateral row of 5 spots and a sublateral row of 3 ferruginous mixed with grey. Legs annulated as in the previous species; underside of tarsi golden.

Named in honour of my colleague Victor Ferrant, curator in the Museum at Luxembourg.

STIBODERES gen. nov.

♂♀. A genere *Xylinades* dicto differt pronoto fossa dorsali ferro-equino subsimili instructo.

Genotypus: a species identified as *S. chevrolati* Rits. (1883) (described as *Xylinades*). Here also belongs *S. impressus* Jord. (1895).

3. *Stiboderes cavifer* spec. nov.

♂♀. Angulis posterioribus fossae pronoti rotundatis.

Hab. Java: Malang, *type*. Sumatra. Borneo. A series.

The greyish ochraceous pubescence of the upperside more extended than in *S. chevrolati* Rits. (1883). Sides of pronotum more rounded, the dorsal groove smaller, its lateral angles not projecting side- and backwards, but rounded off, and the longitudinal portion of the groove oblique and very much shorter than the transverse part of it. Elytra much less strongly punctate, likewise the abdomen. In most specimens a black median spot on some or all tibiae.

4. *Stiboderes subtilis* spec. nov.

♂♀. *S. chevrolati* similis, antennis multo tenuioribus, metasterno abdomineque multo subtilius punctatis.

Hab. Borneo: Pontianak, 2 ♂♂, 1 ♀.

Antenna decidedly slenderer than in *S. chevrolati*, in ♂ segments 3 to 5 of equal length, 6 a little shorter and at the apex slightly wider than 5, 9 broader than 10, in ♀ 4 perceptibly longer than 3, 5 to 7 shorter, club four times as long as broad. Pronotum a little more strongly rounded, the groove as in *S. chevrolati*, but the forward portions of it shorter and less curved. Elytra as strongly punctate as in *S. chevrolati*. Punctures at side of metasternum smaller than those on metepisternum. Abdomen practically impunctate, whereas in *S. chevrolati* at least sternite 4 is coarsely punctate at the sides.

TAPHRODES gen. nov.

♂♀. Pronoto fossa longitudinali laterali infra carinam sita instructo, oculis integris.

Genotypus: a species identified as *S. marmoratus* Roel. (1880) (described as *Xylinades*).

Here also belongs *S. granulatus* Jord. (1895).

This genus and the preceding one comprise each a natural group of species which it is advisable to separate from *Xylinades*.

5. *Taphrodes monilis* spec. nov.

♂♀. *T. marmoratus* similis, pronoto multo fortius tuberculato-rugato, carina dorsali gradatim arcuata, metepisterno sulcato.

Hab. Sumatra: Palembang, *type*; Bedagei, Singapore. Perak, North Borneo. A series.

Dorsal carina of pronotum curved from side to side, interrupted in middle and reaching close to or joining the lateral carina; disc with numerous glossy tubercles and ridges, at sides of disc two rows of tubercles along shallow longitudinal grooves, black patches more or less diffuse, median one small. Granulation of elytra stronger than in *T. marmoratus*, in first and second rows of punctures the granules distinct to beyond middle of elytra, black markings variable. Subbasal transverse groove of metasternum sharply defined throughout, not interrupted at side. The punctures of the metepisternum are so joined together as to form a longitudinal groove.

6. *Taphrodes pellax* spec. nov.

♂♀. *Præcedenti* similis, capitis carina mediana longiore, antennis tenuioribus, clava longiore, pedibus brunneo-guttulatis.

Hab. Sumatra: Palembang, *type*, 1 ♂. North Borneo (Wahnes, Waterstradt), 1 ♂, 2 ♀♀.

Segment 9 of antenna longer than broad, all the segments slenderer than in *T. marmoratus* and *T. monilis*, less rounded-dilated, in type (a large ♂) as long as the proboscis is broad between the antennal grooves, and 4 to 7 each slightly longer than 3; in second ♂ the antenna shorter. Median carina of head nearly as long as its distance from the eye. Pronotum in anterior half less rounded-dilated than in the previous forms, dorsal carina evenly curved, dark markings diffuse. Elytra as strongly punctate-striate as in *T. monilis*, but the granules confined to the basal half, or at least the granules of rows 1 and 2 inconspicuous in and behind middle. Femora and tibiae dotted with brown.

7. *Taphrodes ornatus* spec. nov.

♂. *Pube russa* tectus, elytris nonnullis maculis bene expressis luteis vel luteo-ochraceis ornatis, vitta concolore utrinque ab apice rostri trans caput et pronotum ad humerum continuata. Carina pronoti dorsalis gradatim arcuata.

Long. 12 mm.

Hab. Borneo: Penrissen, v. 1899, 1 ♂, *type*, a second specimen in the Sarawak Museum.

Recalls *Xylinades whiteheadi* Jord. (1898). Median carina of head short, anteriorly terminating abruptly. Antenna essentially as in *T. marmoratus*. From apex of rostrum to base of elytra above shoulder a dorso-lateral luteo-ochraceous stripe. Pronotum but slightly wider before middle than behind it, disc irregularly tuberculate, dorsal carina evenly concave, interrupted in middle and not reaching lateral carina, length of prothorax 3.5 mm., breadth 3.0 mm.

Luteous spots of elytra sharply defined: besides the shoulder stripe a thin marginal line below shoulder, a sutural stripe from scutellum to an antemedium cluster of eight small spots (four on each elytrum) arranged in a transverse triangle the apex of which is directed backwards, before apical declivity an oblique row of spots in interspaces 1 to 4, the spot in 4 the longest, a short marginal line at apex, not reaching sutural angle, in front of this spot a vestige of another, at apical fourth a marginal linear spot and in middle of margin a subtriangular one; rows 1 to 3 with distinct granules to beyond middle. Middle of pro- and mesosterna inclusive of coxae, the transverse groove of metasternum and the sublateral area of abdomen ochraceous; femora partly of the same colour, tibiae darker, unicolorous; subbasal groove of metasternum laterally interrupted.

8. *Xylinades limbalis* spec. nov.

♂♀. *X. sulcifronti* Jord. (1895), similis. Frons capitis medio sulcata. Clava elongata. Elytra macula magna atra mediana laterali notata, sine macula atra dorsali postmediana. Fossae pronoti minores quam fossae *X. sulcifrontis*.

Hab. Borneo: Kina Balu, type; Kuching, xi. xiii; Pengaron, Martapoera, ex coll. van de Poll, a small series.

Pubescent luteous grey, elytra dotted with black and the dorsal interspaces bearing each a line of raised cinnamon-brown pubescence, which gives the elytra the appearance of being subcarinate; alternate interspaces broader and more elevate, granules conspicuous dorsally from base to apical declivity; in middle of basal margin a spot, on suture near apex another larger, but less well defined, tip of suture and a diffuse, smallish subapical marginal spot black like the large, well-defined, lateral median spot; these markings stand well out on the pale ground. Sides of abdomen with dispersed coarse punctures and a row of black spots, a submedian row indicated in type. Tibiae usually with a brown spot in middle and smaller ones near base and at apex, pubescence coarse like that of elytra, also on upperside of first segment of tarsi and in groove of second.

9. *Xylinades furus* spec. nov.

♂♀. *Pracedentis* vicinus, pronoto minus rotundato, carina ad angulum lateralem non interrupta, elytrorum granulis minoribus, interspatiis striarum melius terminatis, sine lineis e squamulis suberectis compositis, duabus maculis lateralibus et tertia dorsali postmediana atris.

Hab. Dutch Borneo: Pontianak, a series of both sexes.

In some specimens there is an indication of a median carina on the frons. The dorsal interspaces of the elytra appear flat owing to the smaller size of the tubercles and the shorter pubescence; the pattern of the elytra is of the more usual *X. nodicornis* type, the postmedian black patch being present; this patch as well as the two lateral ones are variable in extent, being often connected with each other. The punctures on abdominal segments 1 to 4 are very small as compared with those of *X. limbalis*. The tibiae are distinctly grooved at the base on upperside and bear a minute brown median spot or are unicolorous, apart from the denuded extreme tip. The antennae have no long hairs on the underside in any of the 14 ♂♂ before me.

10. *Gulamentus lujai* spec. nov.

♂♀. Brevis, supra brunneo-niger; rostro albo; antennarum segmento 11° duobus praecedentibus simul sumptis longitudine subaequali; pronoto macula magna laterali basali alba, carina laterali ad marginem apicalem usque distincta; elytris litura ×-alba basali atque macula transversa communi antapicali alba notatis; pygidio (♂) albo, semicirculari, (♀) longiore, truncato-emarginato, lateribus brunneis, apice nigricante; subtus albus, tibiarum apice extremo atque totis tarsis nigris.

Long. (cap. excl.) 5-6 mm.

Hab. Congo: Kondué (E. Lujá), a small series in Mus. Luxembourg (incl. of type), and at Tring.

Space between eye and antennal groove about as wide as the first antennal segment is long. Frons somewhat rugulose longitudinally. End-segment of antenna broader than 9 and 10, but only a little longer than these two together. The large white lateral patch on the pronotum usually bears two small brown spots. Scutellum broad, either brown, or the sides very narrowly white. The white × at the base of the elytra is frequently interrupted on each elytrum, at base it extends to near shoulder as a thin marginal line; the spot placed before apex usually curved, being concave in front, sometimes separated into two spots, one on each elytrum, frequently one or two white dots at sides. On metepisternum a brown spot. Tibiae compressed, broader in ♂ than in ♀. First tarsal segment about as long as 2 to 4 together. Anal sternite of ♂ with broad shallow depression, which is not sharply defined.

11. *Rhaphitropis oblongus* spec. nov.

♂. Subcylindricus, elytris parum deplanatis, nigro-brunneus, antennis pedibusque rufis, clava nigrescente, corpore subtus et capite (occipitis area brunnea mediana excepta) et pygidio griseo-albis parum lutescentibus, pronoto et elytris fortiter eadem pubescentia variegatis.

Antenna corpore longior, segmentum 2. latitudine dimidio longius, 3. longius quam 1. et 2. simul sumpta, atque paululo longius quam 4., sed singulis 5°-8° brevius, clava latior quam funiculus, infra pilosa, 9. parum brevior quam 8., fere duplo longior quam 10. Carina dorsali pronoti late concava. Elytra dorso densius griseo-variegata quam ad latera. Pygidium subtilissime coriaceum. Femur intermedium maris simplex.

Long. 3 mm.

Hab. Philippines: S. Miguel, S.E. Luzon, 1 ♂.

A little over twice as long as broad. Pronotum for the greater part black-brown marked with white: in middle a spot before scutellum extending well beyond carina to near centre, and a small spot before centre, at sides a large apical spot connected with an elongate patch which runs from base across angle of carina forward; surface sculpture of disc minutely coriaceous, sides more distinctly granulate: carina gradually concave as in *Rh. convexipennis* Jord. (1895); the angle between basal longitudinal carinula and dorsal carina acute. Scutellum white. Elytra with basal margins concave, from suture to shoulder white variegated with brown, sides brown variegated with white, this brown area posteriorly extending to near suture, apical margin broadly white, narrowing laterally. Frons less than one-third as broad as proboscis.

12. *Rhaphitropis limbalis* spec. nov.

♂. Rufo-brunneus, griseo-pubescent, pronoto indistincte brunneo-vittato, elytris lateribus brunneis griseo-albo variegatis, antennarum basi pedibusque pallide rufis.

Rostrum sat longum, longitudine quarta parte latius. Oculus subtus nonnihil emarginatus. Antenna longa, trans medium elytrorum extensa, segmento tertio 1° et 2° simul sumptis longiore, 3^{to}–6° fere aequilongis, 8° parum brevior, clava angusta, longa, lineari, 9° longitudine tertii, dimidio longiore quam 10°. Pronotum longitudine quarta parte latius, carina dorsali levissime concava, ad latera gradatim antrorsum flexa. Elytra basi truncata. Femur medium (♂) simplex.

Long. 3.4 mm.

Hab. N. Celebes : Toli-Toli, xi, xii. 1895 (H. Fruhstorfer), 1 ♂.

The rufous-brown colour showing through the grey pubescence; centre of occiput brown, on pronotum indications of four brown stripes or elongate spots which extend from base forward to about middle; the dark brown lateral area of elytrum reaches from shoulder to apical fourth and dorsally to fourth line of punctures, and encloses a grey patch with brown centre, the margin of wing remaining grey, in third and fifth interspaces pale brown dots. Eye a little longer transversely than wide vertically, broadest in frontal half. Frons more than one-third the width of the proboscis. Pronotum as broad as elytra, dorsal carina moderately concave, laterally flexed forward in a much flatter curve than is usual in this genus, the lateral carina reaching to meral suture; angle between longitudinal basal carinula and dorsal carina acute. Base of elytra truncate, not concave.

13. *Rhaphitropis placidus* spec. nov.

♂. *C. convexipennis* similis, oculo longiore, carina pronotali minus concava, atque colore distinguendus.

Long. 2.7 mm.

Hab. Perak (W. Doherty), 1 ♂.

Rufous brown, antenna and legs paler. Head and rostrum grey, without large brown patch on occiput, frons and base of rostrum rather less convex than in *Rh. convexipennis*. Antenna reaching to middle of elytra, segment 3 longer than 1 + 2 and than 8, club slender, 9 = 3, 10 = 8. Pronotal carina as feebly concave as in *Rh. vittatus* Jord. (1925); from base to beyond centre a large brown median patch, divided by a grey median line which is dilated before the scutellum, the double patch reappearing at apex, diffuse, at sides an indication of a brown patch or stripe. Base of elytra truncate; alternate interspaces grey, scutellum and basal fourth of suture likewise grey, this broadish stripe widening in ante-median depression, in middle a brown transverse band, widest at suture, irregular, behind it a similar grey band, interrupted at suture, narrowing laterally, connected at suture with a transverse, curved, apical grey patch which tapers laterally, between these two grey markings a large brown patch on apical declivity. Pygidium grey. Midfemur (♂) simple.

Differs from *Rh. vittatus* in the frons being much less convex, not projecting above the level of the eye, and in the markings.

14. *Rhaphitropis indicus* spec. nov.

♀. *Rh. convexipenni* similis, nigro-brunneus; antennarum segmento primo pallido, capite minus convexo, earina dorsali pronoti medio fortius concava, singulo elytro basi paululo concavo; pubescentia grisea fere ut in *Rh. convexipenni* disposita.

Long. 3.4 mm.

Hab. N.W. India: Kulu, 1 ♀.

Darker brown than *Rh. convexipennis*, especially the antenna and legs. Frons less strongly convex than the eyes, distinctly rugulose; apical margin of proboscis straighter than in *Rh. convexipennis*; antenna almost black, segment 1 pale rufous, 3 longer than 1 + 2 and than 4, this a little longer than 5, 5 to 7 even in length, 8 shorter, club broader than in *Rh. convexipennis*, 9 twice 8, 10 one-half longer than 8; middle of occiput brown. Pronotum distinctly granulate all over, markings grey: a broadish stripe from scutellum beyond centre, nearer side than middle a narrow grey stripe anteriorly joining a large apical patch on its outer side and posteriorly a basal patch on its dorsal side, before earina on dorsal side of this line a small spot; earina more strongly curved in centre than in *Rh. convexipennis*, recalling *Rh. gracilis* Jord (1925). Scutellum and anterior third of suture grey, punctate stripes of elytra rather deep, interspaces 3, 5, and 7 spotted with grey, a basal spot above shoulder and a triangular, transverse, subapical spot on each elytrum also grey, interspace 9 with at least one spot, all these markings rather diffuse and partly confluent. Pygidium brownish black, with few grey hairs, coarsely rugate-granulate.

15. *Rhaphitropis capucinus* spec. nov.

♂♀. Nigro-brunneus, griseo notatus, antennarum basi pedibusque pallidis. Occiput antice et intra oculos subito elevatum, hac area elevata subtriangularis supra parum convexa pileolo similis. Antennae longae (♂), trans elytrorum medium tendentes, segmentis 3^{io}-7^o fere aequilongis, 8^o brevior, in ♀ medium elytrum non attingentes, 3^{io} quarto parum longiore. Carina dorsalis pronoti fere recta. Elytra basi truncata. Femur medium intus concavum, subtus in carinam altam elevatum.

Long. 3 mm.

Hab. Perak (W. Doherty), 1 ♂, type; North Borneo, 1 ♀.

The raised occiput is in the plane of the pronotum and projects much above the eyes and frons, the outline of this raised platform is triangular, but the anterior angle is rounded and slightly indented, the sides of the platform being more or less vertical, not gradually slanting. Markings of upper surface grey: sides and a median spot on occiput, on pronotum a median stripe, widened before centre (cruciform) and before scutellum, laterally two stripes from earina forward, the dorsal one interrupted or constricted, the outer one anteriorly joined to the grey underside; scutellum greyish white; on elytra a stripe from scutellum to antemedian depression, the suture remaining brown, in the depression 3 short stripes, more or less merged together, and outwardly extended to base above shoulders behind middle a sort of transverse band composed of short streaks in interspaces 3, 5, and 7 and of a long streak on suture, before apex a narrow transverse spot on each elytrum, two elongate spots behind shoulder, otherwise the sides nearly entirely brown. Pygidium margined with grey.

The carina on underside of midfemur of ♂ abrupt on distal side, rising more gradually on proximal side.

16. *Rhaphitropis gibba* spec. nov.

♂. Brunneus, supra griseo et brunneo variegatus, elytris ad scutellum elevatis ubi macula nigro-brunnea notatis. Frons capitis lata. Oculus rotundatus infra subsinuatus.

Long. 2.8 mm., lat. 1.4 mm.

Hab. Philippines: Cathalogan, Samar, 1 ♂.

Easily recognised by the base of the elytra being strongly convex at the scutellum and here blackish. Eye nearly as in *Ormiscus*, little longer than broad, distinctly incurved towards antenna, placed nearer the antennal groove than is usual in this genus, the distance being somewhat shorter than antennal segment 2. Antenna reaching to near middle of elytra, segment 3 longer than 1 and 2 together, half as long again as 4, twice as long as 8, club loose, 9 triangular, very little longer than 8, not quite thrice as long as broad, 10 somewhat shorter (11 missing). Head and rostrum pubescent grey. Pronotum: a median stripe, very broad behind carina, extending forward to middle, thence indistinct, at each side of it a grey central spot, rather large and joined to the grey lateral area, which is slightly variegated with brown, in front of carina at each side of grey median stripe a brown patch, another behind carina, but further lateral, larger and more diffuse, apical area brown, projecting backwards between and at the outer sides of the two grey dorsal spots; carina essentially as in the two preceding species. Scutellum black. Base of elytra elevate around scutellum; this hump not tuberculiform, but strongly convex, gradually fading away, above shoulder a distinct depression; basal margin of elytra concave, lateral and apical margins broadly black, this border narrower at shoulder, rest of elytra rufous; the grey pubescence forms short stripes and spots, which are diffuse and at base and behind middle more or less confluent (the pubescence is not well preserved in the only specimen we have). Underside blackish, covered with grey pubescence. No tooth at apices of tibiae.

17. *Rhaphitropis cor* spec. nov.

♀. Nigro-brunneus, ex parte rufescens, supra griseo variegatus, subtus griseus, scutello luteo-albo, elytris macula velutina atra circumscutellari ornatis. Oculus rotundatus, subsinuatus, serobi approximatus. Antennarum segmentum 3^{um} secundo longius, 10^{um} fere quadratum. Frons lata. Pronotum crebre ruguloso-granulatum. Margo basalis utriusque elytri convexus. Pygidium latum, rotundatum.

Long. 3 mm.

Hab. South India: Nilgiri Hills (H. I. Andrewes), 1 ♀.

Subcylindrical, elytra not flattened. Frons feebly convex, nearly half as broad as the rostrum; head and rostrum rugulose. Eye longer than broad, but strongly rounded, with small but distinct sinus; distance between eye and antennal groove about two-thirds the length of segment 2 of antenna. Pubescence of head and rostrum grey, not dense. Antenna brown, reaching beyond base of elytra, segment 1 and bases of 2 to 9 pale rufous, 3 shorter than 1 and 2 together, half as long again as 4, not quite twice as long as 8, 9 triangular, as long as 4,

10 almost square, 11 ovate, one-third longer than broad, one-fifth shorter than 9. Pronotum densely rugulate-granulate, behind carina a broad median patch and half-way to side a smaller one, from carina forward a diffuse median stripe, behind apical margin half-way to side a spot, and diffuse pubescence on disc grey, a brown patch in front of carina at each side of median stripe rather well defined; carina quite gradually and not deeply concave, convex half-way to angle.

Scutellum luteous grey, convex, conspicuous, being surrounded by a black sutural patch. Elytra granulose, punctate-striate, grey, diffusely mottled with brown, sides darker than dorsum; subbasal swelling indicated, there being a slight depression behind it and at its outer side; basal margin of each elytrum curved forward, as in *Rh. marchicus*. Pygidium almost semicircular.

18. *Rhaphitropis stevensi* spec. nov.

♀. *Rh. vittato* Jord. (1925) colore similis, capite multo minus convexo, carina dorsali basi magis approximata, elytris fortius striatis.

Long. 3 mm.

Hab. Nepal-Sikhim frontier: Gopaldhara, 3,440 ft. and 4,920 ft., vi. 1918 (H. Stevens), 2 ♀♀.

Brown, antenna, tibiae and tarsi pale rufous. Pubescence of proboscis and underside grey, of head and the markings on pronotum and elytra yellowish grey. Frons rather strongly convex, but not so much bulging as in *Rh. vittatus*, very little less than half as broad as the proboscis. Antenna reaching well beyond base of elytrum, segment 3 half as long again as 4, as long as 1 and 2 together, club slender, only slightly flattened, 9 very little shorter than 3, conical, twice as long as 8, 10 as long as 11, a little shorter than 9. Eye transverse, straight below, not incurved, distance from antennal groove not quite as long as segment 3 of antenna.

Pronotum coriaceous, with three luteous grey vittae, not sharply defined, one central, not quite reaching apical margin, widened at carina; the others dorso-lateral, joined anteriorly and posteriorly to the grey underside; and constricted or (type) interrupted before middle; dorsal carina parallel with basal margins of elytra, nearer base than in *Rh. vittatus*, very gradually and rather feebly curved backwards in middle, its lateral angle 90°, with the tip rounded off, the carina continued as a faint raised line which runs obliquely upward; longitudinal basal carinula forming an angle of 90°, with the dorsal carina. Scutellum luteous grey, conspicuous. Elytra deeply punctate-striate to apex, with faint subbasal swelling; base of suture and interspaces 3, 5, 7, and 9 luteous grey, the stripes several times interrupted, that of 3 not reaching base; basal margin slightly curved forward.

19. *Rhaphitropis tamilis* spec. nov.

♂. *Rh. stevensi* sp.n. colore similis, capite minus convexo, oculis multo magis approximatis (♂), antennae articulo 3^o quarto vix longiore, pronoto fortius rugato-coriaceo, carina dorsali medio subangulata, margine basali elytri magis rotundato.

Long. 2.4-3 mm.

Hab. Ceylon, 1 ♂ ex coll. Faust, type, and 1 ♀ from Kandy, vii. 1908 (G. E. Bryant).

Proboscis grey, one-half broader than long. Frons grey, one-sixth the width of the proboscis in ♂, one-fourth in ♀; occiput brown, a narrow border of the eyes grey. Antenna reaching to near middle of elytrum, pale rufous, segment 3 shorter than 1 + 2, very little longer than 4, club slender, 9 half as long again as 8, 10 somewhat shorter.

Pronotum with three grey vittae: median one narrow from carina to middle, here rounded-widened, broad behind carina, dorso-lateral stripe broad, interrupted or constricted before middle, connected with grey underside at apex and at carina; middle of disc more finely coriaceous than sides; dorsal carina farther from base than in *Rh. stevensi*, more broadly convex each side and more incurved in centre, its lateral angle more broadly rounded; the basal longitudinal carinula forming an acute angle with the dorsal carina. Markings of elytra nearly as in *Rh. stevensi*, but the suture more or less grey to apex, the spots in the other interspaces shorter and broader, the apex with a grey transverse border which extends a little in front of the apical depression. Tibiae and tarsi pale rufous. In ♂ the ventral abdominal segments each with a small median groove, in ♀ the apical margin of the anal sternite projecting downward.

20. *Rhaphitropis asterias* spec. nov.

♂. Brunneus, supra griseo maculatus, infra griseus lateribus diffusim brunneo maculatis. Oculi magni, transversi, subcontigui. Antennarum segmentum 3^{um} longitudine secundi, 9^{um} et 10^{um} triangularia, 11^{um} ovatum. Tibia antica dente parvo apicali armata.

Long. 2.9 mm.

Hab. Woodlark I., iii, iv. 1897 (A. S. Meek), 1 ♂.

Frons (and probably rostrum, which is denuded) grey, this pubescence extending along eyes as a narrow border and centrally projecting a little on to occiput. On pronotum a nearly square spot before scutellum, continued as a narrowing stripe to centre of disc, ending in between two largish rounded spots, at each side of disc a small spot a little nearer lateral angle than middle and placed well in front of carina, further lateral another spot, larger and antemedian, at apex a transverse spot joined to the grey underside, all these markings grey. Scutellum and suture grey, the latter brown at apex and in antemedian depression, interspace 3 spotted from behind base to apex, 5 from shoulder to apical declivity, 7 behind shoulder and before apical declivity, 9 with a small median spot.

Frons a little narrower than segment 2 of antenna is long. Eye much longer than broad, incurved below. Antenna reaching base of elytra, rather short, segment 3 very little longer than 4, half as long again as 8, club loose, 9 triangular, one-half longer than broad, a little longer than 3, 10 shorter than 9, also triangular, about one-fourth longer than broad, 11 very slightly shorter than 9. Pronotal carina evenly concave in middle, not angulate, somewhat convex towards sides, laterally flexed forward a very short distance. Elytra strongly punctate-striate, slightly depressed transversely before middle.

21. *Rhaphitropis stephanus* spec. nov.

♂. Speciei praecedenti similis, latior, oculis minoribus, fronte capitis latiore. Long. 3 mm.

Hab. New Guinea: Stephansort (Kunzmann, 1894), 1 ♂ ex coll. van de Poll.

Frons about one-third as broad as rostrum. Occiput somewhat impressed along middle. Segment 10 of antenna a little shorter than in *Rh. asterias* and 11 a little longer. The tooth at the apex of foretibia strong.

ATINELLIA gen. nov.

♀. Generi *Rhaphitropis* dicto similis; oculo laterali, rostro apice parum emarginato, pronoto sine carinula basali longitudinali laterali, sed carinula brevi transversa laterali instructo, margine basali elytrorum fortiter antrorsum producto.

Genotypus: *A. senex* spec. nov.

22. *Atinellia senex* spec. nov.

♀. Brunnea, supra sat sparsim griseo-pubescent. Frons capitis latissima, tertia parte angustior quam rostrum. Oculus rotundatus, paulo longior quam latus, infra levissime emarginatus, sat fortiter convexus. Antenna rufa, segmento 2° clavato, 3° octavo duplo longiore, clava fusca, sat brevi, 9° triangulari octavo longitudine aequali, 10° fere quadrato, 11° elliptico novo latiore. Pronotum fortiter granuloso-rugulosum, apice ad latera cum prosterno albo-griseo, macula basali mediana luteo-grisea, carina dorsali medio concava leviter angulata. Elytra convexa, granulosa, striato-punctata, margine antico fortiter antrorsum curvato haud incrassato. Pedes rufi. Corpus subtus albo-griseum, lateribus sternorum densius pubescentibus.

Long. 3.3 mm.

Hab. Ceylon: Kandy, vii. 1908 (G. E. Bryant), 1 ♀.

The grey pubescence of underside of the prothorax anteriorly continued upwards to behind eye. Third interspace of elytrum slightly spotted with grey and brown.

DISSOLEUCAS gen. nov.

♂♀. *Rhaphitropidi* similis, supra inaequalis, oculo sublaterali, fronte capitis parum planata, carina dorsali in medio non evidenter concava, carinula laterali longitudinali antice obsolescente postice dorsum versus arcuata, elytrorum basi intra humeros emarginata, tarsorum segmento 1° caeteris simul sumptis parum brevior.

Genotypus: *D. niveirostris* F. (1798) (as *Anthribus*).

23. *Uncifer exilis* spec. nov.

♀. Nigro-brunneus, tibiis tarsisque parum pallidioribus, subtus et ad pronoti latera et ad basin et suturam elytrorum diffuse griseus. Antenna brevis, elytrorum basin haud superans; segmentum 2. crassum, tertio longius, 6. brevius quam 5. et 7., 9. triangulare, latitudine dimidio longius, 10. transversum, 11. ovatum paululum longius quam latius. Oculus transversus, antice rectus, haud sinuatus, ad frontem capitis planatus, versus latera evidenter elevatus. Carina pronoti elytrorum margini basali approximata ad latera fere ad apicem continuata. Elytra granulosa, sat fortiter punctato-striata. Pygidium tam longum quam latum, granulose.

Long. 2.3 mm.

Hab. Perak (W. Doherty), 1 ♀ ex coll. van de Poll.

The grey pubescence at the sides of the pronotum and at the base and along the suture of the elytra is inconspicuous and diffuse. Proboscis two-thirds broader than long. Frons one-fifth as broad as proboscis. Segment 10 of antenna asymmetrical, more widened on the anterior side than on the posterior one. Eye distinctly elevate laterally, subcariniform. Pronotum granulose, the granules more or less fused together to form ridges; carina parallel with basal margin of elytra, subbasal, but basal at lateral angle, lateral carina distinct to near apex, straight. Elytra with a slight indication of a subbasal swelling.

24. *Uncifer cyphonides* spec. nov.

♂. Brunneus, rufescens, sat sparsim griseo pubescens, tibiis tarsisque rufis. Rostrum apice planum, basi constrictum. Oculi transversus, ad frontem planus, ad latus elevatus, compressus, cariniformis. Pronotum longitudine plus dimidio latius; carina in medio modice concava, versus latera convexa, basalis. Elytra convexa, latitudine quarta parte longiora, apicem versus gradatim angustiora, striato-punctata, granulosa. Pygidium rufescens, fere semicirculare. Segmentum anale ventrale breve, emarginatum.

Long. 2.5 mm.

Hab. North Borneo: Brunei, 1 ♂.

Elliptical, evenly convex, without markings. Proboscis twice as broad as long, straight at apex, appearing constricted at base on account of the expanded upper margins of the scrobes, the sides somewhat slanting from near constriction, base of proboscis and frons but slightly convex. Frons one-third as wide as proboscis. Eye slightly incurved, much raised laterally; distance from antennal groove shorter than segment 2 of antenna (4 to 11 missing, 1 and 2 pale rufous). Pronotum almost smooth, the surface structure being very indistinct; carina shallowly concave medianly, where it is distant from scutellum, towards sides almost appressed to margin of elytra, which is curved forward, lateral angle acute, tip rounded off, lateral carina distinct, running forward to middle as a straight raised line. Elytra without subbasal swelling. Pygidium slightly convex in middle. Anal ventral segment of even length throughout, emarginate from side to side.

25. *Uncifer diffinis* spec. nov.

♀. Brunneus, luteo-griseo pubescens. Frons capitis rostri trienti aequilata. Rostrum apice parum emarginatum. Oculi parum longior quam latior, infra subrectus. Antenna basi rufa, humerum paulo superans; segmentum 3. secundo brevius, quarto paululo et octavo dimidio longius, clava sat longa, segm. 9. conicum, tertio aequilongum, decimo trienti longius, 11. ellipticum, fere duplo longius quam latius. Pronotum conicum, granuloso-coriaceum, vitta mediana ante medium dilatata, in medio et ad apicem angustata, utrinque macula antemediana diffusa et altera minore postmediana, vitta sublateralis antice et postice cum pubescentia prosterni conjuncta; carina dorsalis fere ad basin sita, gradatim concava, versus latera convexa, angulo laterali acuto; carina lateralis paulo elevata trans medium continuata. Scutellum griseum. Elytra cylindrica, striato-punctata, granulosa, grisea, brunneo-marmorata, macula mediana suturali atque fascia anteapicali brunneis conspicuis. Pygidium granulose, fere semicirculare. Corpus infra griseum. Pedes rufi, tarsi apicem versus brunnescentibus.

Long. 3 mm.

Hab. Ceylon : Kandy, vi. 1908 (G. E. Bryant), 1 ♀.

Elytra more extended brown at the sides than dorsally, basal edge rounded, narrowly brown-black, suture narrowly brown from base to median macula, this macula connected with the sides by a narrow transverse brown band, a similar band further forward, both evidently inconstant, the band placed at the beginning of the apical declivity broader, subbasal swelling indicated, bearing a brown spot.

MALLORRHYNCHUS gen. nov.

♂♀. Brevis, ovatus, generi *Uncifer* dicto similis. Rostrum breve, dorso plus minus concavum, saepe villosum. Oculi dorsales, fere circulares, magni. Antennae breves, elytrorum basin non attingentes. Carinae dorsalis pronotalis angulus lateralis acutus elytrum tangens. Segmenta 2. et 3. tarsorum parum dilatata.

Genotypus : *M. hilaris* spec. nov.

Near *Uncifer*. The rostrum usually has on the upperside a large depression covered with fine silky hair, at the anterior margin of this groove some woolly hair which is directed backwards, the groove deeper in ♂ than in ♀. Pronotum with very shallow hexagonal or rounded impressions which form a net, but the interspaces between the meshes rather broad.

26. Mallorrhynchus hilaris spec. nov.

♂. Rufus, oculis elytrisque nigris. Rostrum lateribus griseo-pubescentibus, Frons capitis quartae parti rostri aequilata. Antennarum segmentum 3. secundo parum brevius, 3.-6. fere aequilongum, 7. et 8. breviora, 8. latius quam praecedentia, 9. triangulare, apice intus productum, 10. longitudine multo latius, 11. circulare, parum latius quam 10. Pronotum brunnescentibus, antice rufum, tribus vittis antice abbreviatis ac lateribus albo-griseis; carina antebasalis latera versus fortiter convexa, angulo laterali retrorsum productum. Elytra striato-punctata, macula basali suturali elongata, altera supra humerum sita subrotunda, fascia valde oblique a latere pone medium ad suturae angulum continuata albis. Metasternum fortiter convexum.

Long. 3.3 mm., lat. 1.9 mm.

Hab. Dutch New Guinea : Humboldt Bay, ix. x. 1893 (W. Doherty), 1 ♂.

Segments 9 and 10 of the antenna are both asymmetrical, their apices being more strongly produced distad on one side than on the other. Pronotum somewhat impressed centrally in front of the carina. Elytra with a slight antemedian depression across suture and a more distinct one behind basal margin above shoulder, the apical portion of the suture also being depressed; the oblique band narrow anteriorly and posteriorly and slightly curved, at base a vestige of a marginal spot, apical margin narrowly white. Pygidium almost semicircular. Knees and tips of tibiae narrowly brown. Mesosternal process vertical.

27. Mallorrhynchus assimilis spec. nov.

♀. Praecedentis statura et similitudo. Niger, albo-notatus. Caput cum rostro albo-pubescentibus. Frons capitis quarta parte rostri angustior. Antenna rufa, segmenta 8.-10. brunnescentibus, 3. quarto triente longius, 4.-6. aequilongum, 7. breve, clava quadriarticulata, 8. dilatatum, triangulare, tertio longius, latitudine

fere duplo longius, 9. et 10. octavo dimidio latiora atque paulo longiora, 11. sub-circulare, decimo brevius et angustius, pallidum. Pronotum sine vittis albis, ad marginem apicalem pubescentia alba prosterni dorsum versus continuata. Elytra macula elongata suturali basali, altera supra humerum brevior, fasciaque postmediana oblique a lateribus trans suturam completa, ad latera latiore albis signata. Infra albus, genubus et tibiis apicibus et tarsis nigro-brunneis.

Long. 2.8 mm., lat. 1.5 mm.

Hab. Dutch New Guinea: Humboldt Bay, ix. x. 1893 (W. Doherty), 1 ♀.

This species might be mistaken for the ♀ of the previous one, but the differences in the antennae seem to exclude the possibility that *M. assimilis* is the ♀ of *M. hilaris*. Moreover, the frons is narrower in *M. assimilis* than in *M. hilaris*, whereas it should be broader, if *M. assimilis* were the ♀ of the previous species.

Frons with a black mark. The impression of the proboscis very shallow, unfortunately so much denuded that we do not know as to whether it is as woolly as in *M. hilaris*. Dorsal carina of pronotum a little more deeply concave than in *M. hilaris*; elytra more convex, suture less depressed at apex; knees and apices of tibiae more broadly blackish brown (the rest of the tibiae rufous, covered with white pubescence), derm of tarsi the same dark colour except segments 3 and 4, which are rufous. Underside of body white. The proportional lengths of segments 7 to 11 of antenna are 3, 7, 8, 7, 5.

28. *Mallorrhynchus gravis* spec. nov.

♀. Nigro-brunneus, abdomine cum pygidio, antennis pedibusque pallide rufis. Caput cum rostro griseo-album, postice brunneum; frons sextae parti rostri aequilata. Segmentum 3. antennae quarto fere dimidio longius, secundo parum brevius, 4.-8. gradatim brevior, 8. latitudine parum longius, paululo latius quam 7., 9. triangulare tertio longius, 10. parum latius et brevius quam 9., 11. ovatum, apice truncatum, longius et latius quam 9. Pronotum vitta angustata interrupta mediana et maculis plus minus confluis lateralibus albo-griseis notatum. Elytra fortiter striato-punctata, diffuse griseo-albo irrorata, stria basali suturali cum scutello albo-grisea. Subtus griseo-albus.

Long. 3 mm., lat. 1.5 mm.

Hab. Philippines: Samar, vi., vii. 1896 (J. Whitehead), 1 ♀.

Rather more elongate than the two previous species. The diffuse markings of the pronotum consist of a narrow median stripe, interrupted in centre of disc and not nearly reaching to apex, in front of carina, nearer side than middle, a triangular patch more or less centred with brown, in front of this patch a smaller, rounded, more conspicuous spot, an antemedian subventral spot partly separated from the greyish white underside by a brown spot, in front of and behind carina additional greyish white pubescence. Carina dorso-laterally less convex than in the preceding species.

29. *Mallorrhynchus parvus* spec. nov.

♀. Minor, nigro-brunneus, antennis pedibus abdomine atque dorso elytrorum rufis. Caput cum rostro griseo-album; frons quarta parte rostri parum angustior; rostrum laud villosum, sine impressione mediana, apice cum labro rufo. Segmentum 2. antennae primo brevius, parum longius quam 3., 3.-6. subaequalia, 7. et

8. breviora, 8. omnium brevissimum, 9. triangulare, latitudine fere dimidio longius, apice emarginato, 10. tam longum quam latum, 11. ovatum, apice truncatum, nono longitudine aequale, parum pallidius, vix angustius. Pronotum lateribus et basi albo-griseum, vitta mediana antice et postice abbreviata atque macula parva antemediana dorso-laterali eodem colore, inconspicuis; earina dorsalis versus latera fortiter convexa, angulo laterali fortissime producto. Elytra paululo deplanata, fortiter punctato-striata, area dorsali communi rufa postice gradatim angustiore antice ad humeros extensa. Subtus cum pedibus griseo-albo pubescens.

Long. 2.5 mm.

Hab. Philippines: Imugan, Luzon, 1 ♀.

Elytra irregularly and diffusely marmorated with greyish white, a large lateral antemedian patch, a transverse anteapical band and a number of small spots brown without white pubescence, stripes and punctures deep, subbasal swelling indicated, dorsum somewhat flattened, apical declivity strongly convex except at suture, apex greyish white behind brown band, segment 3 of antenna a little shorter than 4.

30. *Mallorrhynchus bicolor* spec. nov.

♂. Pallide rufus, ovatus, elytris nigris griseo-sericeis. Rostrum impressum, villosum. Frons capitis angusta, sexta parte rostro paulo latior. Segmenta 3.-8. antennae gradatim breviora, 3. octavo fere duplo longius, 9. triangulare vel conicum, longitudine tertii, 10. parum brevius, 11. ellipticum, parum longius et latius quam 9. Pronotum immaculatum. Elytra pone basin ad apicem usque fere gradatim declivia, apice anguste rufescentia, punctato-striata, interspatiis antice leviter convexis, postice planis. Pygidium semicirculare. Metasternum brunneum.

Long. 2.7 mm., lat. 1.6 mm.

Hab. North Borneo: Mt. Marapok, 1 ♂ ex coll. van de Poll.

A short broad species without markings on pronotum and elytra. Carina parallel to base of elytra, dorso-laterally convex, but here not farther from true basal margin of pronotum than in centre.

31. *Mallorrhynchus laetus* spec. nov.

♂. *M. bicolori* simillimus, antennis brevioribus, clava latiore, fronte capitis minus angustata, elytris pube nigro-brunnea variegatis diversus.

Long. 2.7 mm., lat. 1.5 mm.

Hab. Perak (W. Doherty), 1 ♂.

Segment 3 of antenna shorter than 2, one-third longer than 4, 4 to 8 gradually shorter, 8 little longer than broad, slightly broader than 7, 9 as broad as long, 10 much broader than long, 9 and 10 more widened on inner side than on outer (=posterior), 11 almost circular, somewhat broader than 9 and 10, both 10 and 11 on a short stalk. Carina of pronotum parallel with base of elytra, slightly angulate in middle. Elytra silky grey, the pubescence not concealing the colour of the derm, a large lateral antemedian patch, a smaller lateral apical one and 4 or 5 dots in third interspace, 3 in fifth, a large spot behind basal margin at each side of suture, and part of shoulder covered with dark brown instead of white pubescence. Underside entirely rufous.

32. *Mallorrhynchus disertus* spec. nov.

♀. Nigro-brunneus, subtus cum capite et pronoti apice rufescens, antennis pedibusque pallide rufis. Frons capitis trienti rostri aequilata. Segmentum 3. antennae secundo parum brevius, quarto triente longius, 4.-6. fere aequilonga, 7. et 8. breviora, 8. dimidio tertii parum brevius, 9. triangulare, latitudine parum longius, apice truncatum, 10. tam longum quam latum, 11. circulare, duobus praecedentibus angustius. Pronotum immaculatum, lateribus extremis griseo-albis. Elytra pone medium transversim ad latera usque griseo-marmorata.

Long. 3 mm., lat. 1.6 mm.

Hab. Perak (W. Doherty), 1 ♀.

Similar to *M. bicolor*, but the pronotum and the derm of the underside brown. Scutellum and a short sutural stripe, some indistinct lines in basal half and a postmedian band, which extends from side to side and is composed of short lines connected with one another across the stripes of punctures, greyish white. Dorsal carina of pronotum almost straight in middle, here farther from extreme base than half-way to sides.

33. *Apolecta fasciata pardalina* subsp. nov.

♂♀. Spots of elytra black, well defined, those of anterior half more or less rounded, extending over several interspaces, the stripes of punctures traversing them bear little grey pubescence, some of the spots connected with one another transversely, spots in apical half nearly all joined, forming a very irregular network. Black lateral stripe of prosternum interrupted, sharply defined.

Hab. Philippines: Areroy, Masbate, 2 ♂♂, 1 ♀.

34. *Apolecta cleora* spec. nov.

♂. Nigra, cinnamomeo-pubescent, nigro-maculata: pronoto vitta mediana lata biconstricta trans caput continuata ubi gradatim angustiore, duabus maculis parvis lateralibus; elytro tribus maculis dorsalibus rotundis, sex lateralibus minoribus atque tribus suturalibus; tarsis nigris; segmento primo abdominis duobus tuberculis (♂) notato.

Long. 8 mm.

Hab. Philippines: Mt. Bauahão, Luzon, 1 ♂.

Pronotum smooth, as in *A. fasciata* and *A. maculata* Jord. (1895). The antebasal carina of the pronotum, though curved back in middle, does not join the subbasal ridge or swelling. The thin lateral carinae of the frons do not join the median carina, but are connected with it between the antennae by a transverse swelling. Black median stripe of pronotum but slightly narrower in front than behind, its sides incurved twice in anterior half. Scutellum black. Spots of elytra very sharply defined, the three dorsal ones the largest, one of them placed behind base, the second close to middle, the third behind middle, the last two extending across four interspaces, a smaller spot on shoulder-angle, another behind it and four along lateral margins, all more or less rounded, near them a few blackish dots, at suture a small line before and behind middle and a round spot near apex; elytra somewhat flattened before middle, but almost gradually slanting from middle to apex.

On underside an interrupted lateral stripe on prosternum, a vestige of a spot on metasternum, and a row of vestigial lateral spots on abdomen black.



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CONTENTS OF NO. III.

	PAGES
1. TYPES OF BIRDS IN THE TRING MUSEUM <i>Ernst Hartert</i>	259—276
2. ON <i>DELIAS BELLADONNA</i> AND ALLIED SPECIES (PEL. RHOP.). <i>Karl Jordan</i>	277—287
3. ON SOME SUBSPECIES OF AFRICAN <i>CHARAXES</i> <i>Karl Jordan</i>	288—289
4. TWO NEW INDIAN ANTHRIBIDAE, RECEIVED FROM THE FOREST RESEARCH INSTITUTE AND COLLEGE AT DEHRA DUN <i>Karl Jordan</i>	290—291
5. ON A FOURTH COLLECTION OF BIRDS MADE BY MR. GEORGE FORREST IN NORTH-WESTERN YUNNAN <i>Lord Rothschild</i>	292—313
6. REVIEW OF THE BIRDS COLLECTED BY ALCIDE D'ORBIGNY IN SOUTH AMERICA <i>C. E. Hellmayr</i>	314—334

NOVITATES ZOOLOGICAE

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No. 3.

TYPES OF BIRDS IN THE TRING MUSEUM

BY ERNST HARTERT, PH.D.

B. Types in the General Collection.¹ VI.

STRIGES.

1400. *Strix cayelii* Hart. = *Tyto novaehollandiae cayelii*.

Strix cayelii Hartert, *Nov. Zool.* 1900, p. 228 (Kayeli, N.E. Buru).

Type: "♀," Kayeli, October 1898. J. Dumas coll.

1401. *Tyto manusi* Rothschild. & Hart. = *Tyto novaehollandiae manusi*.

Tyto manusi Rothschild & Hartert, *Nov. Zool.* 1914, p. 291 (Manus, Admiralty Islands).

Type: "♂," Manus, 10.x.1913. A. F. Eichhorn coll. No. 6234 of the Meek collections.

Both these wonderful Owls—of each of which only one specimen exists in European collections!—are, I have no doubt, subspecies of the extremely variable Australian *Tyto novaehollandiae*.

1402. *Strix flammea sumbaensis* Hart. = *Tyto alba sumbaënsis*.

Strix flammea sumbaënsis Hartert, *Nov. Zool.* iv, p. 270 (1897—Sumba Island, south of Flores, west of Timor).

Type: ♀, Waingapo, Sumba, September 1896. A. Everett coll.

1403. *Strix flammea meeki* R. & H. = *Tyto alba meeki*.

Strix flammea meeki Rothschild & Hartert, *Nov. Zool.* xiv, p. 446 (1907—Collingwood Bay, East Papua).

Type: ♂, Collingwood Bay, 5.ix.1906. A. S. Meek coll. No. A 2791.

(Both these forms are very much like the Australian *T. a. delicatula*, but differ in the coloration of the tail, while *meeki* differs from *sumbaënsis* in having the outer two pairs of rectrices pure white, and in having a smaller bill. For the rest, see original description.)

¹ Continued from NOVITATES ZOOLOGICAE, 1925, p. 157. See also NOVITATES ZOOLOGICAE, 1918, pp. 4-63; 1919, pp. 124-178; 1920, pp. 425-505; 1922, pp. 365-412; 1924, pp. 112-134; and 1925, pp. 138-157.

1404. *Strix flammea gracilirostris* Hart. = *Tyto alba gracilirostris*.

Strix flammea gracilirostris Hartert, *Bull. B.O. Club*, xvi, p. 31 (1905—"Fuertaventura and Lanzarote, Eastern Canary Islands").

Type : ♂, Fuertaventura, 28.v.1904. Polatzek coll.

1405. *Strix flammea bargei* Hart. = *Tyto alba bargei*.

Strix flammea bargei Hartert, *Bull. B.O. Club*, i, p. xiii (1892—Curaçao).

Type : ♂ ad., Curaçao, Fort, 7.vii.1892. Ernst Hartert coll. No. 154.

1406. *Strix flammea contempta* Hart. = *Tyto alba contempta*.

Strix flammea contempta Hartert, *Nor. Zool.* v, p. 500 (1898—Cayambe, N.W. Ecuador).

Type : ♀ Cayambe, roof of Government House, 9,323 feet high, 25.vi.1897. W. F. H. Rosenberg coll. No. 610.

1407. *Tyto alba detorta* Hart. = *Tyto alba detorta*.

Tyto alba detorta Hartert, *Bull. B.O. Club*, xxxi, p. 38 (1913—Cape Verde Islands).

Type : ♂, St. Jago, Cape Verde Is., 4.xii.1897. Boyd Alexander coll.

1408. *Strix flammea schmitzi* Hart. = *Tyto alba schmitzi*.

Strix flammea schmitzi Hartert, *Nor. Zool.* vii, p. 534 (1900—Madeira).

Type : ♂, Funchal, Madeira, 16.iv.1898. Padre Schmitz coll. No. 264.

1409. *Glaucidium cuculoides persimile* Hart. = *Glaucidium cuculoides persimile*.

Glaucidium cuculoides persimile Hartert, *Nor. Zool.* xvii, p. 205 (1910—Hainan).

Type : ♀ ad., Five Finger Mts., Hainan, 25.iv.1899. John Whitehead coll. No. 168.

† (?) 1410. *Speotyto cunicularia becki* R. & H. = *Speotyto cunicularia becki* (?).

Speotyto cunicularia becki Rothschild & Hartert, *Nor. Zool.* ix, p. 405 (1902—Guadeloupe Island, west of Lower California).

Type : ♂ ad., Guadeloupe Island, 12.i.1900. R. H. Beek coll. No. 33.

Ridgway, *B.N. and Middle Amer.* vi, p. 817, 1914, has placed the name *becki* as a synonym of *hypogaea*, but I can hardly think that this is quite correct. The type specimen (the only one we received) is darker than any *hypogaea* I have seen, but, of course, Ridgway had much more material of the latter, though apparently only one from Guadeloupe! Also the bill is much smaller than in our specimens of *hypogaea*. Ridgway gives a rather wide distribution of *hypogaea*, viz.: "Southern British Columbia to Panama, east to eastern edge of Great Plains." It would be strange that Guadeloupe Island, over 170 miles west of Lower California, should have the same form as the western United States, while Margarita Island, much less than 50 miles from Venezuela, should have its special subspecies (*brachyptera*).

1411. *Athene noctua lilith* Hart. = *Athene noctua lilith*.

Athene noctua lilith Hartert, *Jög. pal. Fauna*, p. 1006 (1913—"Palästina und Mesopotamien (oberer Euphrat), und das süd-westliche Persien").

Type: ♂, Der-es-Zor, Upper Euphrates, 15.v.1911. J. Aharoni coll.

Col. Meinertzhagen, *Ibis*, 1924, p. 618, says that *lilith* and *saharae* are the same, in which case, however, he should have called all the desert birds *saharae*, not *lilith*, the former name having been published 1909, i.e. four years before *lilith*. Spreading out our 29 *saharae* side by side with 15 *lilith*, it is obvious that the latter average much paler, especially the heads being lighter; only 3 of our 15 could be mistaken for *saharae*, while only 2 of our *saharae* would be called *lilith* if their origin was unknown. Possibly, if I had had all this material available in 1913, I would not have named *lilith*, but it seems wiser not to unite it with *saharae*.

Athene noctua bactriana is, except by the coloration of the head, distinguishable by the thickly feathered toes! The Irak specimens mentioned by Meinertzhagen are, indeed, somewhat intermediate between *lilith* and *bactriana*.

1412. *Athene noctua solitudinis* Hart. = *Athene noctua solitudinis*.

Athene noctua solitudinis Hartert, *Nov. Zool.* xxxi, p. 18 (1924—Air, southern Sahara).

Type: ♀, Toderia, Air, 23.ix.1922. Angus Buchanan coll. No. 231.

When I said (i.e.) that this bird was "much" smaller than *A. n. saharae* this requires some modification, as most *saharae* are indeed larger, but sometimes the bill is not larger, and the wings measure only 150–154 mm., the latter being the length of the wing of *A. n. solitudinis*, while in *saharae* the wings are generally 160–164 mm.

† 1413. *Syrnium whiteheadi* Sharpe = *Strix seloputo wiepkeni*.

Syrnium Wiepkeni Blasius, *Braunschweig. Anz.* No. 52, p. 467 (March 1, 1888—Palawan, coll. by Platen).

Syrnium whiteheadi Sharpe, *Ibis*, 1888, p. 196, pl. iii (April 1888—Palawan, coll. by Whitehead).

Type: ♂ ad., Taguso, Palawan, 9.vii.1887. John Whitehead coll. No. 1527.

This form is undoubtedly a subspecies of *S. seloputo*.

1414. *Ninox boobook cinnamomina* Hart. = *Ninox boobook cinnamomina*.

Ninox boobook cinnamomina Hartert, *Nov. Zool.* xiii, p. 293 (1906—Island of Babber, S.W. Islands).

Type: ♂, Tapa, Babber, 22.viii.1905. Collected by Heinrich Kühn's native hunters. No. 6606 of the Kühn collections.

1415. *Ninox meeki* R. & H. = *Ninox meeki*.

Ninox meeki Rothschild & Hartert, *Bull. B.O. Club*, xxxiii, p. 105 (1914—Manus, Admiralty Islands); *Nov. Zool.* 1914, p. 289.

Type: ♂ ad., Manus, 6.ix.1913. Albert S. Meek coll. No. 5985.

The nearest ally seems to be *Ninox dimorpha* of Papua, but it would be hazardous to suggest that the two were subspecies.

1416. **Pisorhina manadensis tempestatis** Hart. = *Otus manadensis tempestatis*.
Pisorhina manadensis tempestatis Hartert, *Nor. Zool.* xi, p. 190 (1904—Wetter or Wetar Island).

Type: ♂ ad., Wetter Island, 15.x.1902. Heinrich Kühn coll. No. 5782.

1417. **Pisorhina manadensis kalidupae** Hart. = *Otus manadensis kalidupae*.
Pisorhina manadensis kalidupae Hartert, *Nor. Zool.* x, p. 21 (1903—Kalidupa I., Tukang Besi Islands).

Type: ♀ ad., Kalidupa, 29.xii.1901. Heinrich Kühn coll. No. 4486.

1418. **Pisorhina sulaensis** Hart. = *Otus manadensis sulaensis*.
Pisorhina sulaensis Hartert, *Nor. Zool.* v, p. 126 (1893—Sula Mangoli I.).

Type: ♂ ad., Sula Mangoli, October 1897. William Doherty coll.

In spite of the tarsus being unfeathered for about one-third of its length in front and behind, there can, in my opinion, be no doubt that *sulaensis* is also a subspecies of *manadensis*. Other subspecies are *magicus* from Ceram and Amboina, *leucospilus* from the northern Moluccas, *albiventris* from Flores, Sumbava, Lomblen, *bouruensis* from Buru (which seems to differ fairly well from *magicus*!), *morotensis*, and *siaoensis*. There would be no difficulty about all these if there were not three examples from Ternate (North Moluccas!) which are said to agree with *magicus*. Perhaps this mystery might be explained by re-examination, or it may be that they never came from Ternate! Ternate being a central trading station for the Moluccas for a long time, specimens were brought there from many places, and the young birds said to have been taken from the nest by Rosenberg are not convincing, as young of these various forms can probably not be distinguished.

1419. **Scops luciae** Sharpe = *Otus luciae luciae*.
Scops luciae Sharpe, *Ibis*, 1888, p. 478 (Kina Balu).

Type: ♀ ad., Kina Balu, N. Borneo, 8,000 feet, 24.ii.1888. John Whitehead coll. No. 2050.

I do not recognize the genus *Heterosops*! *Otus luciae* is figured *Ibis*, 1889, pl. iii.

1420. **Pisorhina alfredi** Hart. = *Otus alfredi*.
Pisorhina alfredi Hartert, *Nor. Zool.* iv, p. 000 (1897—Flores); figured *Nor. Zool.* v, 1898, pl. i.
Type: ♂ ad., Repok Mts., S. Flores, above 3,500 feet, November 1896. Alfred Everett coll.

This species is very far removed from the *manadensis* group, and resembles more *P. luciae*, though quite different from the latter.

1421. **Scops fuliginosa** Sharpe = *Otus fuliginosus*.
Scops fuliginosa Sharpe, *Ibis*, 1888, p. 197 (Palawan).
Type: ♀ juv., Taguso, Palawan, 18.vii.1887. John Whitehead coll. No. 1572.

Evidently Sharpe, when describing *S. fuliginosa*, failed to notice that the type was a young bird, and that some incoming feathers show that the adult plumage is quite different—in fact, apparently very much like that of *Otus everetti*

from Mindanao. Whitehead believed *fuliginosus* to be nothing else than *everetti*, but this is not certain, and I am inclined to think that it is a small form of the larger *everetti*.

1422. *Otus scops powelli* Meinertzh. = *Otus scops powelli*.

Otus scops powelli Meinertzhagen, *Bull. B.O. Club*, xli, p. 21 (1920—Crete).

Type: ♀ ad., Candia District, Crete, 2,000 feet, 30.vi.1920. Col. R. Meinertzhagen coll.

The specimens collected by Meinertzhagen stand out indeed from a large series of *O. scops scops* by their greyish general coloration, large white spots on the head, and heavy black markings, on the underside especially. In these they remind one of *O. scops cyprius*, which, however, is very distinct, and rather constant. In the oasis of Bilma, Central Sahara, Captain Buchanan shot a Scops owl in November, which is greyer than any of our very numerous North African specimens, and closely resembles *O. s. powelli*, but it has not the heavy markings on the head.

1423. *Pseudoptynx solomonensis* Hart. = *Bubo (Pseudoptynx) solomonensis*.

Pseudoptynx solomonensis Hartert, *Bull. B.O. Club*, xii, p. 25 (Isabel I., Solomon Is.).

Type: ♀ ad., Isabel, 9.vii.1901. A. S. Meek coll. No. 3531.

(For my view on the genus *Pseudoptynx*, see *Vög. pal. Fauna*, p. 960.)

1424. *Bubo bubo hispanus* R. & H. = *Bubo bubo hispanus*.

Bubo bubo hispanus Rothschild & Hartert, *Nov. Zool.* 1910, p. 110 (Spain).

Type: ♂ ad., Aguilas (near Murcia), Spain, 12.ii.1898. Shot by side of nest containing two eggs. Gray coll.

† 1425. *Bubo bubo interpositus* R. & H. = *Bubo bubo ruthenus*.

Bubo bubo ruthenus Buturlin & Zhitkow, *Mém. Soc. Imp. Géogr. Russ.* xli, 2, p. 272 (1906—Eastern European Russia, including Middle Volga basin. Type Simbirsk. Publ. in Russian!).

Bubo bubo interpositus Rothschild & Hartert, *Nov. Zool.* 1910, p. 111 (Asia Minor, N. Caucasus, and Lower Volga, near Sarepta).

Type: ♂ ad., Eregli, Asia Minor, 15.ii.1909. P. Ürmös coll.

The four Eregli specimens are very constant and darker than the majority of specimens from the Volga, but it seems to be correct to unite them with *ruthenus*.

† 1426. *Bubo bubo aharonii* R. & H. = *Bubo bubo ruthenus* (?).

Bubo bubo aharonii Rothschild & Hartert, *Nov. Zool.* 1910, p. 112 (Jordan Valley, Palestine).

Type: ad., Jordan Valley, Palestine, near Wadi Suenit, 5.iv.1909. J. Aharoni coll.

Since describing *B. b. aharonii* we have received from its discoverer, Mr. J. Aharoni, quite a number of Eagle Owls from Palestine and Syria. While in the mountains of Palestine proper *B. b. ascalaphus* is nesting, a totally different Eagle Owl appears there in winter, which we cannot separate from our "*interpositus*," which appears to be the same as *ruthenus*. The type agrees fairly well with these *ruthenus*, but is somewhat darker and much smaller; this is, however, probably individual variation. But in Coelesyria, the land east of the High Lebanon (N.W. of Damascus, near Tanail), *B. b. ruthenus* must breed, as we

received a male in very worn summer plumage, obtained August 29, 1917; it is not very strange that the Asia Minor form should range south to Coelesyria (and probably the High Lebanon).

An adult female shot at Abu Shushe (Gezer), in Palestine, 21.x.1912, on the other hand, perfectly agrees with *B. bubo turcomanus*, which might very well occur there in winter.

While *ascalaphus* ranges into Palestine from Egypt, the specimens from Palmyra, far out in the Syrian desert, and one from "Dschebe," are typical *desertorum*. This is not strange, as the pale *desertorum* type of *ascalaphus* occurs in all desert regions from South Algeria and South Tunisia to Aïr (Asben) and Damergu (Buchanan coll.) and to East Arabia (near El Hofuf, R. E. Cheesman coll.), and are, the farther out in the desert, the paler.

The darker *ascalaphus* we had from the Wadi Martabat south of Beersheba, Gaza, Rehoboth near Jaffa, Kanar, and Rhemme, all from Aharoni, who took much trouble in obtaining these Eagle Owls for us.

ACCIPITRES.

† 1427. *Cerchneis tinnuncula dörriesi* Swann = *Falco tinnunculus tinnunculus*. *Cerchneis tinnuncula dörriesi* Swann, *Synopt. List Accipitres*, p. 146 (1920—"Siberia—Amur River to Yenisei—and Mongolia; in winter to India, Ceylon, Assam, Burma, and China").

Type: ♂, Sidimi, Ussuriland, not far from Wladiwostok, 2.vi.1884, Dörries coll.

I do not think that this form is separable.

1428. *Cerchneis tinnunculus carlo* Hart. & Neum. = *Falco tinnunculus carlo*. *Cerchneis tinnunculus carlo* Hartert & Neumann, *Journ. f. Orn.* 1907, p. 592 (Shoa, Harrar, Somaliland, Victoria Nyanza).

Type: ♂ ad., Bussidimo, near Harrar, 28.viii.1902. N. Sapphiro coll.

1429. *Falco tinnunculus dacotiae* Hart. = *Falco tinnunculus dacotiae*. *Falco tinnunculus dacotiae* Hartert, *Vög. pal. Fauna*, p. 1086 (1913—Eastern Canary Islands).

Type: ♂ ad., Lanzarote, 13.iii.1902. Johann Polatzek coll.

1430. *Falco biarmicus abyssinicus* Neum. = *Falco biarmicus abyssinicus*. *Falco biarmicus abyssinicus* Neumann, *Journ. f. Orn.* 1904, p. 369 (Abyssinia, Shoa, Galla countries).

Type: ♂ ad., in moult, Kolla, Shoa, 21.ix.1900. Osear Neumann coll.

Some specimens of *F. b. tanypterus* are hardly separable from *abyssinicus*.

† 1431. *Falco peregrinus brittanicus* Erl. = *Falco peregrinus peregrinus*. *Falco peregrinus brittanicus* Erlanger, *Journ. f. Orn.* 1903, p. 296 (Great Britain).

Type: ♂ ad., Isle of Man (no date, nesting according to verbal information). J. R. Wallace coll. (Bought at the sale of the "Distington Museum.")

1432. *Falco subbuteo streichi* Hart. & Neum. = *Falco subbuteo streichi*. *Falco subbuteo streichi* Hartert & Neumann, *Journ. f. Orn.* 1907, p. 592 (China, north to Tsinling Mts.).

Type: ♂ ad., near Swatow, 23.iv.1888.

1433. *Falco subbuteo jugurtha* Hart. & Neum. = *Falco subbuteo jugurtha*.

Falco subbuteo jugurtha Hartert & Neumann, *Journ. f. Orn.* 1907, p. 591.

Type: ♂ ad., Morocco (near Tanger), May 1899. Vaucher coll.

(The subspecies of *Falco subbuteo* are not very sharply marked, but the extremes—*streichi* and *jugurtha*—are well separable.)

1434. *Baza leucopias* Sharpe = *Aviceda leucopias*.

Baza leucopias Sharpe, *Ibis*, 1888, p. 195 (Palawan); Whitehead, *Ibis*, 1890, p. 43, pl. ii.

Type: ♀ juv., Kalusian, Palawan, 5.x.1887. John Whitehead coll. No. 1726.

Mr. Swann is in error when he says that the type is in the British Museum. There was only one specimen, which is in Tring, like nearly all the types of species described by Sharpe from Whitehead's Kina Balu and Palawan collections.

Unfortunately the name *Aviceda* (1836) antedates *Baza* (1837). Swann preserved the latter name for *B. leuphotes* (Dumont); he quite correctly employed the name *leuphotes* (sic), which was first given (1820), instead of *B. loophotes* (Temm.), which was taken from the same type-specimen in the Paris Museum, but which dates from 1826; Swann, however, quotes *Dict. Sci. Nat.* (Levrault), xvii, while it is vol. xvi! The generic separation of *Baza* from *Aviceda* is unfounded; the diagnosis given by Swann is misleading; the difference between the secondaries and primaries is greater in "*Baza leuphotes*" than in the other *Avicedae*. Swann treats *leucopias* as a subspecies of *A. jerdoni*; this is probably correct, but before we know the adult plumage of *leucopias* it is an experiment to place it with *jerdoni*, which is larger.

Sharpe's name appeared first as *leucopias*, but he doubtless meant *leucopais*, and this is stated to be the case by Whitehead in 1890.

1435. *Baza subcristata megala* Stres. = *Aviceda subcristata megala*.

Baza subcristata megala Stresemann, *Nor. Zool.* xx, p. 307 (1913—Fergusson I., D'Entrecasteaux group).

Type: ♀ ad., Fergusson Island, 16.vi.1897. A. S. Meek coll. No. 627.

Only differs in being generally larger. Inhabits also Goodenough Island; there are, however, intergradations. See Stresemann, l.c.

1436. *Baza subcristata pallida* Stres. = *Aviceda subcristata pallida*.

Baza subcristata pallida Stresemann, *Nor. Zool.* xx, p. 306 (not 307) (1913—Key and S.E. Islands).

Type: ♂ ad., Tual, Key Is., 10.vii.1900 (not 10.iv). Heinrich Kühn coll.

1437. *Odontriorchis palliatus guianensis* Swann = *Odontriorchis palliatus guianensis*.

Odontriorchis palliatus guianensis Swann, *Synopsis Accipitres*, p. 159 (1922—Colombia and Ecuador to Trinidad and North Brazil).

Type: ♂ ad., near Paramaribo, Surinam, 17.vi.1905. B. Chunkoo coll.

(The genus generally called *Leptodon* must be termed as above, as the name *Leptodon* is preoccupied; for a similar reason the accustomed name of *cayennensis*

cannot be used, as *Falco cayennensis* of Gmelin, *Syst. Nat.* i. 1, p. 269, is pre-occupied by *Falco cayennensis* Gmelin on p. 263. Another instance of the care taken by older writers! We should have been thankful to Mr. Swann if he had mentioned this in his *Synopsis*; it thus became necessary for him to name the Guiana form, as above.)

1438. *Milvus migrans arabicus* Swann = *Milvus migrans arabicus*.

Milvus migrans arabicus Swann, *Synops. Accipitres*, p. 153 (1922—South Arabia).

Type: juv., Lahej, South Arabia, 25.viii.1899. W. Dodson coll.

Cf. Meinertzhagen, *Ibis*, 1924, pp. 632, 633!

The smaller size of this subspecies is striking, but the colour differences do not amount to much, as these birds are very variable, but the Arabian form is lighter than *M. m. parasitus*, though it agrees with some (few) specimens of *aegyptius*.

1439. *Milvus milvus fasciicauda* Hart. = *Milvus milvus fasciicauda*.

Milvus milvus fasciicauda Hartert, *Bull. B.O. Club*, xxxiii, p. 89 (1914—Cape Verd Islands); *Vög. pal. Fauna*, p. 1169.

Type: ♂ ad., Santo Antão, Cape Verd Is., 12.xii.1897. Boyd Alexander coll.

1440. *Spilornis cheela perplexus* Swann = *Spilornis cheela perplexus*.

Spilornis cheela perplexus Swann, *Synopsis Accipitres*, p. 135 (1922—"Triomote" (sic!), should be Iriomoto, South Riu Kiu Is.),

Type: ♂, not in full plumage! Iriomoto, South Loo Choo Is., 16.vi.1904. Collected by Alan Owston's hunters.

Of this bird, there is the "type" and an adult male (!). This form seems to be quite distinct, but requires confirmation by more material.

1441. *Limnaëtus limnaëtus floris* Hart. = *Spizaëtus cirrhatus floris*.

Limnaëtus limnaëtus floris Hartert, *Nov. Zool.* v, p. 46 (1898—South Flores).

Type: "♂," South Flores, November 1896. Alfred Everett coll.

Not only found on Flores, but also on Wetter and Luang Islands, as recorded in *Nov. Zool.*

1442. *Buteo buteo harterti* Swann = *Buteo buteo harterti*.

Buteo buteo harterti Swann, *Synoptical List Accipitres*, p. 43 (1919—Madeira).

Type: ♀ ad., S. Amaro, Madeira, 20.i.1895. Ex coll. Musei Seminaris Funchal, Padre Schmitz coll.

(The Buzzards of the Atlantic Islands are all very similar, but the Madeiran form has certainly longer wings than the Azores birds. A difficulty are the forms from the Azores and Canary Islands. I cannot confirm that the former are "paler," nor does there seem to be a tangible difference in size. My remarks, *Vög. pal. Fauna*, pp. 1123, 1124, should be consulted, and it must be remembered that 4 or 5 mm. in the length of the wing of a Buzzard is meaningless, also how much Buzzards vary individually.)

1443. **Buteo oreophilus** Hart. & Neum. = *Buteo oreophilus*.

Buteo oreophilus Hartert & Neumann, *Ornith. Monatsber.* 1914, p. 31 (South Abyssinia).

Type: ♂, Koritsha, Djam Djam, Southern Abyssinia. Oscar Neumann coll. No. 464.

(I expect that *Buteo brachypterus* of Madagascar and *B. oreophilus* must be looked upon as subspecies of *B. buteo* in a final review of the genus *Buteo*.)

1444. **Busarellus nigricollis australis** Swann = *Busarellus nigricollis australis*.

Busarellus nigricollis australis Swann, *Synopsis of Accipitres*, p. 95 (1922—"N. Argentina. Paraguay").

Type: ♂ ad., Mocoví (in the Chaco), Argentina, 3.ix.1905. S. Venturi coll. No. 1015. (Not "Morovi," and not collected in "1915," as could have been seen in my and Venturi's paper in Nov. Zool. 1909, p. 239.)

This bird is certainly larger than our specimens from Cayenne, etc., but I do not think it is "paler generally," nor can I see that the head is whiter; we have a specimen with dark (fresh) and pale (older) feathers. The difference of *B. n. australis* from *B. n. macropus* is not well shown in Swann's *Synopsis* both apparently having been compared with *B. n. nigricollis*, though the larger and stouter feet are not mentioned under *australis*.

1445. **Melierax canorus neumanni** Hart. = *Melierax musicus neumanni*.

Melierax canorus neumanni Hartert, *Vög. pal. Fauna*, p. 1165 (1914—Nubia to Lower White Nile, Lake Tchad to Haussaland).

Type: ♂ ad., Arbub, near Merowe, 18.iii.1904. N. C. Rothschild coll.

† 1446. **Astur riggenbachi** Neum. = *Accipiter badius sphenurus*.

Astur riggenbachi Neumann, *Bull. B.O. Club*, xxi, p. 69 (1908—"Senegal").

Type: "♂," Gassam, east of Thiès, 7.ix.1907. F. W. Riggenbach coll. No. 1404.

I have no doubt that "*Astur riggenbachi*" is founded on richly-coloured specimens of *A. badius sphenurus*; in the type-specimen the chest is uniform dark vinous cinnamon, in the two other specimens barred with white. But in the same country occur specimens with pale vinous cinnamon underside, barred with white. Also specimens with slate-grey and with clear bluish-grey upperside are found in the same places: Senegambia, Gambaga, South Abyssinia.

Doubtless Reichenow's "*Astur sphenurus obscurior*," *Journ. f. Orn.* 1916, p. 161, from Bossum in the district of the Uam River, a tributary of the Shari, in N.E. Kamerun, is also based on two dark-backed specimens, after comparison with light-backed ones.

The name *A. s. obscurior* has been missed by both W. Selater (*Syst. Av. Ethiop.* i, 1924) and by Swann in his *Synopsis Accipitr.* 1920 and 1922.

1447. **Astur gentilis fujiyamae** Hart. & Swann = *Accipiter gentilis fujiyamae*.

Astur gentilis fujiyamae Hartert & Swann, *Bull. B.O. Club*, xliii, p. 170 (1923—Japan).

Type: ♂ ad., Sagami, Hondo, south of Tokio, no date. From Alan Owston's hunters.

† (?) 1448. *Spilospizias trinotatus haesitandus* Hart. = *Accipiter trinotatus haesitandus* (?).

Spilospizias trinotatus haesitandus Hartert, *Nov. Zool.* iii, p. 162 (1896—South Celebes, Indrulaman and Bonthain Peak).

Type: ♂ ad., Tasoso, Bonthain Peak, 6,000 feet, October 1895. Alfred Everett coll.

The specimens collected by Everett look rather different from the northern examples, but it must be taken into consideration that they are beautifully prepared, while in nearly all the northern ones we have for comparison there is not much to be seen of the abdomen, because they are made up rather short; moreover, a female collected by William Doherty on Bonthain Peak, 4,000 feet high, is underneath as dark as the Minahassa skins, the thighs quite pinkish-buff. (See *Nov. Zool.* 1897, p. 159.) It is therefore doubtful if this subspecies is recognizable.

1449. *Accipiter hiogaster rooki* R. & H. = *Accipiter novaehollandiae rooki*.

Accipiter hiogaster rooki Rothschild & Hartert, *Nov. Zool.* xxi, p. 288 (1914—Rook Island between New Britain and Kaiser Wilhelms Land).

Type: ♂ ad., Rook Island, 2.viii.1913. A. S. Meek's collectors (Eichhorn). No. 5893.

(Left out in Stresemann's review, 1924.)

1450. *Astur etorques bougainvillei* R. & H. = *Accipiter novaehollandiae bougainvillei*.

Astur etorques bougainvillei Rothschild & Hartert, *Nov. Zool.* xii, p. 250 (1905—Bougainville I., Solomon Is.).

Type: ♂ ad., Bougainville Island, 16.iv.1904. A. S. Meek coll. No. A 1555.

1451. *Astur rufoschistaceus* R. & H. = *Accipiter novaehollandiae rufoschistaceus*.

Astur rufoschistaceus Rothschild & Hartert, *Nov. Zool.* ix, p. 590 (1902—Isabel I., Solomon Archipelago).

Type: ♂ ad., Isabel I., 17.vi.1901. A. S. Meek coll. No. 3307.

1452. *Astur etorques rubianae* R. & H. = *Accipiter novaehollandiae rubianae*.

Astur etorques rubianae Rothschild & Hartert, *Nov. Zool.* xii, p. 250 (1905—Rubiana, Gizo, Rendova Is.; Solomon Is.).

Type: ♀ ad., Gizo, 27.xi.1903. A. S. Meek coll. No. A 652.

1453. *Accipiter fasciatus polycryptus* R. & H. = *Accipiter fasciatus polycryptus*.

Accipiter fasciatus polycryptus Rothschild & Hartert, *Nov. Zool.* xxii, p. 53 (1915—British New Guinea and Kaiser Wilhelm Land).

Type: ♂ ad., a Weiske skin, from "Sogeri district," 2,000 to 3,500 feet (purchased in London).

This bird is quite different from the *hiogaster-ectorques* group; it has a slate-coloured cere, while the *hiogaster-ectorques* group have a yellow cere.

Mr. Swann, *Synops. Accipitres*, 1922, p. 48, includes in the distribution of *A. f. polycryptus* (wrongly spelt *polycriptus*) "New Britain, New Ireland, D'Entrecasteaux Islands, Waigiou I." This is quite wrong, as *A. f. polycryptus* is only known from East Papua: Stephansort, Langemak Bay, Friedrich-Wilhelm-Hafen, Huongulf, "Sogeri district" in the Owen Stanley Mts., Nicura, Kumusi River, and Owgarra on the Angabunga River. The localities added by Swann are evidently those of *Accipiter hiogaster dampieri*, with a yellow cere, which is a distinguishable form, by smaller size and paler colour, from *A. h. etorques*. *A. h. dampieri* is also found on Manus.

1454. *Accipiter torquatus buruensis* Stres. = *Accipiter fasciatus buruensis*.

Accipiter torquatus buruensis Stresemann, *Nov. Zool.* xxi, p. 381 (1914—Buru).

Type: ♀ ad., Fakal on Buru, 3,300 feet, 24.iii.1912. Erwin Stresemann coll. No. 1127.

1455. *Astur griseogularis obiensis* Hart. = *Accipiter fasciatus obiensis*.

Astur griseogularis obiensis Hartert, *Nov. Zool.* x, p. 3 (1903—Obi Island).

Type: ♀ ad., Obi Major, Central Moluccas, 6.iv.1902. John Waterstradt coll. No. O. 67.

1456. *Accipiter fasciatus mortyi* subsp. nov.

Smaller than *A. f. griseogularis*, larger than *A. f. obiensis*. Wing ♀ 254, ♂ 208, tail ♀ about 202, ♂ 155 mm. Wing in *A. f. griseogularis*, ♀ 260–280, ♂ 218–225 mm. Wing in *A. f. obiensis*, ♀ 231–233, ♂ (moulting) apparently under 200 mm.

Type: ♀ ad., Morty or Morotai Island, North Moluccas. No date. Ex John Waterstradt.

Swann erroneously united *obiensis* with *griseogularis*, while he queried the locality Morotai (Morty). In *obiensis* the throat is not so grey as in *griseogularis*.

In some of our skins of the *griseogularis-mortyi-obiensis* group the cere appears (in the skins!) to be quite as yellow as in the *hiogaster-novae-hollandiae* group, while generally the coloration of the cere is a splendid character to separate the two groups, as pointed out by Stresemann, *Journ. f. Orn.* 1924, p. 444. I entirely agree (after much hesitation and consideration!) with that grouping; at first it seems absurd to look upon forms as different as the grey *novae-hollandiae* (not to talk of its white mutant) and *rufoschistaeus*, etc., as subspecies, but a careful study of the whole group reveals its sensibility. It is strange that neither Mathews nor Swann took notice of the field observations in Australia, and that they did not understand that the white *novae-hollandiae* and the grey *cinereus* were varieties of one form. But Mathews did not either accept the fact that the white and slate-coloured *Demigretta sacra* were the same—even in his latest list he kept them as two different species, disregarding all that had been written about the different variations of this and other herons. (Cf. among others—about *A. novae-hollandiae*—*Orn. Monatsber.* 1923, pp. 127–129.)

1457. *Astur melanochlamys schistacinus* R. & H. = *Accipiter melanochlamys schistacinus*.

Astur melanochlamys schistacinus Rothschild & Hartert, *Nor. Zool.* xx, p. 482 (1903—Mt. Goliath, Eastern Central Dutch Papua).

Type: ♂ ad., Mt. Goliath, 2.ii.1911. A. S. Meek coll. No. 5278.

Cf. Rothschild, *Nov. Zool.* 1921, p. 292.

† 1458. *Accipiter eudiabolus* R. & H. = *Accipiter bürgeri*.

Astur bürgeri Reichenow, *Orn. Monatsber.* xxii, p. 29 (February 1914—"Mämoboberg," rectius Mäanderberg, Sepik River region, New Guinea).

Accipiter eudiabolus Rothschild & Hartert, *Bull. B.O. Club*, xxxv, p. 8 (published November 1914—Babooni, British New Guinea, 3,000 feet).

Type: adult. Babooni, September 1903. H. C. Pratt coll.

Reichenow described a young bird moulting in February, we the adult in October of the same year. (Cf. Stresemann, *Archiv f. Naturg.* 89, A, 7. and 8. Heft, p. 64, 1923.)

A pair said to be male and female in juvenile plumage were collected by A. F. Eichhorn on the Hydrographer Mountains, W. of Dyke Acland Bay, S.E. Papua, 2,500 feet high, in January and March 1918. The upperside is light chestnut, each feather black along the middle, the slightly elongated feathers of the nape indicating a small crest, black with white base. Quills black, all except the outer primaries with light chestnut edges, the innermost secondaries like the back. Rectrices black with brownish-grey to greyish-brown cross-bars and rufous tips and edges. Underside lighter than the upperside and with black shaft-stripes, basally whitish. Quills barred with whitish-grey, these bars being distinct at base and underneath, but above only noticeable at base. Tail-bars from underneath whitish. Wings in both specimens about 295, which makes one doubt that they are male and female. "Iris greenish yellow or dirty yellow, bill black, cere slate-blue, feet dull greenish yellow."

1459. *Astur cirrhocephalus papuanus* R. & H. = *Accipiter cirrhocephalus papuanus*.

Astur cirrhocephalus papuanus Rothschild & Hartert, *Nor. Zool.* xx, p. 482 (1913—Snow Mountains and Eastern Papua).

Type: ♀ ad., Snow Mountains, 23.x.1910. A. S. Meek coll. No. 4883.

Since received from the Hydrographer Mts., W. of Dyke Acland Bay, and from Boboli on the China Straits, south-easternmost Papua.

† 1460. *Accipiter rufotibialis* Sharpe = *Accipiter virgatus virgatus*.

Accipiter rufotibialis Sharpe, *Ibis*, 1887, p. 487 (Mt. Kina Balu, N.E. Borneo).

Type: ♂ ad., Kina Balu, 1,000 feet, 15.iii.1887. John Whitehead coll. No. 1366.

1461. *Accipiter bicolor schistochlamys* Hellm. = *Accipiter bicolor schistochlamys*.

Accipiter bicolor schistochlamys Hellmayr, *Bull. B.O. Club*, xvi, p. 82 (1906—Nanegal, Western Ecuador).

Type: ♀ ad., Nanegal, West Ecuador, July 1898. Goodfellow and Hamilton coll.

This form is undoubtedly distinct, but Central American specimens vary very much, some being as dark as *schistochlamys*, others more like *A. b. bicolor*. The underside in *A. b. bicolor* should not be called "white," as it is very pale grey.

† 1462. *Gymnogenys typicus graueri* Swann = *Gymnogenys typicus typicus*. *Gymnogenys typicus graueri* Swann, *Synopsis Accipitres*, p. 17 (1922—"E. Africa").

Type: ♀, Kissenyi, Lake Kivu, on the shore, 26.xii.1907. Rudolf Grauer coll. No. 1746.

I do not find Swann's characters constant, and agree with Selater, who accepts the distribution of *G. t. typicus* as from the Egyptian Sudan throughout East Africa to South Africa. Swann's distribution is most unlikely to be correct, as he accepts *G. t. graueri* for East Africa, *G. t. typicus* as from South Africa, and reoccurring in Abyssinia and on the White Nile, with *graueri* in between.

1463. *Circus aeruginosus harterti* Zedl. = *Circus aeruginosus harterti*.

Circus aeruginosus harterti Zedlitz, *Journ. f. Orn.* 1914, p. 133 (Africa Minor: Algeria, Morocco, probably Tunisia, perhaps South Spain).

Type: ♂, Mehuila (Mhoiwa), Morocco, 12.v.1902. F. W. Riggensbach coll.

GRESSORES.

1464. *Butorides striatus moluccarum* Hart. = *Butorides striatus moluccarum*.

Butorides striatus moluccarum Hartert, *Vög. pal. Fauna*, p. 1251 (1920—Moluccas).

Type: ♂ Mt. Fogi, West Buru, 14.ii.1902. Heinrich Kühn coll. No. 4982.

1465. *Butorides striatus degens* Hart. = *Butorides striatus degens*.

Butorides striatus degens Hartert, *Vög. pal. Fauna*, p. 1251 (1920—Seychelle Islands).

Type: ♂, Praslin, 25.xii.1904. Thibault coll.

1466. *Egretta dimorpha* Hart. = *Egretta dimorpha*.

Egretta dimorpha Hartert, *Bull. B.O. Club*, xxxv, p. 14 (1914—Madagascar and Aldabra).

Type: ♀, S.E. coast (not "west," as I stated) of Madagascar. Name of collector unknown; bought in Paris.

This heron is one of the most interesting forms I ever described. In colour it is dimorph, being either pure white or dark slate colour with white primary coverts and more or less white on the throat, but there are also slate-coloured specimens with an amount of white in various parts of the plumage.

This heron cannot be united with *Demigretta*, as Selater did, and I do not propose to separate it from *Egretta*, though the legs are, as a rule, longer. Surely the dimorphic coloration cannot be used as a generic character in the family *Ardeidae*!

The Aldabra series has generally larger bills, and longer and stouter legs, but in a few specimens the bills are hardly larger, and the legs are actually shorter in one Aldabra bird; I do not therefore separate the birds from Aldabra from *E. dimorpha*. The feet of the latter are intermediate between those of *Egretta* and *Demigretta*. In the former, which inhabits swamps and meadows, etc., the toes are longer, the claws longer and thinner; in the latter, the "Reef-Herons," which inhabit chiefly cliffs and rocks or river estuaries, the toes are

shorter, the claws shorter and stouter. In *E. dimorpha* they are intermediate ; probably this results from their habits, of which I unfortunately know nothing ; they seem to be also shore birds, but live possibly not so much on rocky shores.

1467. *Ardea cinerea firsas* Hart. = *Ardea cinerea firsas*.

Ardea cinerea firsas Hartert, *Bull. B.O. Club*, xxxviii, p. 6 (1917—Madagascar).

Type : Antinsoy Country, S.W. Madagascar. Last coll.

(Sclater has adopted Gmelin's name *Ardea johannae* for this subspecies, but I do not think that this can be done. Gmelin took his name from Latham, who described a Chinese drawing,¹ from a bird of the island of Johanna. The description reads as if it were made from a Grey Heron, *Ardea cinerea*, except that one can hardly say that that has the feathers of the "fore part of the neck long and loose," and that the "quills are all black." Moreover, it is (of course) not stated that it differs in any way from *Ardea cinerea*, though it must have seemed to be quite different by Latham, or he would not have described it. Moreover, it seems to me very doubtful if a Chinese drawing of about 150 years ago depicted birds from Johanna Island in the Comoro group, and there may possibly be a place of that name in Chinese waters or thereabouts—possibly "Johana," not an island though, but a town on Hondo ; on the other hand, Chinese vessels seem to have voyaged to East Africa centuries ago. In any case, the acceptance of Gmelin's name would only be a guess, and no certainty, and I believe, therefore, that we had better stick to my name, about which there can be no doubt. A Comoro Island specimen has not even been examined, I believe.)

1468. *Nycticorax cyanocephalus falklandicus* Hart. = *Nycticorax nycticorax falklandicus*.

Nycticorax cyanocephalus falklandicus Hartert, *Bull. B.O. Club*, xxxv, p. 15 (1914—Falkland Islands) ; see also *Vög. pal. Fauna*, p. 1254.

Type : adult, Falkland Islands, 1898, purchased from Rowland Ward, dealer, in London.

It seems to me doubtful and unlikely that *Nycticorax nycticorax naevius* and *cyanocephalus* nest together in the same area, if, in fact, they ever occur together ; this not being the case, *cyanocephalus* and *falklandicus* must be looked upon as subspecies of *N. nycticorax*.

ANSERES.

1469. *Merganetta berlepschi* Hart. = *Merganetta turneri berlepschi*.

Merganetta berlepschi Hartert, *Nov. Zool.* xvi, p. 244 (1909—near Tucuman, North Argentina).

Type : ♂ ad., 1800, near Tucuman, 13.vi.1906. L. Dinelli coll. No. 4089.

As I said in *Nov. Zool.* 1909, probably all the so-called species of *Merganetta* must be looked upon as subspecies of one species, but as the distribution was insufficiently known I hesitated using trinomials, and called the new form *M. berlepschi* ; there can, however, be no doubt that it is a subspecies of *M. turneri*, so that I must call it, for the time being, *M. turneri berlepschi*.

¹ It was a very bad habit to name birds from Chinese drawings—in fact, birds should never have been named from drawings alone ! And Chinese drawings were and are often quite fanciful. Cf. the fictitious "*Biophorus paradisiacus*" of Temminck and Schlegel, in the *Fauna Japonica* !

1470. *Salvadorina waigiensis* R. & H. = *Salvadorina waigiensis*.

Salvadorina waigiensis Rothschild & Hartert, *Nov. Zool.* i, p. 683 (1894—Island of Waigiu), ii, pl. iii.

Type: “♂” ad., Waigiu, near New Guinea.

This remarkable duck is now known to inhabit the mountain ranges of New Guinea. The type was received, with many other skins, from the collection of Mr. Bruijn of Ternate, but differently labelled thus: “No. 8. ♂. Waigeou, Papoeasie.” This is the only specimen known from Waigiu, but that locality may, nevertheless, be correct, as Waigiu is insufficiently known, ornithologically.

1471. *Anas laysanensis* Rothschild = *Anas laysanensis*.

Anas laysanensis Rothschild, *Bull. B.O. Club*, i, p. xvii (1892—Island of Laysan, Pacific Ocean).

Type: ♂ ad., Laysan, 19.vi.1891. H. C. Palmer coll. No. 1113.

In addition to the bad skins from Palmer, we have a beautiful series collected by Professor Schauinsland.

1472. *Tadorna radjah rufitergum* Hart. = *Tadorna radjah rufitergum*.

Tadorna radjah rufitergum Hartert, *Nov. Zool.* xii, p. 205 (1905—Australia).

Type: ♂ ad., South Alligator River, Northern Territory, 13.x.1902. J. Tunney coll. No. 975.

† 1473. *Bernicla munroii* R. = *Branta canadensis minima*.

Bernicla munroii Rothschild, *Ann. & Mag. Nat. Hist.* (6), x, p. 108 (1892—Kauai Island, Sandwich group).

Type: ♂ Kanai, 16.iii.1891. H. C. Palmer coll.

† (?) 1474. *Pteronetta hartlaubi albifrons* Neum. = ? *Pteronetta hartlaubi albifrons*.

Pteronetta hartlaubi albifrons Neumann, *Bull. B.O. Club*, xxi, p. 42 (1908—Ituri Forest and Nelle, Upper Congo region).

Type: ♂ ad., Ituri forest, 31.viii.1906. C. F. Camburn coll.

More material is required to prove that the greater extent of white on the forehead is a constant distinguishing character of the Congo form.

PHALACROCORACIDAE.

1475. *Phalacrocorax carbo maroccanus* Hart. = *Phalacrocorax carbo maroccanus*.

Phalacrocorax carbo maroccanus Hartert, *Bull. B.O. Club*, xvi, p. 110 (1906—west coast of Morocco).

Type: ♂ ad., Shorf Elbaz, near Mogador, 17.v.1905. F. W. Riegenbach coll.

1476. *Phalacrocorax colensoi* Buller = *Phalacrocorax campbelli colensoi*.

Phalacrocorax colensoi Buller, *B. New Zealand*, 2nd ed., ii, p. 161 (1888—Auckland Islands).

Type: moulting, worn bird, sex and date unknown, Auckland Islands, collected by Mr. Burton, 1885. Ex Coll. Sir Walter Buller.

147. *Phalacrocorax traversi* Rothsch. = *Phalacrocorax atriceps traversi*.

Phalacrocorax traversi Rothschild, *Bull. B.O. Club*, viii, p. xxi (1898—Macquarie Islands).

Type: adult, not sexed, "Macquarie Islands, June 1898." H. Travers coll.

There can be no doubt that *Ph. atriceps* and *traversi* are subspecies, but it seems to be hazardous to treat them as subspecies of *carunculatus*, in which the feathering runs up between the rami to about the middle of the mandible.

1478. *Phalacrocorax graculus riggenbachi* Hart. = *Phalacrocorax aristotelis riggenbachi*.

Phalacrocorax graculus riggenbachi Hartert, *Nov. Zool.* xxx, p. 132 (1923—west coast of Morocco).
Cf. *Vög. pal. Fauna*, p. 1335!

Type: ♀ ad., Cape Blanco north, south of Mazagan, 5.v.1902. F. W. Riggenbach coll.

1479. *Phalacrocorax harrisi* Rothsch. = *Phalacrocorax (Nannopterum) harrisi*.

Phalacrocorax harrisi Rothschild, *Bull. B.O. Club*, vii, p. lii (1898—Narborough Island, Galápagos Islands).

Type: ♂ ad., Narborough Island, 6.xii.1897. Hall coll. (Webster-Harris Expedition, No. 2829.)

("Phalacrocorax alis brevissimis, quibus minime volare potest avis inepta." R. B. Sharpe, 1899.)

SULIDAE.

1480. *Sula websteri* Rothsch. = *Sula sula websteri*.

Sula websteri Rothschild, *Bull. B.O. Club*, vii, p. lii (1898—"Clarion Island, Galápagos, and neighbouring seas").

Type: ♂ ad., Clarion Island, Revilla Gigedos group, west of Mexico, 4.vii.1897. Webster-Harris Expedition, No. 67.

About the nomenclature of this and other Gannets, see Mathews, *B. Australia*, iv, pp. 212-216, and Mathews and Iredale, *Manual B. Australia*, p. 74.

1481. *Sula granti* Rothsch. = *Sula dactylatra granti*.

Sula granti Rothschild, *Bull. B.O. Club*, xiii, p. 7 (1902—Galápagos Islands).

Type: ♀ ad., Culpepper I., Galápagos Is., 29.vii.1897. Webster-Harris Expedition, No. 126.

1482. *Sula dactylatra californica* Rothsch. = *Sula dactylatra californica*.

Sula dactylatra californica Rothschild, *Bull. B.O. Club*, xxxv, p. 43 (1915—"coasts of California and Central America").

Type: ♀ ad., San Benedicto Island, Revilla Gigedos group, west of Mexico, 7.xii.1901. R. H. Beek coll. No. 1243.

FREGATIDAE.

1483. *Fregata minor magnificens* Math. = *Fregata magnificens magnificens*.

Fregata minor magnificens (sic!) Mathews, *Austral Avian Record*, ii, p. 120 (1914—"Barrington, Indefatigable, Albemarle Islands, etc., Galápagos Islands").

Type: ♂ ad., Barrington Island, 8.vii.1891. Dr. G. Baur coll. No. 259.
(Cf. *Nov. Zool.* 1915, pp. 145, 146; 1924, pp. 300, 303.)

1484. **Fregata minor rothschildi** Math. = *Fregata magnificens rothschildi*.

Fregata minor rothschildi Mathews, *Birds of Australia*, iv, p. 280 (1915—West Indies, type Aruba).

Type: ♂ ad., Aruba, west of Curaçao, off Northern Venezuela, 3.vii.1892. Ernst and Claudia Hartert coll. No. 144.

1485. **Fregata andrewsi** Math. = *Fregata andrewsi*.

Fregata andrewsi Mathews, *Austral Avian Record*, ii, p. 120 (1914—"Christmas Island, Indian Ocean").

Type: ♂ ad., Flying Fish Cove, Christmas Island, 20.xi.1897. Ex Hugh Ross.

† 1486. **Fregata minor listeri** Math. = *Fregata minor minor*.

Fregata minor listeri Mathews, *Austral Avian Record*, ii, p. 119 (1914—Christmas Island, Indian Ocean).

Type: ♀ ad. (only the differences of the female are mentioned in the original description), Flying Fish Cove, Christmas Island, August 1892. Ex Dr. C. W. Andrews.

(Cf. Nov. Zool. 1924, p. 306.)

1487. **Fregata minor ridgwayi** Math. = *Fregata minor ridgwayi*.

Fregata minor ridgwayi Mathews, *Austral Avian Record*, ii, p. 120 (1914—Breeding on Culpepper and Wenman Islands, Galápagos Is.).

Type: ♂ ad., Culpepper Island, 27.vii.1897. Harris coll. No. 194.

1488. **Fregata minor aldabrensis** Math = *Fregata minor aldabrensis*.

Fregata minor aldabrensis Mathews, *Austral Avian Record*, ii, p. 119 (1914—Aldabra Island).

Type: ♂ ad., Aldabra, 23.vii.1906. Thibault coll.

1489. **Fregata ariel iredalei** Math. = *Fregata ariel iredalei*.

Fregata ariel iredalei Mathews, *Austral Avian Record*, ii, p. 121 (1914—Aldabra Island).

Type: ♀ Aldabra, 23.vii.1906. Thibault coll.

PHAETHONTIDAE.

1490. **Phaëthon rubricauda erubescens** R. = *Phaëthon rubricauda erubescens*.

Phaëthon rubricauda erubescens Rothschild, *Avifauna of Laysan*, pt. iii, p. 296 (1900—Kermadec, Norfolk, and Lord Howe's Islands).

Type: adult, Kermadec Islands, purchased from Dannefaerd in New Zealand.

Mathews, *B. Australia*, iv, pp. 298-301, declared that the name *erubescens* was undoubtedly antedated by Brandt's name "*novae-hollandiae*," Brandt's name being the scientific term for Latham's "New Holland Tropic Bird." This is, however, not quite correct, though Brandt named Latham's species. In the description by Latham (quoted by Mathews, p. 299) it is stated that "the quills have a sagittated dash of black and at the end of each of a streak of black, continued from the black web." Such markings one can discover (though the description, taken from a drawing, is bad) in *Phaëthon lepturus*, but never in any *rubricauda*. Also the "yellow legs" are characteristic of *P. lepturus*, while in *rubricauda*

they are greyish. Therefore, whatever one might conclude from collateral evidence, the name *novae-hollandiae* cannot be accepted for any red-tailed Tropic Bird. It is even doubtful if *P. novae-hollandiae* was meant by Brandt to be a binomial term. He first described the species known to him, and then added a list of doubtful forms unknown to him. The headings of the latter are printed in italics, in a different type from the headings of the species he admitted, and as he wrote altogether in Latin the headings became "*Phaëthon Catesbyi*," "*Phaëthon Edwardsii*," and "*Phaëthon Novae-Hollandiae*," instead of Catesby's, Edwards', and the New Holland Tropic Bird.

If the name *novae-hollandiae* is accepted it antedates Mathews's *P. lepturus dorotheae* of 1913, which, moreover, is doubtfully and probably not distinct from *P. l. lepturus*. Looking up this species in the *B. of Australia*, iv, one is struck by seeing it described and figured with a red bill, while one knows, of course, that *P. lepturus* in its various forms has a yellowish bill. Comparing the type and figured specimen, it is obvious that the bill of the skin had been *painted* red, though its natural colour is clearly seen, the paint having been partially washed off. How it was possible to make such a mistake is difficult to understand, nor is it corrected in the *Manual* of 1921. As the supposed red bill was the principal distinguishing character, in addition to the smaller size, one must believe that the author never saw another Australian specimen, nor examined any from the Pacific Ocean. It is regrettable that the beautiful figure in the *B. of Australia* is thus misleading. I wonder if Australian ornithologists have never noticed this and criticized it.

1491. ***Scaephaethon rubricauda rothschildi*** Math. = *Phaëthon rubricauda rothschildi*.

Scaephaethon rubricauda rothschildi Mathews, *B. Australia*, iv, p. 303 (1915—Laysan, Niihau).

Type: ♂ ad., Laysan, caught in nest with young, 5.viii.1896. Professor Schauinsland coll.

† 1492. ***Scaephaethon rubricauda brevirostris*** Math. = *Phaëthon rubricauda rothschildi*.

Scaephaethon rubricauda brevirostris Mathews, *B. Australia*, iv, p. 303 (1915—Bonin Islands).

Type: adult, North Noojima, Bonin Islands, 10.v.1911. From Alan Owston's collectors.

I cannot see that the Bonin Island birds differ at all from those of Laysan and Niihau, which are Mathews's *P. r. rothschildi*.

(To be continued.)

ON *DELIAS BELLADONNA* AND ALLIED SPECIES (LEP. RHOP.)

By DR. KARL JORDAN.

(With eight Text-figures.)

THE history of *Delias belladonna* Fabr. (1793) and allies, from the point of view of the systematist, is an unbroken chain of errors. It did not start well. Fabricius described *D. belladonna* from Jones's drawings, but could not give the locality whence the specimen had come; and the more detailed description and the figure of this specimen published by Donovan in 1823 differ in important points from everything we have seen in collections. Subsequent authors, nevertheless, have applied the name to North Indian or to Chinese specimens. Since 1823 a considerable number of forms similar to *D. belladonna* have been published; some were described as distinct species, and afterwards, erroneously, sunk as varieties or even synonyms, and others were described as varieties, but in reality are distinct species or are varieties of other species than those to which they were originally assigned. The acquisition of larger collections from the Himalayan countries and China appeared to prove the distinctions between the various species and varieties to be very fluctuating, and, the real distinctions not being known, the consequence was great uncertainty and confusion. Elwes (1888) and Butler (1897) drew the logical conclusion that, the differences being unreliable, all the forms known to them belonged to one single species.

The latest account we have of *D. belladonna* and allies is that by Fruhstorfer in Seitz, *Macrolep.* ix, p. 130 (1911). Here Butler's view is adopted. The account bears evidence of being written in haste and not revised.

My assistant, Mr. F. W. Goodson, recently had an occasion to inspect the magnificent series of Oberthür's *Delias*, now in the collection of Mr. John Levick, of Birmingham, and on comparing the large number of specimens of the various so-called varieties of *D. belladonna* from the Oberthür collection, he came to the conclusion that the specimens could be arranged in definite groups which had the appearance of being distinct species. As the opinions expressed by Lepidopterists on the systematics of *D. belladonna* and allies were mainly based on the colour and pattern of these butterflies and often differed greatly, it was necessary for me to study the structure of the various forms so as to arrive at conclusions independent of differences in colour and pattern. Owing to the pressure of other work the following notes are somewhat cursory, but as they put the systematics of *D. belladonna* nevertheless on a firmer basis, they seem to me worth publishing. The next step would be to find structural differences between the ♀♀ of the various species of the *belladonna*-group.

The table on page 278 gives a survey of the distinct species and their distribution as far as known to me.

The species are confined to the mountains. In *Iris*, p. 4 (1924), a ♂ is recorded from Pekin, but I doubt that this single specimen really came from so far north. It will be noticed that no less than 5 species are found in Yunnan, and that *D. belladonna* occurs in all districts except Central China and Formosa. Some of the species and varieties were originally described as new on account

	<i>D. lativitta.</i>	<i>D. patrua.</i>	<i>D. subnubila.</i>	<i>D. wilemani.</i>	<i>D. sanaca.</i>	<i>D. berinda.</i>	<i>D. belladonna.</i>
N.W. India	—	—	—	—	×	—	×
Nepal	—	—	—	—	—	—	×
Sikkim (higher alt.)	—	—	—	—	×	×	×
Sikkim (lower alt.)	—	—	—	—	—	—	×
Assam	—	—	—	—	—	×	×
Burma	?	—	—	—	×	×	×
Yunnan	×	×	×	—	×	—	×
W. China	×	—	×	—	—	×	×
C. China	—	×	—	—	—	×	—
Formosa	×	—	—	×	—	—	—
Tenasserim	—	—	—	—	—	—	×
Sumatra	—	—	—	—	—	—	×
Celebes	—	—	—	—	—	—	×

of the deep tint of the orange markings ; I think Butler (1897) was quite right in looking upon such specimens as discoloured.

The various species can be distinguished without much trouble by differences in the anal tergite of the ♂. After the claspers have been softened (by hot water), they can be sufficiently separated to allow the anal tergite to be inspected. This segment is trifid (text-figs. 1-6) in all the species, but its proportions differ in the various species. The clasper is here a less safe guide ; its structure, however, is nevertheless very interesting. It bears on the inner surface below the middle a rounded hole (text-figs. 7, 8, 9) leading into the hollow interior of the clasper. This interior cavity is lined with a membrane bearing hair-like projections and being raised into a number of longitudinal folds of various lengths. The surface of the folds is formed by chitinated filaments united in a more or less regular network giving the folds the appearance of a sponge. The hole or " groove " is larger in some species than in others. Above it there is a ridge produced into a tubercle (*t*) of varying height, smooth and feebly chitinated. This ridge evidently acts as a guide towards or from the groove. The whole organ here described is doubtless of a glandular nature. In the ♀ there is at each side of the genital orifice a thick bundle of stiff hairs, which may possibly have developed in connection with the peculiar inner structure of the ♂-claspers.

The plume-scales of the ♂♂ are not identical in all the species, and one species (*D. belladonna*) has in the ♂ a much more regularly scaled (less rough) upper surface than the others.

Key to the species :

1. Terminal fringe of forewing to a large extent white 2.
 Terminal fringe of forewing with a very few or no white
 scales 3.
2. Yellow basal costal patch of hindwing above reduced to
 a narrow streak or absent *D. patrua*.
 Yellow basal costal patch of hindwing above large *D. lativitta*.
3. Patch in cell of hindwing below entirely yellow, sometimes
 very small ; on upperside the cell of hindwing in both
 sexes without long white streak *D. belladonna*.
 Patch in cell of hindwing beneath proximally white ; in ♀
 the cell of hindwing above always with conspicuous
 white or greyish white streak 4.

4. Hindwing above with a large orange patch between M¹ and M² *D. wilemani*.
 Discal spot M¹—M² of hindwing above white, or at most suffused with yellow 5.
5. Anal tergite of ♂ long and narrow, the lateral prongs quite short *D. subnubila*.
 Anal tergite distally rounded-dilated, the lateral prongs long 6.
6. Median prong of anal tergite of ♂ shorter than lateral ones *D. sanaca*.
 Median prong a little longer than lateral ones *D. berinda*.

The small Sumatran *chrysorrhoea* belongs to *D. belladonna*; the form from Celebes, which we do not know, probably is a further development of the same branch.

1. *Delias patrua* Leech (1890).

Delias patrua Leech, *Entom.* xxiii, p. 46 (1890) (Chang-yang); id., *Butt. China*, ii, p. 442, pl. xxxvii, fig. 1 ♂, 2 ♀ (1893).

Delias belladonna var. 11. *D. patrua* Leech, *Butler, Ann. Mag. N.H.* (6), xx, p. 162 (1897).

♂ ♀. Discal streaks of both wings narrow above and below; yellow costal basal patch on upperside of hindwing reduced to a narrow costal streak, which is often more grey than yellow; yellow abdominal area canary-yellow with a tint of sulphur, being much paler above than beneath. On underside, the diffuse cell-streak of the forewing subapically not interrupted, its apical portion not forming a transverse patch; basi-costal orange patch of hindwing narrow, not touching the cell.

♂. Upper scales of upper surface nearly all bidentate (apart from the rounded scales in the costal and abdominal areas of hindwing), the teeth about as long as the scale is broad at the base of the teeth. Anal tergite (text-fig. 1) strongly widened distally, the prongs short, the median one thin, the lateral ones broad, a little shorter than the diameter of the sinus measured from the tip of the lateral prong to the tip of the median one; the median prong on a slightly higher level at apex and usually somewhat shorter than the lateral prongs. Apex of clasper usually forming a rather long nose; tubercle of inner surface high, but obtuse; groove large.

Hab. Central China and Yunnan.

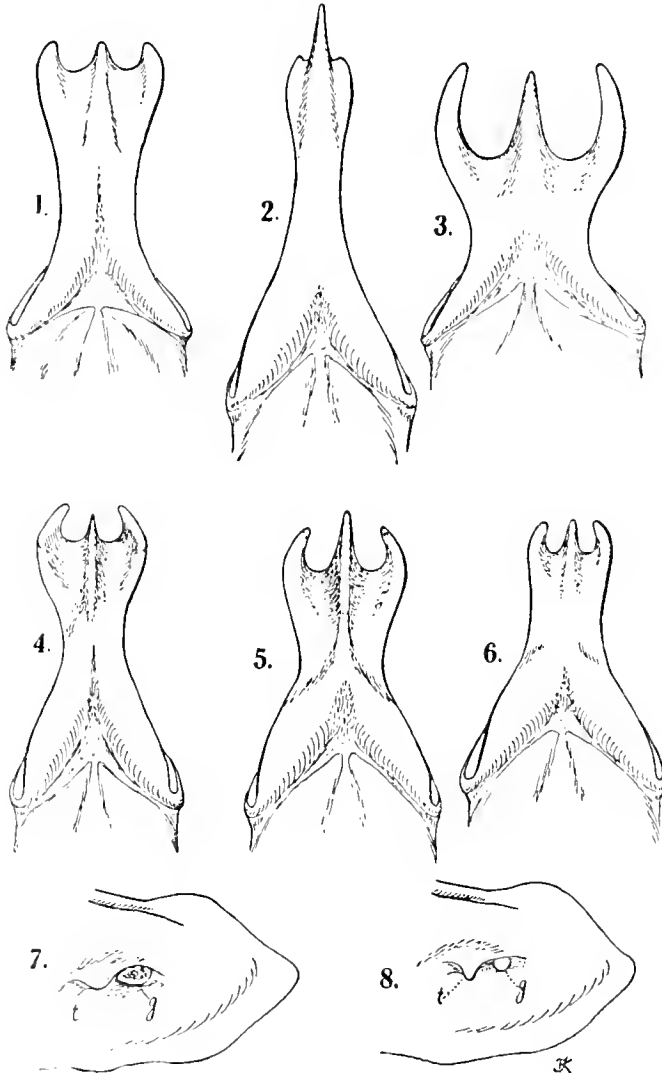
2. *Delias lativitta* Leech (1893).

Delias patrua var. *lativitta* Leech, *Butt. China*, ii, p. 422, pl. xxxv, fig. 1 ♂ (1893) (Ta-tsien-lu and Moupin).

Delias patrua Leech var. *formosana* Matsumura, *Ent. Zeitschr.* xxiii, p. 92 (1909) (♀, Formosa).

♂ ♀. Terminal fringes of both wings for the greater part white, which does not occur in any of the following species, the fringes remaining black even in the palest specimens of *D. sanaca*. On upperside the stripes almost pure white in ♂, the cell-stripe of the hindwing particularly being very prominent, in the ♀ the stripes somewhat shaded with black-brown; in other species with a cell-stripe on the upperside of the hindwing this stripe is much larger and more distinct in ♀ than in ♂; anterior discal spot of hindwing of ♂, above, as well marked as the four other discal spots, in other species this anterior discal spot diffuse in ♂

or absent, but always present in ♀, in *D. lativitta* on the contrary more diffuse in ♀ than in ♂. On underside all specimens with an orange costal streak before vein SC^2 ; subbasal orange costal patch not touching cell and SC^2 ; white cell-streak of forewing distally divided longitudinally into three lines, the



subapical portion of the streak not separated as an oblique transverse patch, which is the case in all the following species.

♂. Scaling similar to that of *D. patrua*. Anal tergite (text-fig. 3) much broader than in *D. patrua*, the prongs much longer and the lateral ones narrower. Tubercle of elasper more triangular; groove somewhat smaller, more circular.

Hab. West China; Yunnan; Formosa.

The specimen from Burma mentioned by Leech as identical with *lativitta*

possibly was the ♀ of *D. sanaca perspicua*. I cannot find any difference between ♂♂ from Formosa (we have no Formosan ♀♀) and from West China.

3. *Delias subnubila* Leech (1893).

Delias sanaca var. *subnubila* Leech, *Butt. China*, ii, p. 421, pl. xxxvii, fig. 7 ♂, 8 ♀ (1893) (W. China).

♂ ♀. Terminal fringes black. On upperside the anterior submarginal spots anguliform, not linear as in the two preceding species; orange basal spot of hindwing touching cell and SC²; discal spots shorter than in the previous species, cell-spot short in ♂, long, broad, and very conspicuous in ♀, not being shaded with blackish in ♀, orange abdominal area slightly deeper in tone than in *D. lativitta*. On underside the white diffuse cell-streak of forewing subapically more or less constricted or nearly interrupted, its apical portion forming an oblique transverse patch, which, in ♀, is also distinct on upperside.

♂. Scaling in middle of upperside much rougher than in the two previous species, the upper scales longer, more deeply sinuate and more or less curved upwards, plumules broader proximally. Anal tergite (text-fig. 2) very different from that of every other allied species: long, narrow, feebly dilated distally, the lateral prongs quite short and ventral, *D. subnubila* representing the one extreme in the development of the anal tergite and *D. lativitta* the other. Tubercle of clasper somewhat lower than in *D. lativitta* and the groove much larger.

Hab. West China and Yunnan; may be expected to occur in N.E. Burma.

4. *Delias wilemani* spec. nov.

Delias taiwana Wileman (partim), *Annot. Zool. Japon.* vii, p. 95, No. 38 (1909) (♀; ♂ = *Aporia molrechti* Oberth, 1909, January).

♂ not known.

♀. Differs from *D. subnubila* and all the other species in the hindwing bearing between the median veins a large, triangular, chrome-yellow, discal patch which is only 1 to 2 mm, distant from the submarginal spot and nearly extends to the cell; this patch corresponds to the last discal patch of the allied species, but is much larger, abdominal area chrome-yellow between M² and SM¹ from near termen more than half-way to base; subapical oblique white cell-patch in forewing, upperside, rather sharply defined, and much more distinct than in the ♀♀ of the three previous species.

Hab. Formosa: Arizan, 2 ♀♀ in coll. Wileman, incl. of *type*; Horisha, 1 small ♀ in Mus. Tring.

5. *Delias sanaca* Moore (1857).

Pieris sanaca Moore, *Proc. Zool. Soc. Lond.*, p. 103, pl. xlv, fig. 4 ♀ (1857) ("Darjiling" error).

Delias belladonna var. 3. *D. sanaca* = *chrysorrhoea*, Butler, *Ann. Mag. N.H.* (6), xx, p. 161 (1897) ("Darjiling" error, Kulu).

Delias belladonna Fabr., Mackinnon and Nicéy., *Journ. Bom'ay N.H. Soc.* xi, p. 585, No. 216 (1898) (partim).

The light-coloured specimens from N.W. India are easily distinguished from all the other species, but the specimens with the white markings not enlarged can only be recognised with certainty as belonging to *D. sanaca* by the examination of the structure. Differs from the various forms of *D. belladonna* in the cell-spot of the hindwing below being white proximally and in the cell of the hindwing above bearing in the ♀ a long grey streak; from similar specimens of

D. berinda in the third discal spot of the hindwing being shorter and proximally more or less concave.

♂. Anal tergite (text-fig. 4) similar to that of *D. patrua*, apically more strongly rounded-dilated and distinctly curved down, the lateral prongs curved, median prong much thinner and always shorter than the lateral ones, median carina high. Tubercle of clasper low, groove very large. Scaling on disc of upperside shorter than in *D. berinda*.

Hab. N.W. India, Sikkim, Burma, and Yunnan, in two subspecies.

a. D. sanaca sanaca Moore (1857).

Pieris sanaca Moore, l.c.

Delias flavalba Marshall, *Proc. Zool. Soc. Lond.*, p. 759 (1882).

Delias sanaca Moore, *Lep. Ind.* vi, p. 163, pl. dxxviii, fig. 1, *a, b, ♂, c, d, e, ♀* (1904) (W. Himalayas).

Very variable, the palest specimens (f. *flavalba*) being white marked with black, and the darkest being black spotted with white in the usual way. The dark specimens resemble *D. belladonna horsfieldi*, which occurs in the same district and with which they have often been confounded; the yellow cell-spot of the hindwing, beneath, is always white proximally, and in the ♀ the cell of the hindwing, above, is for the greater part white.

Hab. N.W. India.

b. D. sanaca perspicua Fruhst. (1911).

Delias belladonna auct. partim.

Delias belladonna var. *horsfieldi* Gray, Elwes (err. determinationis), *Trans. Ent. Soc. Lond.* p. 409, no. 359, pl. x, fig. 3 ♀ (1888) (text partim, Sikkim).

Delias horsfieldi Gray, Moore (err. determinat.), *Lep. Ind.* vi, p. 166 (1904) (partim).

Delias belladonna perspicua Fruhstorfer, in Seitz, *Macrolep.* ix, p. 130, pl. lvi, *a, ♀* (1911) (Upper Burma).

I take the figure in Seitz as type of the name *perspicua*, the figure representing a ♀ of the present subspecies; but the description, particularly of the ♀, and the statement that of all the Chinese forms *zelima* is the one most similar to *perspicua*, point to *D. belladonna* rather than to the present subspecies of *D. sanaca*.

Resembles very closely *D. berinda boyleae*, with which it occurs together, but the anal tergite and the scaling of the upperside different, as stated above; in *boyleae* (not *boylei*!) the third discal spot on the underside of the hindwing proximally drawn out into a thin streak, in *perspicua* truncate or emarginate. Intergrades with *D. sanaca sanaca*.

Hab. Sikkim (at altitudes above 1,800 m.), N.E. Burma, and Yunnan.

6. *Delias berinda* Moore (1872).

Thyca berinda Moore, *Proc. Zool. Soc. Lond.*, p. 566 (1872) (Khasia Hills).

This is the oldest name of the species to which belong *adelma*, *berinda*, and *boyleae*. The true status of *berinda* and *boyleae* has never been perceived. Moore himself and Elwes, de Nicéville, Swinhoe, Fruhstorfer, Butler, etc., confounded *berinda* with the dark forms of *D. belladonna* occurring in Lower Sikkim, Assam, and N.W. Burma and *boyleae* has usually been regarded as an individual aberration (discoloured) of *D. belladonna*.

The three subspecies differ much from each other in colouring; all are

distinguished from the forms of *D. belladonna* by the cell-patch of the hindwing being white proximally on the underside and, in the ♀, being represented on the upperside by a long white streak. Two of the subspecies are easily differentiated from *D. sanaca* and *D. subnubila*, while the third closely agrees in pattern with *D. sanaca perspicua*, cf. above.

♂. Upper scales in centre of wings, upperside, longer than in *D. sanaca*, more or less strongly curved up, rendering the wing-surface rough. Anal tergite (text-fig. 5) nearly as in *D. sanaca*, but the median prong broader and at least as long as the lateral ones. Tubercle and groove of clasper (text-fig. 7) essentially as in *D. sanaca*, the groove slightly smaller.

Hab. Sikkim, Assam, Burma, Yunnan. West and Central China.

a. *D. berinda berinda* Moore (1872).

Thyca berinda Moore, l.c. (Khasia Hills).

Delias ithiola Butler, Moore (err. determinat.), *Butt. Ind.* vi, p. 167, pl. Dxxx, fig. 1b ♀ (1904) (text partim; fig. of type).

Delias belladonna auct. partim.

True *berinda* is evidently rare in collections; it is in general appearance similar to the black forms of *D. belladonna*. On the upperside the white markings are much reduced in size, and the orange anal area of the hindwing is absent; the ♀ has a sharply defined, long, but narrow white streak in the cell of the hindwing. On the underside the markings are likewise small, the orange basal patch of the hindwing is shortened, being sometimes elliptical, and the abdominal area black, without orange.

Hab. Assam; Khasia Hills. N.E. Burma; Barak Valley, W. Manipur, iv; S. Chin Hills, 2,200 m. (Watson).

b. *D. berinda boyleae* Butl. (1885).

Delias boyleae Butler, *Ann. Mag. N.H.* (5), xv, p. 58 (1885) (Darjiling).

Delias horsfieldi Gray, Elwes (err. determinat.), *Ann. Mag. N.H.* (5), xvii, p. 158 (1886) (partim); Moore, *Lep. Ind.* vi, p. 166 (1904) (partim).

Delias belladonna Fa'r., Elwes (err. determinat.), *Trans. Ent. Soc.*, p. 408 (1888) (partim).

Delias belladonna var. *amarantha* Mitis, *Iris*, vi, p. 133, pl. ii, fig. 3 ♂ (1893) (Darjiling, coll. Staudinger ex Elwes).

Delias belladonna var. 5. *D. boylei* (sic!) = *amarantha*, Butler, *Ann. Mag. N.H.* (6), xx, p. 161 (1897) (partim).

Delias belladonna ab. *boyleae* Butl., Fruhstorfer, in Seitz, *Macrolep.* ix, p. 130 (1911).

Delias belladonna ab. *amarantha* Mitis, Fruhstorfer, l.c.

White spots of upperside larger and less diffuse than in *D. b. berinda*, particularly the discal spots of the hindwing, orange anal area large above and below.

Hab. Sikkim, at higher altitudes. May be expected to occur in N.E. Burma.

c. *D. berinda adelma* Mitis (1893).

Delias belladonna var. *adelma* Mitis, *Iris*, vi, p. 130 (1893) (C. China).

Delias sanaca var. *adelma* Mitis, Lecch, *Butt. China*, ii, p. 421, pl. xxxvii, fig. 5 ♂, 6 ♀ (1894) (Chang-yang, vi, vii).

Delias belladonna var. 10. *D. adelma*, Butler, *Ann. Mag. N.H.* (6), xx, p. 162 (1897).

Upperside of ♂ very dark, the markings grey, the discal stripes narrow, diffuse, orange area of hindwing large and conspicuous, in cell of hindwing a

thin white line ; in ♀ the markings of the forewing likewise small, diffuse, on the hindwing large, particularly the long cell-spot, abdominal area grey, the grey streak along submedian fold long and usually somewhat washed with yellow. On underside the orange markings of hindwing large in both sexes, basal costal patch pointed distally.

Hab. Central and West China. May be expected to occur in Yunnan.

7. *Delias belladonna* Fabr. (1793).

Papilio Heliconius belladonna Fabricius, *Ent. Syst.* iii, p. 180, No. 557 (1893) (hab. ?).

Papilio belladonna Fabr., Donovan, *Natur. Repos. Ent.*, pl. xxxv, ♀ (1823) (hab. ?).

Donovan's figure represents the upperside of a ♀ without a white stripe in the cell of the hindwing. In all the previous species (Nos. 1 to 6) the ♀♀ have a long white cell-stripe.

The subcostal vein of hindwing branches off a little more distally and therefore is more strongly curved than in all other species. The submedian discal double spot on the underside of the forewing more clearly defined than in the allied species, the cell-patch of the hindwing always entirely yellow, not being white proximally, the basal orange patch shortened in nearly all specimens, the discal spot following it usually white, rarely washed with yellow. Cell of hindwing above without white spot or the spot is short, never being so long as in the ♀♀ of other species.

♂. Scaling of upperside much more smooth than in any other species of this group, the upper scales much shorter than, for instance, in *D. berinda*, not so much curved upwards and nearly all tridentate in and around the cell on both wings ; plumules shorter than in *D. berinda*, but proximally nearly as broad, in *D. berinda* five times as long as broad, in *D. belladonna* not quite four times. Anal tergite (text-fig. 6) distally less dilated than in *D. berinda*, the sides of the apical portion less rounded, the three prongs of equal lengths, the median carina less elevate, the depressions extending backwards from the sinus at each side of the median prong shorter. Tubercle of clasper (text-fig. 8) higher and more pointed and the groove smaller than in any other species.

Hab. Himalayas from N.W. India to West China, extending southward to Tenasserim, Sumatra, and Celebes.

a. *D. belladonna belladonna* Fabr. (1793).

Fabricius, l.c. ; Donovan, l.c.

Delias belladonna Fabr., Elwes, *Ann. Mag. N.H.* (5) ♂, xvii, p. 158 (1886).

Elwes, l.c., p. 157, says : " As all the forms of this species are, so far as we know, confined in India to the Himalayas, and no collections from the Himalayas are known to have reached Europe in Fabricius's time, whereas many Chinese insects had been brought to Europe, it would be reasonable to suppose that if a form of *belladonna* occurs in China, and resembles Donovan's plate (which, however, in some respects is evidently inaccurate), the Chinese form would be most probably typical." And on p. 158 : " If, therefore, any insect does exist which is distinct from the Himalayan *horsfieldi* and like Donovan's plate, I should expect it to be found in the mountainous regions of south-western China, perhaps near Canton." If we read south-eastern for south-western, I agree with Elwes. No specimen is known to me from S.E. China, and none

from other localities that agree with Donovan's plate and description. The specimen figured by Donovan is a ♀ which has two yellow spots behind M² of the hindwing, one discal, the other submarginal, and both Donovan and Fabricius say that the underside of the hindwing is similar to the upper; Donovan, who expressly states that he has been "more minute in the description of these spots," describes the underside as follows: "The spots being semitransparent the appearance on the underside in a great degree corresponds with that above: there is a small difference, because instead of one yellowish spot at the base of the posterior, there are two, another smaller than that which appears at the base of that wing on the upper surface being situated below it." We must conclude from this description that the submarginal and discal spots on the underside of the hindwing were white as above, not yellow. As two species of this group of *Delias* are known from Formosa, and as in Sikkim *D. belladonna* occurs as low down as 600 mm., there is every likelihood that these *Delias* are also represented in the mountains of south-eastern China. Butler, in *Ann. Mag. N.H.* (5), xv, p. 57 (1885), speaks of a ♂ which agrees with Donovan's figure. There is in the Brit. Mus. an Indian ♀ with the abdomen of a ♂ stuck on which remotely resembles Donovan's figure, as do many ♀♀ of *D. belladonna*.

Hab. ? S.E. China.

b. *D. belladonna zelima* Mitis (1893).

Delias belladonna Fabr., Elwes, *Ann. Mag. N.H.* (5), xvii, p. 158 (1886) (W. Chinese specimens agree with *horsfieldi*); Leech, *Bull. China*, ii, p. 419, pl. xxxvii, fig. 3 ♂, 4 ♀ (1894) (W. China). *Delias belladonna* var. *zelima* Mitis, *Iris*, vi, p. 131 (1893) (W. China). *Delias belladonna* var. *S. D. horsfieldi* = *surya* and *zelima*, Butler, *Ann. Mag. N.H.* (6), xx, p. 161 (1897) (partim).

Upperside: Discal spots of hindwing and submarginal spots of both wings large, chrome-yellow anal area of ♂ large, extending about half-way to base, in ♀ smaller, often vestigial only. On underside the spots of both wings and the orange anal area large.

Hab. West China, Yunnan, and north-east Burma.

c. *D. belladonna horsfieldi* Gray (1831).

Pieris horsfieldi Gray, *Zool. Misc.* p. 32 (1831) (Nepal); Kollar, in Hügel, *Kaschmir*, iv, 2, p. 408 (1848) (Massuri). *Pieris belladonna* Gray, *Lep. Ins. Nepal*, p. 7, pl. viii, fig. 2 ♂ (1846). *Delias belladonna* Fabr., Elwes, *Proc. Zool. Soc. Lond.*, p. 401 (1882) (partim); id., *Trans. Ent. Soc.*, p. 408, no. 359 (1888) (partim). *Delias horsfieldi* Gray, Elwes, *Ann. Mag. N.H.* (5), xvii, p. 158 (1886) (partim); Moore, *Lep. Ind.*, vi, p. 166, pl. dxxix, fig. 1b ♂, 1c ♀ (1904) (partim). *Delias hearseyi* Butler, *Ann. Mag. N.H.* (5), xv, p. 58 (1885) ("Barrackpore" error). *Delias belladonna* var. *surya* Mitis, *Iris*, vi, p. 132 (1893) ("Kashmir" recte Massuri). *Delias belladonna* var. *S. D. horsfieldi* = *surya* and *zelima*, Butler, *Ann. Mag. N.H.* (6), xx, p. 161 (1897) (partim).

Not constantly different from *D. b. zelima*, more variable and as a rule smaller. On upperside the discal spots of forewing usually less diffuse and purer white, the discal spots and cell-patch of hindwing larger. On underside the orange basal patch of hindwing more or less pointed in most specimens. In one of the North-West Indian ♂♂ in the Brit. Mus. there is an orange costal marginal streak on the underside of the hindwing as in *D. lativitta*.

Hab. Sikkim (higher altitudes), Nepal, and North-West India.

d. *D. belladonna ithiela* Butl. (1869).

Thyca ithiela Butler, *Ann. Mag. N.H.* (4), iv, p. 242 (1869) ("Penang" error); id., *Lep. Exot.* p. 62, pl. xxiv, fig. 1 (1871).

Delias belladonna Fabr., Elwes, *Proc. Zool. Soc. Lond.*, p. 401 (1882) (Sikkim, partim); id., *Trans. Ent. Soc. Lond.*, p. 408 (1888) (Sikkim, partim).

Delias belladonna var. 9. *D. ithiela* ♂ = *D. berinda* ♀, Butler, *Ann. Mag. N.H.* (6), xx, p. 162 (1897) (*ithiela* = *berinda* ex errore!).

Delias ithiela Butl., Moore, *Lep. Ind.* vi, p. 167, pl. DXXX, fig. 1. 1a ♂ (1904) (partim, nec fig. 1b, 1c = *berinda*).

White markings reduced in size; orange anal area of hindwing above and below likewise reduced, often absent above, rarely entirely absent beneath.

Hab. Sikkim, at lower altitudes (600 to 1,200 m.).

e. *D. belladonna lugens* subsp. nov.

Delias belladonna Fabr., Elwes, *Trans. Ent. Soc. Lond.*, p. 408, no. 359, pl. x, fig. 2 ♀ (1888) (partim; Khasia Hills).

Delias belladonna var. 9. *D. ithiela* ♂ = *D. berinda* ♀, Butler, *Ann. Mag. N.H.* (6), xx, p. 162 (1897) (partim).

Delias ithiela Butl., Moore, *Lep. Ind.* vi, p. 167 (1904) (partim).

Delias belladonna berinda Moore, Fruhstorfer (err. determ.), in Seitz, *Macrolep.* ix, p. 130 (1911) (Assam).

♂ ♀. Not constantly different from *D. b. ithiela*, but the series of specimens darker, the white spots on the whole smaller, the orange anal patch absent above, very rarely indicated beneath.

Hab. Assam: Khasia Hills (type); Naga Hills. North-West Burma: S. Chin Hills.

f. *D. belladonna hedybia* subsp. nov.

Delias horsfieldi Gray, Moore (err. determ.), *Lep. Ind.* vi, p. 166 (1894) (partim; Haundraw).

Delias belladonna Fabr., Nicéville, *Journ. As. Soc. Bengal*, lxiv, p. 487, sub no. 525 (1895); Bingham, *Fauna Brit. Ind.*, Butt. ii, p. 148, no. 577 (1907) (partim; Tenasserim).

♂ ♀. Smaller than *D. belladonna horsfieldi*, the anterior discal spots of the hindwing, above and below, smaller, particularly on underside, the orange anal area as large or larger than in *D. b. horsfieldi*, touching vein M^2 , the discal spot M^1-M^2 of ♀ washed with yellow. On underside the yellow cell-spot of hindwing reduced, smaller than discal spot M^1-M^2 , often quite small; submarginal spots of forewing and spots 3, 4, 5 of hindwing also reduced in size, yellow abdominal area at least as large as in *D. b. horsfieldi*.

Leads over to the next subspecies.

Hab. Tenasserim: Taoo plateau, 1,200 m., type, and Haundraw R. (Bingham). Also from the "Shan States" without more precise indication of locality.

g. *D. belladonna chrysorrhoea* Vollenh. (1865).

Pieris chrysorrhoea Vollenhoven, *Monogr. Pier.* p. 6, No. 3, pl. ii, fig. 4 ♂ (1865) (Sumatra).

Pieris chrysorrhoea (!) Vollenh., Kirby, *Cat. Diurn. Lep.* p. 462, no. 123 (1871).

Thyca (*Pieris*) *chrysorrhoea* Vollenh., Snellen, *Tijdschr. Ent.* xxxviii, p. 26 (1895) (Sumatra).

Delias belladonna Fabr., Nicéville & Martin, *Journ. As. Soc. Bengal*, lxiv, p. 487, no. 525 (1895).

♂ ♀. A small form, closely resembling *D. b. hedybia*, but the forewing less elongate. In ♀ the markings of the upperside washed with yellow.

Hab. Mts. of Sumatra.

h. *D. belladonna surprisa* Martin (1913).

Delias belladonna surprisa Martin, *Iris*, xxvii, p. 126, pl. vii, fig. 3 ♂, 4 ♀ (1913) (Central Celebes).
Delias surprisa id. l.c. xxxiii, p. 63, no. 70 (1919).

Not known to us. Yellow anal area above absent, beneath vestigial (♂) or absent (♀). Dr. Martin was much surprised when his native collectors brought him this insect. The name, too, is somewhat of a surprise.

Hab. Central Celebes: inland from Paloe Bay.

In *Ann. Mag. N.H.* (5), xvii, p. 161 (1886) de Nicéville, speaking of *D. belladonna*, says that there are three good species of this group: "*D. belladonna*, West China to Kulu; *D. sanaca*, Western Himalayas; *D. belucha*, Beluchistan." This *D. belucha* is evidently a slip; de Nicéville probably had in mind *Aporia belucha*.

ON SOME SUBSPECIES OF AFRICAN *CHARAXES*

BY DR. KARL JORDAN.

1. *Charaxes eudoxus cabacus* subsp. nov.

♂. Similar to *Ch. e. mechowii* Roths. (1899); on the upperside the tawny postdiscal band of the forewing much narrower, being posteriorly from one-third to one-half the width of the black submarginal interspace which separates the band from the marginal spots; on the hindwing the tawny discal band likewise narrower than in *Ch. e. mechowii*, and the black submarginal band broader, this band being anteriorly between SC² and R¹ much broader than the tawny band. On the underside the tawny ochraceous postdiscal band of the forewing narrower than in *mechowii*.

Hab. Uganda: Kampala (Stanley Tomkins). 1 ♂; Entebbe, July 1900 (H. Ratray), type, 5 ♂♂.

2. *Charaxes druceanus kivuanus* subsp. nov.

♂. In colour nearest to *Ch. d. druceanus* from Natal, both *kivuanus* and *druceanus* being darker than *Ch. d. proximans* Joie. & Talb. (1922) from Central and East Africa and Angola. The new subsp. darker than *druceanus* above and beneath; the tawny band of the upperside appreciably narrower and, on the hindwing, shorter; the tawny submarginal spots of the hindwing smaller. On the underside, the white discal band narrower posteriorly on the forewing and anteriorly on the hindwing, and the antemedian tawny band of the hindwing broader towards costal margin, than in the other subspecies.

Hab. Rugege forest, east of south-end of Lake Kivu, 2,100–2,300 m., xii. 1907 (R. Grauer), 2 ♂♂.

3. *Charaxes pelias brunnescens* Roths. (1900).

Charaxes pelias saturnus ab. (loc. ?) *brunnescens* Rothschild, *Nor. Zool.* vii, p. 445 (1900) (N. Angola; "brunnescens" err. typogr.).

We have now 22 ♂♂ and 4 ♀♀ from Angola and the Kassai. Only 2 ♂♂ (from Pungo Andongo, ex coll. A. von Homeyer) have the tawny wing-bases of *Ch. p. saturnus*, all the other specimens being much darker, some so deep black as to resemble *Ch. castor* very closely. In the darkest examples the marginal spots of the forewing are almost completely suppressed. This dark subspecies possibly extends farther north than the Kassai country.

4. *Charaxes pelias pagenstecheri* Schultze (1913).

Similar to *Ch. p. saturnus*, but on the upperside of the hindwing with a broad blue band which recalls *Ch. jason epijasius*. Dr. A. Schultze described this form as an aberration of *saturnus*; he had only one ♀ from the collection made in Abyssinia by the late Baron C. von Erlanger. We have from the same collection a ♂ which agrees with Schultze's description; it was caught at Batuni, south of

Lake Abai, 28.xi.1900. It is a most interesting form, which, we think, represents *Ch. p. saturnus* in Abyssinia. Specimens of *Ch. pelias* obtained farther south by C. von Erlanger belong to *saturnus*: Wante (17.v.1901) and Haro-Bussar (23.v.1901) in Merehan district, and Hanole, Ganale R. (30.vi.1901).

5. *Charaxes etheocles pembanus* subsp. nov.

♂. Upperside similar to that of *Ch. etheocles* ♂-f. *viola* Roths. (1900); on the forewing a pair of small blue subapical spots and a somewhat larger spot of the same colour half-way between them and the cell-apex, at the upper cell-angle a few blue scales (visible under a lens); the hindwing strongly dentate, from the anterior tail forward three ferruginous red admarginal spots bounded by a thin blue-green line, submarginal dots short, blue, partly with a minute white centre. On the underside the pale glossy borders of the black bars and dots very conspicuous and distinct at both sides of nearly all the black bars; on the hindwing the two lines of bars less irregular than in *Ch. e. etheocles*, particularly the outer one, the first three bars of this line being continuous and the next three almost touching one another, there is no bar between R^3 and M^1 ; outside the black discal lunules a very broad ferruginous red band which is about as wide as the interspace between this band and the white submarginal spots; the ferruginous red admarginal spots rather larger than on the upperside. —Large tooth of penis-sheath narrow, long, curved distad.

Hab. Pemba Island (E. Morland), 1 ♂.

TWO NEW INDIAN ANTHRIBIDAE, RECEIVED FROM THE
FOREST RESEARCH INSTITUTE AND COLLEGE AT DEHRA
DUN

By DR. KARL JORDAN.

1. *Acorynus aspersus* spec. nov.

♂. Niger, luteo-marmoratus, confertissime granulatus. Rostrum tricarinatum, planatum, ad carinam dorso-lateralem sulco profundo instructum, carina media tenui trans frontem latam capitis continuata. Antenna sat brevis, rufa, clava nigra, segmentis 3^o et 9^o aequilongis, octavo dimidio longioribus. Pronotum trivittatum, vitta laterali obliqua subangulata, carina lateribus arcuatim antrorsum flexa, carinula basali longitudinali conspicua. Elytra convexa, pone basin haud gibbosa. Pedes nigri, tibiatarum dimidio basali rufo albo-pubescente, tarsorum segmento primo albo apice nigro.

Long. 4.6 mm., lat. 2.2 mm.

Hab. Assam : Haflong, Cachar, v. 1925 (C. F. C. Beeson), 1 ♂.

Nearest to *A. parvulus* Jord. (1894), but different in structure and markings. Proboscis, cheeks, margins of eyes, and the frons luteous grey, this pubescence extending on to occiput as a median stripe. Proboscis flattened as in *A. parvulus*, but with only three carinae, of which the lateral one is accompanied on the outside by a deep groove; the carinae thin, not reaching apex of proboscis, the median one continued to occiput. Antenna similar to that of *A. parvulus*, club rather short and broad, base of 9 rufous, with white pubescence like apex of 8. 10 a little longer than broad. Pronotum with luteous grey median stripe which is broadest before carina, the lateral vitta consists of two elongate spots which touch each other, the anterior spot being more dorsal than the posterior one, between anterior spot and basal margin across carina a diffuse grey spot, in front of lateral carina luteous pubescence, more or less joined to the broken vitta, isolating a brown subapical spot, another brown spot on prosternum, longitudinal; carina straight, slightly flexed back towards sides and then running forward in an even curve, no angle being formed. Elytra marmorated with luteous, a transverse subbasal area and another in middle brown, bearing some small luteous dots; no distinct subbasal swelling, stripes distinct, but not deep. Pygidium semicircular, much broader than long, luteous grey, slightly blackish in middle.

Underside luteous grey, on metepisternum a diffuse brown spot. The grey pubescence of mid- and hindtibiae extends farther to apex below than above. Apical third and extreme base of first tarsal segment black.

2. *Acorynus silvanus* spec. nov.

♀. Compactus, luteo-guttatus, elytris duabus guttis albis, una laterali posthumerali altera dorsali postmediana. Rostrum quinquecarinatum, carina media trans caput continuata, intermedia irregularis, arcuata, antice obsoleta,

Pronotum grosse punctatum, carina lateribus gradatim arcuata, carinula lateralis basalis longitudinalis conspicua. Tibiae annulo medio griseo notatae; tarsorum segmentum 1. griseum basi apiceque nigris.

Long. 8 mm., lat. 4 mm.

Hab. Assam: Haflong, Cachar, v. 1925 (C. F. C. Beeson), 1 ♀.

The species stands isolated among the *Acorynus* with strongly punctate pronotum. Proboscis apically a little broader than long, sides, cheeks, and upper margin of eye luteous; apex of proboscis rugate, carinae not extending to apical margin, lateral carina accompanied on outer side by a deep groove, median one rather high, remaining very distinct on frons and occiput, intermediate carina not well developed, short, irregular. Frons about one-fifth as broad as the base of the proboscis. Segments 3 to 8 of antenna rufescent, 3 less than twice as long as 8, club rather broad, 9 one-fourth longer than 3, twice as long as 8, 10 as long as broad.

Pronotum coarsely punctate, pubescence a dull purplish drab, before middle a transverse groove, 17 yellowish spots, more or less bordered with black, of which three are median, one each side behind carina near lateral angle, one at end of transverse groove, another farther laterad and forward, two farther back and near each other, one above end of lateral carina, but separate from it, and one subventral subapical; carina dorsally straight, very regularly curved forward at sides, without indication of an angle, longitudinal carinula very distinct.

Elytra deeply punctate-striate, punctures large, subbasal callosity rather strongly elevate; suture and alternate interspaces blackish, spotted with clay-coloured pubescence, small spots of this colour also in the stripes of punctures, a spot behind shoulder and another behind middle of third interspace rounded and whitish. Pygidium almost semicircular, with a yellowish basal dot at each side.

Underside punctate, diffusely spotted with luteous, black and grey, tip of metepimerum and lateral angles of abdominal segments luteous grey. A post-median ring on femora, a broad median one on tibiae, and an equally broad ring on first tarsal segment which almost reaches to apex, whitish grey.

ON A FOURTH COLLECTION OF BIRDS MADE BY MR. GEORGE FORREST IN NORTH-WESTERN YUNNAN

BY LORD ROTHSCHILD, F.R.S.

THE collection is rather smaller than the former ones owing to a bad season, interference with freedom of travel owing to bandits, and other similar causes. It appears to have been made also at the lower and intermediate ranges for the most part, as it almost entirely consists of the more tropical species. There are a good number not sent in previous collections. These have the first quotation noted, while all those sent in former collections have not.

1. *Arboricola torqueola* (Valene.).

Perdix torqueola Valenciennes, *Dict. Scienc. Nat.* vol. xxxviii, p. 435 (1825) (Bengal).

The ♀ has the breast much darker olive-brown than any of my Indian examples, but as the ♂ agrees perfectly I do not venture to separate the Yunnan bird on the evidence of a single ♀.

1 ♂, 1 ♀ hills N. of Tengyueh, 8,000 ft. (scrub and cane brakes), Aug. 1924. (Iris orange-red; naked space round eye orange-erimson; bill dark reddish-brown, tip paler; feet deep brownish-red, claws orange-brown.)

2. *Bambusicola fytchii fytchii* Anders.

3 ♂♂, 1 ♀ hills N. of Tengyueh, 5,000–7,000 ft. (thickets), July–Aug. 1924. (Iris brownish-yellow; bill upper mandible black-brown, lower dull brown; feet and legs dull grey, claws brown.)

3. *Gennaues nycthemerus* (Linn.).

Phasianus nycthemerus Linnaeus, *Syst. Nat.* edit. x, pt. i, p. 272, No. 6 (1758) (China ex Albin).

Forrest sent 1 ♂, 2 ♀♀, which are very welcome, as wild shot birds are very rare in collections.

1 ♂, 2 ♀♀ hills N.W. of Tengyueh, 8,000–10,000 ft. in forests, Aug. 1924. (Iris golden-yellow, paler in ♀; bill dull brown with dark-brown base of upper mandible in ♂, dark brown upper and light brown under mandible in ♀; feet and legs crimson, claws flesh-pink.)

4. *Chrysolophus amherstiae* (Leadb.).

1 fledgling ♀, hills N.W. of Tengyueh, 9,000 ft. (forests), Aug. 1924.

5. *Porzana fusca erythrothorax* (Temm. & Schleg.).

Gallinula erythrothorax Temminck & Schlegel, in *Siebold's Faun Jap. Aves*, p. 121, pl. lxxviii (1849) (Japan).

1 ♂, 1 ♀ Tengyueh Valley, 5,500 ft. (swamps and rice-fields), June 1924. (Iris deep orange-erimson; naked area round eye crimson; feet deep orange-red, claws brown; bill brown-black.)

6. *Rostratula benghalensis benghalensis* (Linn.).

The single ♀ sent is abnormal, the hindneck being entirely black and the foreneck and chest much blacker than usual.

1 ♀ Tengyueh, 5,500 ft. (rice-fields), Dec. 1924.

7. *Gallinago solitaria* Hodgs.

Gallinago solitaria Hodgson, *Gleanings in Science*, vol. iii, p. 238 (1831) (Nepal).

1 ? hills N. of Tengyueh, 6,000 ft. (Alpine marshes), Dec. 1924.

8. *Tringa ocropus* Linn.

2 ♀♀ Tengyueh Valley, 6,000–7,000 ft. (rice-fields and marshes), Nov.–Dec. 1924.

9. *Tringa nebularia* (Gunn.).

1 ♀ ? Tengyueh, 6,000 ft., Dec. 1924.

10. *Himantopus himantopus himantopus* (Linn.).

Charadrius himantopus Linnaeus, *Syst. Nat.* edit. x, pt. i, p. 151 (1758) (S. Europe).

1 ? (in very worn plumage) Tengyueh Valley, 5,300 ft. (rice-fields), Sept. 1924.

11. *Sarcogrammus indicus atronuchalis* (Blyth).

1 ♂ Tengyueh Valley, 6,000–7,000 ft. (rice-fields and marshes), Dec. 1924.

12. *Microsarcops cinereus* (Blyth).

2 ♂♂, 1 ♀ Tengyueh Valley, 6,000–7,000 ft. (rice-fields and marshes), Dec. 1924.

13. *Charadrius dominicus fulvus* Gm.

2 ? Tengyueh, 5,500 ft. (rice-fields), Dec. 1924.

14. *Charadrius placidus* Gray.

2 ♀♀, Tengyueh Valley, 5,500 ft., June 1924; 1 Shweli Valley, 6,000 ft., Oct. 1924.

15. *Sphenurus sphenurus yunnanensis* La Touche.

1 ♂ hills N. of Tengyueh, 8,000 ft., July 1924; 2 ♀♀ Shweli Valley, 7,900 ft., Dec. 1924; 2 ♀♀ Shweli–Salwin Divide, 7,000–9,000 ft., July 1924.

16. *Streptopelia chinensis forresti* subsp. nov.

This form from N.W. Yunnan is a mountain form and only a single ♂ was sent by Forrest in his first collection, and was erroneously identified by me as *chinensis vacillans* Hart., which is a bird of the plains and appears to be only known so far from Mengtz.

This new form is nearest to *chinensis suratensis* (Gm.).

♂ ad. differs from *c. suratensis* in the greyer, less brownish head and neck,

in the less distinct rusty buff markings and paler ground colour of the back and interscapulum; in the absence on the upper large and small wing-coverts of the vinaceous patches, which are replaced by irregular more or less obsolete rusty markings; by the narrower central black stripes on the upper wing-coverts; by the brighter blue-grey of the edge of the wing and outer coverts; by the darker breast; and by the buff, not whitish or whitish buff under tail-coverts. The young bird is almost uniform greyish olive-brown above and grey saturated with brown and yellowish rusty below.

1 ♂ hills round Tengyueh, 5,000–7,000 ft., July 1924 (type); (bill brown-black; feet crimson; iris creamy yellow); 1 ♂ Tengyueh, 5,000–7,000 ft., Nov. 1924; 2 ♂♂, 1 ♂ juv. Tengyueh Valley, 6,000 ft., July 1924.

17. *Streptopelia orientalis orientalis* (Lath.).

2 ♀♀ hills N. of Tengyueh, 6,000 ft., July 1924.

18. *Columba hodgsoni* Vig.

1 ♂ hills N. of Tengyueh, 7,000 ft., Dec. 1924; 1 ♀ Shweli-Salwin Divide, 8,000 ft., Dec. 1924.

19. *Phalacrocorax javanicus* (Horsf.).

Carbo javanicus Horsfield, *Trans. Linn. Soc. Lond.* vol. xiii, p. 197 (1822) (Java).

1 ♂ ad. Tengyueh Valley, 5,000–6,000 ft., June 1924; 1 ♀ jun. Tengyueh Valley, 6,000 ft., Oct. 1924.

20. *Nyroca fuligula* (Linn.).

Anas fuligula Linnaeus, *Syst. Nat.* edit. x, pt. i, p. 128, No. 39 (1758) (European seas).

1 ♂ (marked ♀), Shweli Valley, lat. 25° 40', 6,000 ft., June 1924.

21. *Butorides striatus amurensis* Schrenck.

Ardea (Butorides) virescens var. *amurensis*, Schrenck, *Reis. Amur-Lande*, vol. i, pt. ii, p. 441 (1860) (Amur).

♀ imm. hills N.W. of Tengyueh, 7,000 ft., Aug. 1924.

22. *Ardeola bacchus* (Bpt.).

1 ♂ Shweli Valley, 7,000 ft., Dec. 1924; 1 ♂ Shweli-Salwin Divide, 6,000 ft., Nov. 1924.

23. *Bubulcus ibis coromandus* (Bodd.).

1 ♀ ad. (breeding plumage) Tengyueh Valley, 5,300 ft., June 1924; 3 ♀♀ (non-breeding plumage) ditto, 6,000 ft., Aug. 1924.

24. *Egretta garzetta garzetta* (Linn.).

Ardea garzetta Linnaeus, *Syst. Nat.* edit. xii, pt. i, p. 237, No. 13 (1766) (habitat in Oriente).

1 ♂, 1 ♀ Tengyueh Valley, 5,300 ft., June 1924.

25. *Circus cyaneus cyaneus* (Linn.).

1 ♂ hills N. of Tengyueh, 8,000 ft., Dec. 1924.

26. *Circus melanoleucus* (Forst.).

1 ♂ Shweli Valley, 6,000–9,000 ft., Dec. 1924 ; 1 ♀ Tengyueh Valley, 5,300 ft., Sept. 1924.

27. *Falco tinnunculus tinnunculus* Linn.

Falco tinnunculus Linnaeus, *Syst. Nat.* edit. x, vol. i, p. 90, No. 15 (1758) (Europe).

1 ♂, 2 ♀♀ Shweli Valley, 6,000–9,000 ft., Dec. 1924 ; 1 ♂ Shweli-Salwin Divide, 7,000–8,000 ft., Dec. 1924 ; 1 ♀ hills round Tengyueh, 6,000 ft., Dec. 1924.

28. *Falco tinnunculus interstinctus* (McClell.).

1 ♂ juv., 1 ♀ ad. Shweli Valley, 6,000–9,000 ft., Nov.–Dec. 1924.

29. *Strix aluco harterti* (La Touche).

Again only a single example was obtained, and it is as yet very doubtful if *S. a. harterti* and *a. nivicola* are identical or not.

1 ♂ hills N.W. of Tengyueh, 9,000 ft., Aug. 1924. (Iris purple-black ; bill blue-grey, tip yellow ; claws brown.)

30. *Otus bakkamoena glabripes* (Swinh.).

1 ♂, 1 ♀ ad., 1 ♂, 1 ♀ juv. Shweli-Salwin Divide, 6,000–7,000 ft., May 1924.

31. *Cuculus sparveroides* Vig.

One ♂ is conspicuous by the strong wash of rufous on the breast.

1 ♂, 2 ♀♀ Tengyueh, 5,000–6,000 ft., June 1924 ; 1 ♂ juv., 1 ♀ hills N.W. of Tengyueh, 9,000 ft., Aug. 1924.

32. *Cuculus intermedius intermedius* Vahl.

1 ♂, 1 ♀ (red phase) hills N.W. of Tengyueh, 7,000–8,000 ft., Oct. 1924 ; 1 ♂ Tengyueh, 7,000 ft., May 1924 ; 1 ♀ (grey phase) Tengyueh Valley, 6,000 ft., June 1924.

33. *Cuculus canorus telephonus* Heine.

1 ♀ ad., 2 ♂♂ juv. hills around Tengyueh, 5,000–6,000 ft., April and June 1924 ; 1 ♂, 1 ♀ ad. Tengyueh, 6,000–7,000 ft., April–May 1924.

34. *Cacomantis merulinus querulus* Heine.

1 ♂ ad. hills around Tengyueh, 6,000 ft., June 1924 ; 1 ♂ juv. hills N.W. of Tengyueh, 8,000 ft., Oct. 1924.

35. *Eudynamis honorata malayana* Cab. & Heine.

Of the 2 ♂♂ sent, No. 5172 has a wing of 203 mm., and No. 5040 of 207 mm., so the difference from *h. honorata* with a wing of 194 mm. holds good.

1 ♂ Tengyueh Valley, 5,000–6,000 ft., 1 ♂ hills round Tengyueh, 5,000–6,000 ft., June 1924.

36. *Centropus bengalensis bengalensis* (Gm.).

1 ♂ hills round Tengyueh, 8,000 ft., Aug. 1924.

37. *Pyrotrogon erythrocephalus yamakanensis* (Rich.).

1 ♂ hills round Tengyueh, 9,000 ft., 1 ♀ hills N. of Tengyueh, 9,000 ft., July 1924; 1 ♀ Shweli-Salwin Divide, 25° 40' N. lat., 9,000 ft., May 1924.

38. *Dryobates semicoronatus omissus* Rothsch.

4 ♀♀ (Nos. 5196 and 5876 marked ♂♂) hills round Tengyueh, 6,000–7,000 ft., June and Dec. 1924; 2 ♀♀ (No. 5433 marked ♂) hills N.W. of Tengyueh, 8,000 ft., Sept. 1924; 1 ♂ (labelled ♀) Tengyueh Valley, 6,000 ft., Oct. 1924; 1 ♂, 1 ♀ (sexes reversed 5787 marked ♀ = ♂ 5786 marked ♂ = ♀) Shweli Valley, 6,000–9,000 ft., Dec. 1924; 1 ♂, 1 ♀ Shweli-Salwin Divide, 7,000–9,000 ft., July and Oct. 1924 (No. 5432 marked ♀ = ♂).

39. *Dryobates cabanisi cabanisi* (Malh.).

1 ♂, 2 ♀♀ hills round Tengyueh, 7,000–9,000 ft., Dec. 1924.

40. *Dryobates darjellensis* (Blyth).

1 ♀ hills round Tengyueh, 7,000–9,000 ft., Dec. 1924.

41. *Picus canus sordidior* (Rippon).

2 ♂♂, 2 ♀♀ Shweli Valley, 6,000–9,000 ft., Dec. 1924; 1 ♀ Shweli-Salwin Divide, 7,000 ft., Oct. 1924; 1 ♀ ad., 1 ♀ juv. hills round Tengyueh, 6,000–9,000 ft., July and Dec. 1924.

42. *Cyanops franklini franklini* (Blyth).

7 ♂♂, 4 ♀♀, 1 ? hills N. of Tengyueh, 9,000 ft., Aug. 1924; 1 ♂ Shweli-Salwin Divide, 9,000 ft., Dec. 1924.

43. *Alcedo atthis bengalensis* Gm.

1 ♂ ad. round Tengyueh, 6,000 ft., Dec. 1924; 1 ♂, ? juv. Tengyueh Valley, 5,300 ft., July 1924.

44. *Halcyon smyrnensis fusca* (Bodd.).

1 ♂ Tengyueh Valley, 6,000 ft., Dec. 1924; 1 ♂ Shweli Valley, 6,000 ft., Dec. 1924.

45. *Psittacula schisticeps finschi* Hume.

With the exception of No. 5517 all the adult ♂♂ and the ♀ are in full moult.

5 ♂♂, 1 ♀ adult (No. 5517 freshly moulted), 3 ♀♀, ? juv., hills N.W. of Tengyueh, 7,000–8,000 ft., Sept.–Oct. 1924; 1 ♂, 2 ♀♀ juv., Shweli-Salwin Divide, 25° 40' N. lat., 6,000 ft., May 1924.

46. *Coracias affinis* McClell.

1 ♂, 1 ♂ ?, 1 ♀ ? Tengyueh Valley, 5,000–6,000 ft., July 1924; 1 ♂ hills N. of Tengyueh, 6,000 ft., July 1924 (all these 4 birds are much abraded); 1 ♂ around Tengyueh, 6,000 ft., Dec. 1924; 1 ♂ Shweli Valley, 6,000 ft., Dec. 1924 (these 2 birds are in fresh plumage).

47. *Eurystomus orientalis calonyx* Sharpe.

Eurystomus calonyx Sharpe, *Proc. Zool. Soc. Lond.* 1890, p. 551 (Nepal).

1 ♂, 2 ♀♀ juv. hills N.W. of Tengyueh, 7,000 ft., July 1924.

48. *Hirundo rustica gutturalis* Scop.

1 ♂, ? juv., 2 ♀♀ ad. Tengyueh Valley, 5,300 ft., June 1924.

49. *Tesia cyaniventer* Hodgs.

This time Mr. Forrest sent 3 young birds of this interesting little species.

Above dark olive, a yellowish olive superciliary line, and a broad black band behind eye. Below dark grey strongly washed with olive.

There is considerable confusion about the generic terms for this bird and the allied *castaneo-coronata* Burton. In vol. vii of the *Catalogue of Birds*, Dr. Sharpe places these 2 and a Javanese species in the genus *Oligura* Hodgson, although *Tesia* Hodgson is older. In the *Handlist*, vol. iv, p. 58, Dr. Sharpe separates the 2 birds, placing *cyaniventer* under *Tesia* and *castaneo-coronata* into *Oligura*, quoting Oates's *Fauna of British India* as his authority. Oates fixes the type of *Tesia* Hodgs. by "Subsequent Designation" as *cyaniventer* Hodgs. Hartert, in his *Vögel de paläarktischen Fauna*, reunites the two genera by placing *castanea-coronata* under *Tesia*. Outram Bangs has again separated *castaneo-coronata*, generically replacing it in *Oligura*. As, however, I shall not have to deal with *castaneo-coronata* here, I shall say no more about the generic question, except that, as Oates fixed the type of *Tesia* as *cyaniventer*, whether *castaneo-coronata* is congeneric or not, I am correct in putting *cyaniventer* in the genus *Tesia*.

2 ♂♂, ? 1 ♀, ? juv. hills N. of Tengyueh, 8,000 ft., July 1924.

50. *Spelaeornis kauriensis* (Har.).

1 ♀ hills N.W. of Tengyueh, 8,000 ft., Nov. 1924.

51. *Pnoepyga squamata magnirostris* subsp. nov.

♀ ad, similar to *s. mutica*, but more olive-brown, less rufous above, and the yellow spots more defined both on back and rump. The bill is longer and stouter; exposed culmen 11 mm. (in *s. mutica* 8½ mm.).

1 ♀ (rufous form) Shweli Valley, 7,000 ft., Nov. 1924. (Iris black-brown; bill, upper mandible dark brown, lower mandible yellow; feet dark greyish brown.) (Wing 63 mm.)

52. *Enicurus maculatus guttatus* Gould.

1 ♂ hills round Tengyueh, 7,000 ft., Dec. 1924; 1 ♀?, 1 ♂? juv., 1 ? hills N. of Tengyueh, 6,000-7,000 ft., July-Aug. 1924.

53. *Enicurus schistaceus* Hodgs.

1 ♀ hills round Tengyueh, 8,000 ft., Nov. 1924.

54. *Phoenicurus frontalis sinæ* Hart.

5 ♂♂ ad. (Nos. 5760 and 5761 marked ♀ errore !!) Shweli Valley, 7,000-8,000 ft., Nov.-Dec. 1924; 1 ♀ hills round Tengyueh, 8,000 ft., Dec. 1924.

55. *Phoenicurus aureus leucopterus* Blyth.

1 ♂ round Tengyueh, 7,000 ft., Dec. 1924.

56. *Tarsiger rufilatus practicus* (Bangs & Phill.).

Our two ♂♂ from the former collections and the series from the Tsinling Mts. certainly agree with the authors' description, but the present example is practically indistinguishable from *r. rufilatus*; this confirms my former statement that *r. practicus* is a very poor subspecies indeed.

1 ♂ ad. (marked ♀) Shweli Valley, 800 ft., Dec. 1924.

57. *Notodela leucura leucura* (Hodgs.).

Muscisylvia leucura Hodgson, *Proc. Zool. Soc. Lond.* 1845, p. 27 (Nepal).

3 ? juv. hills N.W. of Tengyueh, 9,000 ft., Sept. 1924.

58. *Copsychus saularis saularis* (Linn.).

1 ♂, 2 ♀♀ ad., 2 ♀♀ juv. Shweli-Salwin Divide, lat. 25° 40' N., 7,000-8,000 ft., July 1924; 2 ♂♂, 5 ♀♀ Shweli Valley, 7,000 ft., Dec. 1924; 2 ♂♂ ad., 1 ♀ juv., 1 ♂ juv. Tengyueh Valley, 6,000 ft., Sept. 1924.

59. *Oreicola ferrea haringtoni* Hart.

Hartert gives as sole distinction in the bird the shorter tail, and states that Colonel Harington discovered that the eggs of this form are darker blue and invariably without any markings, whereas in *f. ferrea* the eggs are clouded and spotted with pale red and reddish-brown.

7 ♂♂ Shweli-Salwin Divide, 7,000-8,000 ft., Nov. 1924; 6 ♂♂, 2 ♀♀, 3 ? juv., hills round Tengyueh, 6,000-8,000 ft., June and Dec. 1924; 3 ♀♀ ad., 1 ♀ juv. hills N.W. of Tengyueh, Sept. 1924.

60. *Saxicola torquata indica* Blyth.

2 ♂♂ ad. (freshly moulted) (Nos. 5593, 5594), 1 ♂ ad. (very worn) (No. 5243), 1 ♀ ad., 1 ? (marked ♀) (No. 5883) round Tengyueh, 6,000 ft., June-Dec. 1924; 1 ♀ hills N. of Tengyueh, 7,000 ft., Dec. 1924.

61. *Myiophoneus eugeniae* Hume.

In the description of the soft parts Forrest gives "iris blue-black," whereas in 1918 in his first collection he gives the iris as "dark crimson."

1 ♀ ? hills N. of Tengyueh, 8,000 ft., Aug. 1924; 1 ♂, 1 ♀ Shweli Valley, 8,000 ft., Dec. 1924; 3 ♂♂, 1 ? Shweli-Salwin Divide, 6,000-7,000 ft., July 1924.

62. *Monticola solitarius pandoo* (Sykes).

1 ♀ Shweli Valley, 6,000 ft., Dec. 1924; 1 ♀ ? Shweli-Salwin Divide, 6,000 ft., May 1924.

63. *Turdus eunomus* Temm.

3 ♂♂, 1 ♀ Shweli Valley, 7,000-9,000 ft., Nov.-Dec. 1924.

64. *Turdus eunomus* × *Turdus naumanni*.

1 ♀ Shweli Valley, 6,000–8,000 ft., Dec. 1924.

65. *Turdus obscurus* Gm.

2 ♂♂, 6 ♀♀ Shweli Valley, 7,000–8,000 ft., Dec. 1924.

66. *Turdus dissimilis* Blyth.

3 ♂♂, 1 ♀ (Nos. 5279 and 5283 marked ?), 1 ? juv. Shweli–Salwin Divide, 8,000 ft., July 1924 ; 2 ♂♂ ad., 2 ♂♂ juv. hills N. of Tengyueh, 7,000–8,000 ft., Nov.–Dec. 1924.

67. *Pomatorhinus ruficollis bakeri* Har.

1 ♀ Tengyueh Valley, 6,000 ft., June 1924 ; 3 ♂♂ hills N. of Tengyueh, 7,000 ft., July and Nov. 1924 ; 1 ♂, 3 ♀♀, 4 ? hills round Tengyueh, 7,000–9,000 ft., June–Aug. and Nov. 1924 ; 4 ♂♂ Shweli Valley, 7,000–8,000 ft., Dec. 1924 ; 5 ♂♂ Shweli–Salwin Divide, 5,000–8,000 ft., July 1924.

68. *Pomatorhinus maclellandi odicus* Bangs & Phill.

2 ♂♂, 1 ♀ hills N. of Tengyueh, 8,000 ft., Oct.–Nov. 1924 ; 1 ♂, 1 ♀ Shweli Valley, 7,000–9,000 ft., Dec. 1924 ; 3 ♀♀ Shweli–Salwin Divide, 5,000–7,000 ft., July 1924.

69. *Ianthocincla squamata* Gould.

Ianthocincla squamata Gould, *Proc. Zool. Soc. Lond.* 1835, p. 48 (Himalayas).

1 ♀ Shweli–Salwin Divide, 9,000 ft., Dec. 1924.

70. *Ianthocincla forresti* Rothsch.

At last Forrest has sent some more of this fine species.

1 ♀, 3 ? hills N.W. of Tengyueh, 9,000 ft., May 1924 ; 1 ♂ Shweli–Salwin Divide, 9,000 ft., Dec. 1924.

71. *Ianthocincla sannio* (Swinh.).

3 ♂♂, 3 ♀♀ Tengyueh Valley, 5,300 ft., April–June 1924 ; round Tengyueh, 5,000–7,000 ft., May–June and Nov.–Dec. 1924 ; 1 ♂, 1 ♀ Shweli–Valley, 6,000–8,000 ft., Nov. 1924.

72. *Ianthocincla cineracea styani* (Oust.).

1 ♂, 1 ♀ ad. hills N.W. of Tengyueh, 7,000–8,000 ft., Sept. 1924 ; 1 ♀ ad., 1 ? juv. hills round Tengyueh, 5,300–7,000 ft., May–June 1924.

73. *Ianthocincla phoenicea wellsii* (La Touche).

Trochalopteron phoeniceum wellsii La Touche, *Bull. B.O.C.* vol. xlii, p. 15 (1921) (Mengtze).

2 ♂♂, 3 ♀♀ ? hills N. of Tengyueh, 8,000 ft., July–Aug. 1924. (Iris dark brown ; bill black-brown ; feet dark reddish-brown.)

Forrest's 5 specimens differ from La Touche's diagnosis in not having the

crown and nape "much greener" than in *ph. ripponi*, but having it much greyer and the back more greenish. Therefore, it may be that, when we can compare a good series from the plains, with one from the high mountains, it will turn out that 2 forms of *phoenicea* inhabit Yunnan.

74. *Ianthocincla milnei sharpei* (Rippon).

Trochopteron sharpei Rippon, *Bull. B.O.C.* vol. xii, p. 13 (1901) (Kentung State).

2 ♂♂ Shweli-Salwin Divide, 9,000-10,000 ft., Dec. 1924.

75. *Ianthocincla lanceolata lanceolata* (Verr.).

In my article on Forrest's first collection (Nov. Zool., xxviii, p. 34, No. 111 (1921)) I referred all the 9 examples, there enumerated, to *lanccolata bonvaloti* (Oust.); whereas in my articles on the second and third collections (Nov. Zool., vol. xxx, pp. 43, 44, and 256) I referred 7 examples to *l. bonvaloti* and 3 to *l. lanceolata* on account of differences in size. In the present collection there are 6 further examples, and Dr. Hartert very kindly went through our series of 18 in the Tring Museum and these 6 with me, and very carefully measured the wings of all 24. We came to the conclusion that Sharpe's difference between Oustalet's *l. bonvaloti* and his own *l. yunnanensis*, viz. black *versus* red moustachial line, was, as I stated in my first article, only an individual difference, and that the difference in size was sexual and also possibly a question of age, and we are therefore convinced that *bonvaloti* Oust. and *yunnanensis* Sharpe are pure synonyms of *lanceolata lanceolata*. We find the same differences in size in the allied species, viz. the gigantic *waddelli* and *taivanum*.

1 ♂, 1 ♀ hills round Tengyueh, 6,000 ft., May 1924; 1 ♂, 1 ♀ ? hills N. of Tengyueh, 7,000 ft., Aug. 1924; 2 ♀♀ Shweli Valley, 8,000 ft., Dec. 1924.

76. *Stactocichla merulina merulina* (Blyth).

Garrulax merulina Blyth, *Journ. As. Soc. Beng.*, vol. xx, p. 521 (1851) (Manipur).

This is also the first record of this very strange Laughing Thrush.

1 ♀ hills N.W. of Tengyueh, 8,000 ft., Nov. 1924.

77. *Leiothrix luteus yunnanensis* Rothsch.

I distinguished and described this race from Forrest's first collection, and he did not send any *Leiothrix* in either the second or third collections. The present series of 9 examples amply confirms the distinctness of the subspecies. Quite lately 2 further *Leiothrix* have been described from China, one by Monsieur Delacour as *astleyi* from two cage birds, and one by Dr. Stresemann as *kwangtungensis*. Delacour's bird is mostly red, where *luteus* is yellow; and Stresemann states that his bird is much richer in colour, therefore it is not improbable that both are the same, *astleyi* being changed in colour by captivity.

7 ♂♂ ad. (Nos. 5663 and 5668 marked ♀), 1 ♀ ad., 1 ♀ juv. Shweli-Salwin Divide, 9,000 ft., May and Nov. 1924.

78. *Schoeniparus dubius genestieri* (Oust.).

Forrest has sent this time 23 specimens of this species, 3 of which are young. In my article on his first collection (Nov. Zool., xxviii, p. 36, No. 121

(1921)) I united Rippon's *intermedius* with it as a synonym ; but in my subsequent articles (Nov. Zool., xxx) I was doubtful owing to some young birds. I now, however, have compared the large number at Tring (31 examples from Yunnan, S.W. China, and Bhamo) with these fresh 23 from Yunnan, and both Dr. Hartert and I have been convinced that *intermedius* cannot be upheld.

8 ♂♂, 3 ♀♀, 3 ♀♀ ?, 1 ? ad., 2 ♂♂, 1 ♀ juv., Shweli-Salwin Divide, 8,000-9,000 ft., June and Nov. 1924 ; 2 ♂♂, 1 ♀, 2 ? hills N. and N.W. of Tengyueh, 8,000 ft., July and Sept.-Oct. 1924.

79. *Proparus vinipectus bieti* Oust.

1 ♂ Tengyueh Hills, 7,000 ft., Dec. 1924 ; 2 ♂♂, Shweli-Salwin Divide, 7,000 ft., June 1924.

80. *Brachypteryx cruralis cruralis* Blyth.

The single ♀ sent has the white superciliary line absent, but this is also the case with some of our Indian examples. The single example from Mengtze, quoted as *sinensis*, may be that species, but the examples quoted by Baker as collected by Dr. Coltart in Assam are very doubtful, as we have several ♀ *cruralis* collected by him in Assam labelled *sinensis*, evidently on account of the lack of the superciliary line.

1 ♀ Shweli-Salwin Divide, 6,000 ft., July 1924.

81. *Leioptila pulchella coeruleotincta* Rothsch.

1 ♂ Shweli-Salwin Divide, 7,000 ft., July 1924 ; 1 ? hills N. of Tengyueh, 7,000 ft., July 1924.

82. *Leioptila desgodinsi* (Dav. & Oust.).

1 ♂, 2 ♀♀ Shweli Valley, 6,000-7,000 ft., Dec. 1924 ; 1 ♂ Shweli-Salwin Divide, 8,000 ft., June 1924 ; 1 ♂, 2 ♀♀ hills round and N. of Tengyueh, 6,000-7,000 ft., Aug. and Nov.-Dec. 1924.

83. *Leioptila gracilis* (McClell.).

Hypsipetes gracilis McClelland, *Proc. Zool. Soc. Lond.* 1839, p. 159 (Assam).

This is the first record for Yunnan.

1 ♂ ? hills N. of Tengyueh, 7,000 ft., Aug. 1924.

84. *Pseudominla castaniceps* (Hodgs.).

This ought to come before *Leioptila* by rights.

1 ♂ hills N.W. of Tengyueh, 8,000 ft., Nov. 1924.

85. *Stachyridopsis ruficeps bhamoensis* Har.

1 ♂, 2 ♀♀, 1 ? hills N. of and round Tengyueh, 7,000-8,000 ft., July-Sept. and Dec. 1924 ; 2 ♂♂, 2 ♀♀ Shweli-Salwin Divide, 9,000 ft., June 1924.

86. *Actinodura egertoni ripponi* Ogil.-Grant.

Actinodura ripponi Ogilvie-Grant, *Ibis*, 1907, p. 166 (Mount Victoria).

In my article on Forrest's first collection (Nov. Zool., xxviii, p. 38, No. 129 (1921)), I was misled by Bangs and Phillips quoting *ramsayi* and identified these

birds with typical *egertoni*. On comparing the 17 specimens in the present collection I find that they certainly are not typical *egertoni*. They agree on the upper side with *ripponi* both in the more olive shade of the back and rump and in the more barred tail, and I do not venture to separate them from *ripponi*, although several of them have a greyer head. Below some are darker, but this is very variable.

1 ♀ ? Shweli Valley, 8,000 ft., Dec. 1924 ; 2 ♂♂, 2 ♀♀, 1 ? Shweli-Salwin Divide, 9,000 ft., Dec. 1924 ; 3 ♂♂, 2 ♀♀ ad., 1 ♀ juv., 1 ? fledgling, hills N. of Tengyueh, 8,000 ft., June-Aug. 1924 ; 1 ♂, 2 ♀♀, 1 ♀ juv., hills N.W. of Tengyueh, 8,000 ft., June 1924.

87. *Minla ignotincta* Hodgs.

When I wrote the article on the first collection (Nov. Zool. xxviii) I expressed the opinion that *M. jerdoni* Verr. was identical with *ignotincta*. Since then a considerable amount of further light has been thrown on the subject and many more specimens have come to hand. I received a small lot of birds from the late Charles Oberthur, the great lepidopterist, which were said to have come from Cochin-China, but I do not believe the locality is at all certain. In this series is a MALE *Minla* with deep-red edges to the primaries, but with an olive back, and otherwise exactly like the figure of *M. jerdoni* in the *Nouvelles Archives*. Mr. La Touche says in his description of his new *M. ignotincta mariae* that the description of the edging of the primaries in the *Oiseaux de la Chine* does not agree with his Mengtze birds ; this, however, is an error, for if you examine the Indian birds some have the edges entirely red, some red tipped with yellow, and some half-red, half-yellow, so that this is an absolutely negligible character. In view of my supposed Cochin-China *jerdoni*, and Mr. La Touche's and Bangs and Phillips' Mengtze series of 14 examples, I am convinced that *i. mariae* and *jerdoni* are very closely allied and that we have three forms of *Minla*, viz. *ignotincta ignotincta* Hodgs. from Himalayas, Assam, and down to Manipur and the higher mountains of Western Yunnan, *ignotincta jerdoni* Verr. from Chenton in China and *ign. mariae* in Eastern Yunnan. All the series of 18 examples in the present collection are *i. ignotincta*. Bangs and Phillips and La Touche expressly emphasise the fact that their birds from Mengtze are very bright yellow below, and treat this as a distinguishing character of *i. jerdoni* ; but in this they are wrong, for the original *i. jerdoni* is not yellow, and all my series of *i. ignotincta* from N.W. Yunnan and those from Mengtze are very yellow. I have now received 2 further true *jerdoni*, and these are white below.

8 ♂♂ (Nos. 5065 and 5658 marked ♀ ; No. 5203 marked ?), 4 ♀♀ (Nos. 5066 and 5659 marked ♂♂), Shweli-Salwin Divide, 8,000-9,000 ft., June and Nov. 1924 ; 3 ♂♂ (No. 5378 marked ?), 2 ♀♀ hills N. of Tengyueh, 8,000 ft., July-Aug. and Nov. 1924 ; 1 ♀ (marked ?) hills round Tengyueh, 6,000 ft., June 1924.

88. *Siva strigula yunnanensis* Rothsch.

7 ♂♂, 5 ♀♀ Shweli Valley, 8,000-9,000 ft., Nov. 1924 ; 3 ♂♂, 2 ♀♀, 1 ? juv. Shweli-Salwin Divide, 8,000 ft., June-July 1924.

89. *Siva cyanoptera wingatei* Grant.

1 ♂, 1 ♀ hills N. of Tengyueh, 7,000 ft., Aug. 1924; 1 ♀ Shweli Valley, 8,000 ft., Dec. 1924; 7 ♂♂, 5 ♀♀ Shweli-Salwin Divide, 7,000-8,000 ft., June and Nov. 1924.

90. *Pteruthius melanotis melanotis* Hodgs.

Forrest has at last sent some more of this little bird. The ♂ proves to be quite indistinguishable from *m. melanotis*, and the ♀ proves that the former ♀♀ were somewhat aberrant in the extent of brown on the throat, as this ♀ is in that respect almost similar to Sikkin ♀♀.

1 ♂ hills N. of Tengyueh, 8,000 ft., Oct. 1924; 1 ♀ (marked ♂) Shweli Valley, 7,000 ft., Dec. 1924.

91. *Pteruthius aeralatus ricketti* Grant.

1 ♂, 2 ♀♀ Shweli-Salwin Divide, 9,000 ft., Dec. 1924; 1 ♂, 1 ♀ Shweli Valley, 9,000 ft., Dec. 1924; 2 ♂♂, 2 ♀♀ hills N.W. of Tengyueh, 8,000-9,000 ft., Sept. 1924.

92. *Suya superciliaris superciliaris* Anderson.

1 ♀ hills S. of Tengyueh, 7,000 ft., Nov. 1924; 2 ♀♀ hills N. of Tengyueh, 6,000-8,000 ft., July and Oct., 1924; 4 ♂♂, 5 ♀♀, 4 ? hills round Tengyueh, 5,000-6,000 ft., May-July and Sept. 1924; 1 ♀ Tengyueh, 7,000 ft., Sept. 1924.

93. *Suya parvirostris* La Touche.

The 3 specimens in the present collection are in good plumage.

3 ? hills round Tengyueh, 5,000-6,000 ft., May and July, 1924.

94. *Yuhina gularis griseotincta* Rothsch.

3 ♂♂, 4 ♀♀ Shweli-Salwin Divide, 8,000-9,000 ft., June and Nov. 1924.

95. *Yuhina flavicollis rouxi* (Oust.).

2 ♀♀, 1 ? hills N.W. of Tengyueh, 8,000-9,000 ft., Oct. and Dec. 1924; 4 ♂♂, 1 ♀ Shweli-Salwin Divide, 9,000 ft., June and Nov. 1924.

96. *Yuhina diademata diademata*.

4 ♀♀ Shweli-Salwin Divide, 7,000-8,000 ft., June and Nov. 1924.

97. *Alcippe nipalensis yunnanensis* Har.

1 ♂, 1 ♀ Shweli-Salwin Divide, 7,000 ft., Oct. 1924; 1 ♂ hills N.W. of Tengyueh, 9,000 ft., Nov. 1924; 3 ♂♂, 6 ♀♀ hills N. of Tengyueh, 7,000-8,000 ft., July-Aug. and Oct.-Dec. 1924; 14 ♂♂, 16 ♀♀ hills round Tengyueh, 6,000-8,000 ft., May-July and Oct. 1924.

98. *Franklinia gracilis* (Franvl.).

1 ? hills round Tengyueh, 6,000 ft., July 1924.

99. *Prinia inornata* exter Thayer & Bangs.

1 ? hills round Tengyueh, 5,000-6,000 ft., July 1924.

100. *Phylloscopus subaffinis* (Grant).

1 ♀ Shweli Valley, 8,000 ft., Dec. 1924.

101. *Phylloscopus fuscatus* (Blyth).

1 ♀ hills N. of Tengyueh, 7,000 ft., Dec. 1924.

102. *Phylloscopus davisoni* (Oates).

2 ♂♂, 3 ♀♀ hills round Tengyueh, 5,000-9,000 ft.

103. *Phylloscopus superciliosus superciliosus* (Gm.).*Motacilla superciliosa* Gmelin, *Syst. Nat.*, vol. i, p. 975 (1788) (ex Latham, *Gen. Syn.* ii, p. 549, "Russia").

1 ♀ hills round Tengyueh, 7,000 ft., Dec. 1924.

104. *Phylloscopus lugubris* Blyth.

1 ♂, 2 ♀♀ hills round Tengyueh, 5,000-9,000 ft., Oct.-Nov. 1924.

105. *Cryptolopha burkii tephrocephala* (Anders.).

1 ♂, 1 ? hills round Tengyueh, 6,000-8,000 ft., June-July 1924 ; 1 ♂, 1 ♀ hills S. of Tengyueh, 7,000 ft., Oct. 1924.

106. *Culicicapa ceylonensis* (Swains.).

3 ♂♂, 3 ♀♀ Shweli-Salwin Divide, 6,000-8,000 ft., June and Nov. 1924 ; 1 ♀ hills round Tengyueh, 6,000-8,000 ft., Nov. 1924.

107. *Chelidorynx hypoxantha* (Blyth).

1 ♂, 1 ♀ hills round Tengyueh, 8,000 ft., June 1924.

108. *Muscicapa blythi* Rothsch.

3 ♂♂ ad., 1 ♂ juv. (Nos. 4543, 4544 marked ♀) Tengyueh Valley, 5,500 ft., Oct. 1924 ; 1 ♂, marked ♀, hills N. of Tengyueh, 7,000 ft., Nov. 1924 ; 1 ♂ Shweli-Salwin Divide, 8,000 ft., June 1924.

109. *Muscicapa parva albicilla* (Pall.).

2 ♀♀ ad. (No. 5549 marked ♂), 1 ♀ juv. hills N. of Tengyueh, 7,000-8,000 ft., Oct. 1924.

110. *Muscicapa thalassina thalassina* Swains.

2 ♂♂ (marked ♀) Shweli Valley, 7,000 ft., Dec. 1924 ; 4 ♂♂, 1 ♀ (Nos. 5437 and 5441 marked ♀) hills N.W. of Tengyueh, 7,000-8,000 ft., Aug.-Sept. 1924 ; 4 ♂♂ ad. (No. 5071 marked ?), 1 ? juv. hills round Tengyueh, 6,000 ft., May-June, 1924.

111. *Anthipes laurentei* La Touche.

Anthipes laurentei La Touche, *Bull. B.O.C.*, vol. xlii, p. 15 (1921) (Loukouchai).

1 ♂ hills N. of Tengyueh, 7,000 ft., Nov. 1924.

112. *Niltava sundara* Hodgs.

1 ♂, 1 ♀ ad., 1 ♂, 1 ♀ juv. Shweli-Salwin Divide, 7,000-8,000 ft., June 1924.

113. *Niltava grandis* (Blyth).

1 ♂ ad. hills N. of Tengyueh, 9,000 ft., Aug. 1924 ; 1 ? juv. hills round Tengyueh, 7,000 ft., Aug. 1924 ; 1 ♂ ad. Shweli-Salwin Divide, 6,000 ft., June 1924.

114. *Tchitrea paradisi affinis* "Hay" Blyth.

Journ. As. Soc. Beng., vol. xv, p. 292 (1846) (Malay Peninsula and Tenasserim).

1 ♂ juv. hills N. of Tengyueh, 7,000 ft., Oct. 1924.

(For some unaccountable reason Mr. La Touche has applied the name *incii* Gould to this kind, whereas true *incii* is a purple-backed species, never white.)

115. *Rhipidura albicollis albicollis* (Vieill.).

3 ♂♂, 4 ♀♀ Tengyueh Valley, 5,500-7,000 ft., Oct.-Dec. 1924 ; 1 ? Shweli-Salwin Divide, 8,000 ft., Nov. 1924.

116. *Pericrocotus speciosus speciosus* (Lath.).

Mr. La Touche, in 1921 (*Bull. B.O.C.*, xlii, p. 54) described a *speciosus bakeri* from S.E. Yunnan, giving as distinctions from *speciosus fokkiensis* the red on the central rectrices in the ♂♂ and the darker colour of the back in the ♀♀ ; from *speciosus speciosus* he said it differed by the scarlet-, not orange-red. Now, in the same year, but somewhat earlier, I identified the 3 birds sent by Forrest in his first collection as *speciosus speciosus*, and, moreover, at Tring I have 2 males from the same place in the Sikkim Himalayas, one of which is orange-, the other scarlet-red. I therefore am obliged to sink Mr. La Touche's *sp. bakeri* as a synonym of *sp. speciosus*.

2 ♂♂, 5 ♀♀ ad., 2 ♂♂ juv. hills N.W. of Tengyueh, 7,000-9,000 ft., Sept. 1924.

2 ♂♂, 5 ♀♀ ad., 2 ♂♂ juv. hills N.W. of Tengyueh, 7,000-9,000 ft., Sept. 1924.

117. *Pericrocotus brevirostris ethelodus* Bangs & Phill.

I am still very much in doubt as to the status of this form and *neglectus* Hume, and the present series does nothing to clear up my difficulties—in fact, only increases the doubts.

1 ♂ ad., 2 ♀♀ ad., 1 juv. hills round Tengyueh, 6,000 ft., June and Nov. 1924 ; 1 ♂ ad. Tengyueh Valley, 7,000 ft., Dec. 1924.

118. *Pericrocotus* sp. ?

This is a young bird agreeing in colour with a young bird at Tring of *solaris*, except that the yellow in the wing is more orange, but it has a gigantic bill almost as large as in *speciosus*.

1 ♀ ? hills round Tengyueh, 6,000 ft., June 1924.

119. *Pericrocotus solaris solaris* Blyth.

Pericrocotus solaris Blyth, *Journ. As. Soc. Bengal*, vol. xv, p. 310 (1846) (Darjeeling).

This is the first record for Yunnan.

1 ♀ Shweli Valley, 7,000 ft., Dec. 1924.

120. *Graucalus macei siamensis* Baker.

Graucalus macei siamensis Stuart Baker, *Bull. B.O.C.*, vol. xxxviii, p. 69, No. 4 (1918) (Mi-Nam, Kabun).

I determined the only example, a young bird, sent by Forrest in his first collection, as *macei macei*, but as I now have an adult ♀ I perceive that the N.W. Yunnan form belongs to *m. siamensis*.

1 ♀ ad. (marked ♂) hills N. of Tengyueh, 8,000 ft., Dec. 1924.

121. *Campephaga melachistos melachistos* (Hodgs.).

Polvocrivora melachistos Hodgson, *Ind. Rev.*, vol. i, p. 328 (1837) (Nepal).

Stuart Baker unites *avensis* (*melanoptera*) as a subspecies to *melachistos*, but I am convinced he is wrong, because they both occur together in the Tengyueh district.

1 ♂, 1 ♀ hills N.W. of Tengyueh, 8,000 ft., Sept. 1924.

122. *Spizixos canifrons* Blyth.

2 ♂♂, 2 ♀♀ hills N. of Tengyueh, 9,000 ft., Aug. 1924.

123. *Microscelis concolor* (Blyth).

Dr. Stresemann, after examining a big series of *concolor*, *leucocephalus*, *perniger*, and *sinensis*, has come to the conclusion that the dark birds and the white-headed ones are the same species. In addition, founding his observations on the fine Chinese material of Dr. Weigold, he declares that the glossy black "Formenkreis" of *perniger* with its various races, *sinensis*, etc., and the group of *concolor*, are merely colour phases of the same species. This he emphasises, because he has examples of the *perniger* glossy type with varying degrees of white heads as in the *leucocephalus* phase of *concolor*, and, therefore, draws the conclusion that *concolor* is a dimorphic species with a bright deep black phase = *perniger* Swinh., and a dull, more slaty black phase = *concolor* Blyth. The present 6 specimens all belong to the *concolor* phase, 3 adults and 1 young being uniform dark typical *concolor* examples, 1 a white-headed *leucocephalus*, and the last an intermediate between *leucocephalus* and *concolor*. The truth is that in Szechuan only white-headed *leucocephalus* occur, while in Hainan and Formosa only black-headed ones; in Yunnan and on the coast mixed are found.

2 ♂♂, 2 ♀♀ Shweli-Salwin Divide, 8,000-9,000 ft., Dec. 1924 (♂ 5828 complete *leucocephalus*, ♂ 5831 intermediate); 1 ♀, 1 ? juv. hills N. of Tengyueh, 8,000 ft., Aug. 1924.

124. *Alcurus striatus* Blyth.

The 9 specimens sent in the present collection show a wing measurement of 95-107 (♂♂ and ♀♀ inclusive) as opposed to a measurement in ♂♂ from Assam and Burma of 97-107, whereas Yunnan (including former collections.)

♂♂ only vary from 99 to 109, thus proving that Bangs and Phillips's *st. paulus* has no existence in fact.

4 ♂♂, 5 ♀♀ hills N. of Tengyueh, 9,000 ft., July-Aug. 1924.

125. *Pycnonotus xanthorhous* And.

1 ♂, 3 ♀♀ hills round Tengyueh, 5,000-8,000 ft., June and Aug. 1924 ; 1 ♀, 2 ? Tengyueh Valley, 5,300 ft., July 1924 ; 1 ♀ (? ♂ a.) Shweli Valley, 6,000 ft., Nov. 1924.

126. *Molpastes burmanicus* (Sharpe).

6 ♂♂, 3 ♀♀, 2 ? hills round Tengyueh, 6,000 ft., July, Sept., and Dec. 1924 ; 1 ♂, 1 ♀ hills N. of Tengyueh, 7,000 ft., Aug. 1924 ; 1 ? nestling hills S. of Tengyueh, 7,000 ft., Nov. 1924.

127. *Iole maclellandi similis* Rothsch.

1 ♂, 1 ? Shweli Valley, 8,000 ft., Dec. 1924 ; 4 ♂♂, 1 ♀ hills N.W. of Tengyueh, 7,000-8,000 ft., Oct. 1924 ; 3 ♂♂, 6 ♀♀, 1 ? hills N. of Tengyueh, 8,000 ft., Aug. 1924.

128. *Chloropsis hardwickii* Yard. & Selby.

2 ♂♂ hills N. of Tengyueh, 7,000 ft., Aug. 1924 ; 1 ♀ hills E. of Tengyueh, 9,000 ft., Dec. 1924.

129. *Lanius collurioides siamensis* Gyldenst.

Lanius collurioides siamensis Gyldenstolpe, *Orn. Monatsb.*, vol. xxiv, p. 28 (1916) (Koh Lak).

The fine adult ♂ is undoubtedly this race, and so are the young birds of the first collection ; the adult ♂ is easily distinguished by the pale back and wing edgings, and also by the white lores and superciliary markings. I had identified the former 3 specimens as *collurioides collurioides*.

1 ♀ ad. Shweli Valley, 7,000 ft., Dec. 1924.

130. *Lanius cristatus cristatus* Linn.

2 ♂♂ juv. round Tengyueh, 6,000 ft., Dec. 1924.

131. *Lanius shach tephronotus* (Vig.).

2 ♀♀ ad. Shweli Valley, 6,000-8,000 ft., Dec. 1924 ; 1 ♀, ? juv. round Tengyueh, 6,000 ft., Nov. 1924.

132. *Lanius nigriceps nigriceps* (Frankl.).

1 ♂ ad., 1 ♀, ? juv. around Tengyueh, 6,000 ft., Nov. 1924 ; 6 ♂♂ ad. Shweli Valley, 6,000-8,000 ft., Dec. 1924.

133. *Paradoxornis guttaticollis* A. Dak.

2 ♂♂, 1 ♀ hills N. of Tengyueh, 9,000 ft., Aug. 1924 ; 1 ♂ ?, 1 ♀ ?, hills S. of Tengyueh, 7,000 ft., Dec. 1924.

134. *Paradoxornis brunnea* (Anders.).

There is a certain amount of doubt about the species and subspecies of the *webbiana* group which arises owing to the absence or presence in varying degrees of the striping on the throat in the same locality. Also the degree of vinaceous or chestnut coloration on the cheeks in the various races of *webbiana*. The exact status of *brunnea* is a great puzzle; it undoubtedly has the cheeks almost uniform in chestnut colouring with the crown, whereas my *webbiana ricketti* has a much paler, almost white throat heavily striped and has the cheeks vinaceous and striped like the throat—in fact, except that it has the throat whiter and the crown and nape much darker chestnut it is very close to *webbiana styani*. The chief difficulty arises from the fact that my *ricketti* and *brunnea* occur together in N.W. Yunnan. One great distinction between *ricketti* and *brunnea* is that the latter has the breast and half the abdomen vinaceous, which is not the case in *ricketti* and *styani*, and which in the other races of *webbiana* only goes as far down as the breast at the outside. I shall therefore, for the present, treat *brunnea* as a species, and decide definitely in my proposed final paper when giving a complete list of all the birds recorded from Yunnan.

5 ♂♂, 6 ♀♀ Tengyueh Valley, 5,500–6,000 ft., June and Sept.–Oct. 1924; 3 ♂♂, 3 ♀♀ hills round Tengyueh, 6,000–7,000 ft., June and Dec. 1924; 3 ♂♂, 2 ♀♀ hills N. of Tengyueh, 6,000–7,000 ft., July 1924.

135. *Paradoxornis poliotis poliotis* (Blyth).

Suthora poliotis Blyth, *Journ. As. Soc. Beng.*, vol. xx, p. 522 (1851) (Cherrapunji).

This seems to be the first record for Yunnan. The two birds appear to be not quite adult, so I do not venture to separate them from *p. poliotis*, but the crown is decidedly more olive, less rufous than in my 4 Burmese *p. poliotis*.

1 ♂, 1 ♀ hills N.W. of Tengyueh, 9,000 ft., Sept. 1924.

136. *Aegithaliscus concinnus talifuensis* Ripp.

1 ? Shweli Valley, 10,000 ft., Dec. 1924; 1 ♂ hills N. of Tengyueh, 8,000–9,000 ft., Nov. 1924; 1 ♂, 1 ♀ hills N.W. of Tengyueh, Nov. 1924; 1 ♀ hills round Tengyueh, 7,000 ft., July 1924.

137. *Parus monticolus yunnanensis* La Touche.

1 ♂ hills round Tengyueh, 6,000 ft., Dec. 1924; 1 ♂ hills N. of Tengyueh, 8,000 ft., Dec. 1924.

138. *Parus major tibetanus* Hart.

1 ♂ Tengyueh Valley, 7,000 ft., Dec. 1924; 1 ♂ hills N. of Tengyueh, 8,000 ft., Dec. 1924.

139. *Parus spilonotus subviridis* Tickell (Blyth).

Parus subviridis Tickell (Blyth), *Journ. As. Soc. Beng.*, vol. xxiv, p. 265 (1855) (Tenasserim).

I wrongly identified the two examples of this bird in the first collection as *sp. spilonotus*.

3 ♂♂ ad., 2 ♀♀ juv. Shweli Valley, 8,000–9,000 ft., Nov. 1924; 2 ♂♂ ad., 1 ♂ juv. Shweli–Salwin Divide, 7,000–8,000 ft., Oct. 1924.

140. *Sitta europaea nebulosa* La Touche.

1 ♂, 1 ♀ ? hills round Tengyueh, 5,000–8,000 ft., June 1924 ; 1 ♂ Shweli Valley, 9,000 ft., Dec. 1924.

141. *Zosterops simplex* Swinh.

This bird has usually been treated as a subspecies of *Z. palpebrosa*, as I also have done, but it is resident in N.W. Yunnan with a true *palpebrosa* form and must be treated as a distinct species. In S.E. Yunnan Mr. La Touche records two different birds as *Zosterops palpebrosa* subsp. ; the first is evidently a *simplex* form and the second a *palpebrosa* form.

1 ♀, 1 ? hills round Tengyueh, 7,000 ft., June 1924 ; 1 ♀, 1 ? hills N. of Tengyueh, 7,000 ft., June 1924 ; 3 ♂♂, 3 ♀♀ Shweli–Salwin Divide, 6,000–8,000 ft., Nov. 1924.

142. *Zosterops palpebrosa elwesi* Baker.

Zosterops palpebrosa elwesi Stuart Baker, *Ibis*, 1922, p. 144 (Sikkim).

This is a new record for Yunnan ; as it had hitherto been confused with *simplex*.

1 ♂, 2 ♀♀ hills N. of Tengyueh, 7,000 ft., June 1924 ; 1 ♀ hills S. of Tengyueh, 8,000 ft., Dec. 1924 ; 2 ♀♀, 1 ? Shweli–Salwin Divide, 6,000–8,000 ft., Nov. 1924.

143. *Dicaeum ignipectus ignipectus* (Blyth).

1 ♂ ad. Shweli Valley, 9,000 ft., Nov. 1924 ; 1 ♀ juv. Shweli–Salwin Divide, 9,000 ft., June 1924.

144. *Dicaeum minullum olivaceum* Wald.

3 ♀♀, 1 ? Shweli–Salwin Divide, 9,000 ft., June 1924 ; 1 ♀ hills round Tengyueh, 7,000 ft., June 1924 ; 1 ♀ hills N.W. of Tengyueh, 8,000–9,000 ft., Oct. 1924.

145. *Aethopyga ignicauda exultans* Baker.

1 ♀ hills N.W. of Tengyueh, 9,000 ft., Dec. 1924.

146. *Aethopyga dabryi* (Verr.).

4 ♂♂, 1 ♀ Shweli–Salwin Divide, 9,000 ft., June 1924 ; 1 ♂ Shweli Valley, 9,000–10,000 ft., Dec. 1924.

147. *Aethopyga nipalensis nipalensis* (Hodgs.).

4 ♂♂, 2 ♀♀ Shweli–Salwin Divide, 9,000 ft., June 1924 ; 1 ♂, 3 ♀♀ hills N. of Tengyueh, 9,000 ft., July–Aug. 1924 ; 3 ♂♂ ad., 1 ♂ juv. hills N.W. of Tengyueh, 8,000–9,000 ft., Oct. 1924.

148. *Arachnothera magna magna* (Hodgs.).

1 ♂ hills N.W. of Tengyueh, 9,000 ft., Sept. 1924.

149. *Motacilla alba hodgsoni* Blyth.

2 ♂♂ Tengyueh Valley, 5,500 ft., Nov. 1924; 1 ♂ juv. round Tengyueh, 6,000 ft., Sept. 1924.

150. *Motacilla alba leucopsis* Gould.

3 ♂♂, 2 ♀♀ Tengyueh Valley, 6,000 ft., Dec. 1924.

151. *Motacilla boarula melanope* Pall.

2 ♂♂ ad. (No. 5509 marked ♂), 1 ♀ ad., 1 ♀ juv. Tengyueh Valley, 5,500--6,000 ft., Nov. 1924; 1 ♀ (marked ♂) Shweli Valley, 7,000 ft., Dec. 1924.

152. *Dendronanthus indicus* (Gm.).

Motacilla indica Gmelin, *Syst. Nat.*, vol. i, p. 962 (1788) (ex Sonnerat and Latham, India).

This is, I believe, the first record for N.W. Yunnan, but La Touche records it from Mengtsz, and so does Collingwood Ingram.

1 ♀ Tengyueh Valley, 6,000 ft., Sept. 1924.

153. *Anthus berezowskii yunnanensis* Ueh. & Kur.

2 ♂♂, 2 ♀♀ Tengyueh Valley, 5,500 ft., Nov. 1924.

154. *Anthus roseatus* Blyth.

The ♀ from N. of Tengyueh (No. 5887) has the spotting on the under-surface much heavier than any in our long series at Tring.

1 ♂, 1 ♀ round Tengyueh, 5,500 ft., Nov. 1924; 1 ♂ hills N. of Tengyueh, 7,000 ft., Dec. 1924.

155. *Anthus richardi richardi* Vieill.

1 ♀ hills round Tengyueh, 6,000 ft., Dec. 1924.

156. *Alauda arvensis japonica* Temm. & Schleg.

1 ♀ hills round Tengyueh, Dec. 1924.

157. *Melophus melanicterus* (Gm.).

1 ♀ juv. hills S. of Tengyueh, 6,000 ft., Oct. 1924.

158. *Emberiza pusilla* Pall.

3 ♂♂, 4 ♀♀, 1 ? Tengyueh Valley, 6,000 ft., Dec. 1924; 1 ♂ hills round Tengyueh, 7,000 ft., Oct. 1924; 2 ♂♂ Shweli Valley, 7,000 ft., Nov. 1924.

159. *Passer rutilans intensior* Rothsch.

Mr. Kinnear has compared a huge series ranging from Cashmere to Yunnan, consisting of 194 specimens, in the Tring and British Museums (34 Tring, 160 British Museum), and came to the conclusion that *rutilans cinnamomeus* and *rutilans debilis* were the same, and that my *rutilans intensior* showed differences in the darker colour of the ♀♀. The two freshly moulted ♀♀ now to hand do

not bear this out, but the freshly moulted ♂♂ show some differences, so I shall retain the name at all events till my final paper.

2 ♂♂, 2 ♀♀ hills round Tengyueh, 6,000–8,000 ft., June and Dec. 1924 ;
1 ♂, 1 ♀ Shweli–Salwin Divide, 8,000 ft., Nov. 1924.

160. *Haematospiza sipahi* (Hodgs.).

Corythus sipahi Hodgson, *Asiat. Research.*, vol. xix, p. 151 (1836) (Nepal).

In my article on the first collection of Forrest I adopted Hartert's view that the correct name of this bird was *indica* Gmelin. This view is, however, not accepted by most ornithologists, and Hartert himself now says that as there is a slight doubt, the name of Hodgson is safer.

1 ♂ Shweli–Salwin Divide, 9,000 ft., June 1924.

161. *Pyrrhula nipalensis ricketti* La Touche.

Pyrrhula ricketti La Touche, *Bull. B.O.C.*, vol. xvi, p. 21 (1905) (Mts. of N.W. Fokien).

This is the first record for N.W. Yunnan. The 2 specimens now to hand are rather worn and therefore are considerably darker than 2 ♂♂ and 1 ♀ from Fokien in the Tring collection in very fresh plumage.

1 ♂, 1 ♀ hills N. of Tengyueh, 9,000 ft., Aug. 1924.

162. *Carduelis ambiguus* (Oust.).

7 ♂♂, 1 ♀ Shweli Valley, 6,000–9,000 ft., Dec. 1924 ; 2 ♂♂ (No. 5141 marked ♀) Shweli–Salwin Divide, 8,000 ft., July 1924.

163. *Mycerobas melanozanthus* (Hodgs.).

1 ♂ juv. hills N.W. of Tengyueh, 8,000–9,000 ft., Nov. 1924.

164. *Munia atricapilla atricapilla* (Vieill.).

1 ♂ Shweli–Salwin Divide, 8,000 ft., July 1924.

165. *Munia punctulata topela* Swinh.

3 ♂♂, 9 ♀♀, 2 ? ad., 1 ♂ juv. hills round Tengyueh, 6,000 ft., May–July and Dec., 1924 ; 2 ? hills N. of Tengyueh, 7,000 ft., June 1924 ; 1 ♂, 1 ♀, 1 ? ad., 1 ♀ ? juv. hills S. of Tengyueh, 6,000–8,000 ft., Nov.–Dec. 1924 ; 1 ♂ juv. Shweli Valley, 7,000 ft., Dec. 1924.

166. *Oriolus indicus tenuirostris* Blyth.

1 ♂ ad., 1 ♀ juv. hills round Tengyueh, 5,000–8,000 ft., May 1924 ; 1 ♂, 1 ♀ ad. hills N. of Tengyueh, 7,000 ft., Dec. 1924 ; 1 ♂ ad. hills N.W. of Tengyueh, 8,000 ft., Oct. 1924 ; 1 ♂ ad. Shweli–Salwin Divide, 8,000 ft., Dec. 1924.

167. *Oriolus trailli* (Vig.).

1 ♀ hills N. of Tengyueh, 8,000 ft., July 1924.

168. *Dicrurus hottentotta* (Linn.).

2 ♂♂ hills N.W. of Tengyueh, 7,000 ft., Sept. 1924.

169. *Dicrurus macrocerus cathoecus* Swinh.

1 ♂, 1 ♀ ad., 1 ? juv. round Tengyueh, 5,000–6,000 ft., May–June 1924 ; 1 ? juv. Tengyueh Valley, 5,300 ft., July 1924 ; 1 ♂ N.W. of Tengyueh, 7,000 ft., Sept. 1924.

170. *Dicrurus leucophoeus nigrescens* Oates.

1 ♂, 1 ♀ Tengyueh Valley, 5,000–6,000 ft., July 1924 ; 2 ? round Tengyueh, 5,000–6,000 ft., June and Dec. 1924 ; 1 ♂ hills N.W. of Tengyueh, 6,000 ft., Oct. 1924 ; 4 ♂♂, 1 ♀ Shweli Valley, 6,000–8,000 ft., Dec. 1924.

171. *Chaptia aenea* (Vieill.).

Dicrurus aeneus Vieillot, *Nouv. Dict. d'Hist. Nat.*, vol. ix, p. 586 (1817) (Bengal).

2 ♂♂, 2 ♀♀, 1 ? hills N.W. of Tengyueh, 8,000 ft., Aug. 1924.

172. *Bhringa remifer* (Temm.).

Edolius remifer Temminck, *Planch. Col.*, vol. iii, pl. 178 (1823) (Java and Sumatra).

1 ♀ hills N.W. of Tengyueh, 7,000 ft., Sept. 1924.

173. *Acridotheres grandis* Moore.

Acridotheres grandis Moore, *Cat. B. Mus. E.T. Co.*, vol. ii, p. 537 (1856) (Sumatra ?).

In my account of Forrest's third collection I inadvertently listed the ♀ "No. 1381 round Tengyueh, 5,000–6,000 ft., March 1922" as *A. cristatellus*.

1 ♂, 1 ? Tengyueh Valley, 5,300 ft., July 1924.

174. *Acridotheres cristatellus cristatellus* (Gm.).

1 ♂, 1 ♀ Shweli Valley, 6,000 ft., Dec. 1924.

175. *Nucifraga caryocatactes yunnanensis* Ingr.

2 ♂♂, 2 ♀♀ Shweli Valley, 8,000–10,000 ft., Dec. 1924.

176. *Urocissa erythrorhyncha erythrorhyncha* (Gm.).

2 ♂♂ Shweli Valley, 6,000–9,000 ft., Nov. 1924 ; 1 ♂ Tengyueh Valley, 6,000 ft., June 1924.

177. *Dendrocitta formosae himalayensis* Blyth.

Mr. E. C. Stuart Baker, in his *Fauna of British India Birds*, vol. i, p. 52, puts *himalayensis* down as a subspecies of *sinensis* Lath. He has completely overlooked the fact that Dr. Stresemann already in 1913, *Ornith. Monatsb.*, vol. xxi, p. 9, had shown that the name *Corvus sinensis* Gm. ex Lath. could not be used as applying to the *Dendrocitta* from China, as the diagnosis is totally different, and therefore renamed the bird *Dendrocitta formosae sinica*. Mr. Baker further complicates matters by saying that his *sinensis* (non Gmelin) = *sinica* of Stresemann had an entirely PALE GREY tail with NO black tip, whereas *sinensis* = *sinica* has in reality the WHOLE of the tail BLACK. A great disadvantage to students in Mr. Baker's book is that, as in the present instance, when he is

dealing with Indian subspecies of extra-limital species, he never gives the quotation of the extra-limital typical race.

1 ♂ ad., 1 ♂ ?, 1 ♀ ?, juv. ? Shweli-Salwin Divide, 9,000 ft., May and Dec. 1924 ; 3 ♂♂, 1 ♀ ad. Shweli Valley, 9,000-10,000 ft., Nov.-Dec. 1924 ; 2 ♂♂, 2 ♀♀ ad. hills N.W. of Tengyueh, 7,000 ft., July 1924.

178. **Pica pica serica** Gould.

Pica serica Gould *Proc. Zool. Soc. Lond.*, 1845, p. 2 (Amoy).

2 ♂♂, 4 ♀♀ Tengyueh Valley, 6,000-7,000 ft., Dec. 1924 ; 1 ♂ round Tengyueh, 6,000 ft., Dec. 1924.

179. **Corvus coronoides intermedius** Adams.

1 ♂ Tengyueh Valley, 6,000 ft., Dec. 1924.

The fourth collection consists of 916 skins of 176 species and subspecies, of which 29 had not been sent before.

REVIEW OF THE BIRDS COLLECTED BY ALCIDE D'ORBIGNY IN SOUTH AMERICA.

By C. E. HELLMAYR.

PART VI.

(Parts I and II, Nov. Zool. Vol. XXVIII; Part III, Vol. XXX; Parts IV and V, Vol. XXXII.)

Gubernetes yperu = *Gubernetes yetapa* (Vieill.).¹

Gubernetes yperu (Licht.); ² L. & O., *Syn. Av.* i, p. 58 (Chiquitos, Bolivia).

Alecturus yetapa, d'Orbigny, *Voy.*, p. 342 (Chiquitos).

No longer in the Paris Museum. I have not been able to examine Bolivian examples, but several from Mattogrosso and western Minas (Bagagem) agree exactly with others from Paraguay. At some time I thought it possible to separate a smaller northern form,³ but additional material proves the non-existence of the supposed difference in size, some of our adult males from Mina. being fully as large as the Paraguayan bird: wing 130–134, tail 256–298 mm. This striking species inhabits the campo-districts of Misiones (Argentine) Paraguay, and southern Brazil, ranging to the north as far as western Minas Geraes, and westward to Mattogrosso and adjacent portions of eastern Bolivia (Chiquitos).

Fluvicola bicolor = *Fluvicola albiventer* (Spix).⁴

Fluvicola bicolor (not of Gmelin); ⁵ L. & O., *Syn. Av.* i, p. 58 (no locality); d'Orbigny, *Voy.*, p. 343 (Corrientes, Arg.; Chiquitos, E. Bolivia).

No. 1, "♂" ad. (mounted): "No. 5879. *F. albiventris* Sp. Rép. Arg. Corrientes, d'Orbigny, 1829. ♂, No. 102."—Wing, 75; tail, 59½; bill, 15 mm.

This bird differs slightly from Brazilian (Maranhão, Goyaz) examples in having only the *greater* upper wing-coverts tipped with white, while the median series are uniform black.

F. albiventer is widely diffused in South America, extending from the vicinity of Buenos Aires through Argentine, Bolivia, and Brazil to the banks of the Amazons. It is most probably only the southern representative of the Guianan *F. pica* (Bodd.), from which it chiefly differs by black (instead of white) upper tail-coverts, by the absence of white on shoulders and back, etc. etc.

¹ *Muscicapa yetapa* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 21, p. 460 (1818—ex Azara, No. 75: Paraguay).

² *Muscicapa yperu* Lichtenstein, *Verz. Dubl. Berliner Mus.* p. 52 (1823—San Paulo).

³ Cf. *Abhandl. Bayer. Akad. Wiss.* ii, Kl., 22, iii, 1906, p. 647.

⁴ *Muscicapa albiventer* Spix, *Av. Bras.* ii, p. 21, pl. xxx, fig. 1 (182 —part.: ♂; "in campis Brasiliae").

⁵ *Muscicapa bicolor* Gmelin, *Syst. Nat.* I, ii, p. 946 (1789—ex Daubenton, *Pl. enl.* 566, fig. 3, etc.: Cayenne); = *Fluvicola pica* (Bodd.) 1783.

Fluvicola perspicillata = Lichenops perspicillata perspicillata (Gm.).¹

Fluvicola perspicillata " Vieill. " ; L. & O., *Syn. Ar.* i, p. 58 (Buenos Ayres, Corrientes, rep. Argentina ; Chiquitos, rep. Boliviana ; Patagonia).

Ada perspicillata, d'Orbigny, *Voy.*, p. 339 (Corrientes ; Chiquitos, Moxos, Bolivia ; " à l'embouchure de La Plata " (Montevideo, Buenos Ayres) ; Patagonia (Rio Negro) ; descr. ♂♀).

Nos. 1, 2, ♂♂ ad. (skins) : " de Maldonado, 13. 9^{bre} 1827. No. 14. Passer. Mâle. Envoi de M. d'Orbigny. "—Wing, 90, 91 ; tail, 61, 61 ; bill, 15, 16 mm.

No. 3 (♂) ad. (skin) : " d'Orbigny, juillet 1829. No. 75 (bis). *Ada perspicillata* Nob. Corrientes. "—Wing, 89 ; tail, 62 ; bill, 15½ mm.

No. 4 (♂) ad. (skin) : " No. 200. d'Orbigny, 1834. Chiquitos. D. 14. "—Wing, 93 ; tail, 64 ; bill, 16½ mm.

No. 5 (♀) ad. (skin) : " d'Orbigny, février 1831. Patagonie. *Ada perspicillata* Nob. "—Wing, 80 ; tail, — ; bill, 15½ mm.

No. 6 (♂) juv. (skin), from Patagonia, without original label.—Wing, 88 ; tail, 60 ; bill, 16 mm.

The adult males from Maldonado (which may be regarded as topotypical), one from La Plata (Castelnau coll.), two from Corrientes (No. 3, and another obtained by Flamant, in the Paris Museum), and two from Rio Grande do Sul represent *L. p. perspicillata*, as defined by Ridgway, the black basal portion of the outer web of the five outer primaries being wholly concealed by the primary coverts, while the space between the end of the latter and the sinuation of the quills is pure white. One of the Maldonado birds (No. 2), however, shows on the third and sixth primary a narrow dusky line running towards the sinuation.

Seven adult males from Chili are larger and have the outer web of the five outer primaries as far as the sinuation of the quills black, the white area being thus considerably reduced in extent. The dusky apical spots of the primaries are generally larger and darker, more of a blackish hue. This form has been separated by Ridgway as *L. perspicillata andina*.²

Birds from western Mattogrosso (Pansecco, near Jaurú, not far from the frontier), eastern Bolivia (Chiquitos), and Patagonia (Neuquen) are variously intermediate between *L. p. perspicillata* and *L. p. andina*. One male from Pansecco, one from the Rio Negro (No. 6), and another from Neuquen (Rio Limay), in pattern of primaries, agree with typical *perspicillata* ; two others from Pansecco, one from Neuquen (Nogueira), and the Chiquitos bird have, like *andina*, the outer web of the five outer remiges down to the sinuation black, this colour being, however, exteriorly accompanied by a narrow, white edge. The majority of these intergrades are small like *perspicillata*, though some are very nearly as large as *andina*, as may be seen from the appended figures, based on adult males only.

Lichenops p. perspicillata.

	Wing.	Tail.
One from Rio de La Plata	91	64½ mm.
Two from Maldonado	90, 91	61, 61 „
Two from Rio Grande do Sul	89, 90	61, 62½ „
Two from Corrientes	89, 91	62, 62 „

¹ *Motacilla perspicillata* Gmelin, *Syst. Nat.* 1, ii, p. 969 (1759—ex Buffon : Montevideo).

² *Lichenops perspicillatus*, *β andinus* Ridgway, *Proc. U.S. Nat. Mus.* i, " 1878," p. 483 (1879—Chili).

Lichenops p. perspicillata \geq *L. p. andina*.

	Wing.	Tail.
Four from Pansecco, W. Mattogrosso .	90, 91½, 92, 93	59, 61, 62, 63 mm.
One from Chiquitos, E. Bolivia .	93	64 "
Four from Neuquen, W. Patagonia .	91, 91½, 92, 93	58, 61, 61½, 62 "

Lichenops p. andina.

	Wing.	Tail.
Seven from Chili .	93, 94 (three), 95 (two), 96	62, 63 (two), 64, 65 (two), 66 mm.

Fluvicola nigerrima = (*Knipolegus aterrimus aterrimus* Kaup.¹
Knipolegus aterrimus anthracinus Heine.²

Fluvicola nigerrima (nec Vieillot);³ Lafresnaye & d'Orbigny, *Syn. Ar.* i, in *Mag. Zool.* cl. ii, p. 59. (Cochabamba, Yungas, Moxos, Chiquitos, rep. Boliviana; descr. ♀).

Ada nigerrima, d'Orbigny, *l'oy.*, Ois., p. 340 ("le versant oriental des Andes Bolivienues dans les provinces de Yungas, Ayupaya, Cochabamba, et Chuquisaca"; descr. ♂♀).

No. 1, "♂" ad. (skin): "D. 83. *Ada nigerrima* d'Orb. Mâle. Yungas, d'Orbigny, 1834. No. 152."—Wing, 90; tail, 75; bill, 15 mm. = *K. aterrimus aterrimus* Kaup.

No. 2, "♂" ad. (skin): "D. 83. Cochabamba. *Ada nigerrima* Nob. Mâle. d'Orbigny, 1834. No. 152."—Wing, 92; tail, 75; bill, 17 mm. = *K. aterrimus aterrimus* Kaup.

No. 3, "♀" ad. (skin): "D. 231. Cochabamba. *Ada nigerrima* d'Orb. fem. d'Orbigny, 1834. No. 139."—Wing, 88; tail, 77; bill, 16 mm. = *K. aterrimus aterrimus* Kaup [designated as type].

No. 4, "♀" juv. (skin): "D. 231. Chiquitos. *Ada nigerrima* d'O. fem. d'Orbigny, 1834. No. 139."—Wing, 83; tail, —; bill, 13½ mm. = *K. aterrimus aterrimus* Kaup.

No. 5, "♀" ad. (skin): "D. 231. *Ada nigerrima* Nob. fem. Yungas, d'Orbigny, 1834. No. 139."—Wing, 75; tail, 65; bill, 15 mm. = *K. aterrimus anthracinus* Heine.

No. 6, "♀" ad. (skin): "D. 231. *Ada nigerrima* Nob. fem. d'Yungas, d'Orbigny, 1834. No. 139."—Wing, 78; tail, 67½; bill, 15 mm. = *K. aterrimus anthracinus* Heine.

There has been much confusion regarding the races of the large black *Knipolegus* of western South America and their nomenclature. D'Orbigny, its discoverer, identified it with *Muscicapa nigerrima* of Vieillot, now ascertained to represent a very distinct species confined to the elevated districts of S.E. Brazil (Minas, Rio de Janeiro, S. Paulo). Kaup, recognizing their distinctness, renamed the Bolivian bird *C. aterrimus*. Having never seen a specimen himself, he relied solely on d'Orbigny's account, notably on the measurements as given in the *Voyage* (wing 68, tail 57 mm.), which, however, turn out to be entirely

¹ *Knipolegus aterrimus* Kaup, *Journ. f. Ornith.* i, p. 29 (1853—based upon "*Ada nigerrima* d'Orb. & Lafr. *l'oy. Amér.* p. 340; *Synops.* p. 59, No. 3.—"In den Provinzen Yungas, d'Ayupaya Cochabamba, und Chuquisaca"; descr. ♂ only).

² *Knipolegus anthracinus* Heine, *Journ. f. Ornith.* vii, p. 334 (1859—"Bolivia"; descr. ♂ ad., type in Berlin Museum).

³ *Muscicapa nigerrima* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 21, p. 453 (1818—locality unknown; descr. ♂♀).

erroneous. Six years later Heine described another species, *C. anthracinus*,¹ from "Bolivia," the type being an adult male in the Berlin Museum.² The next addition to the list was made by Leybold, who, in 1865, based his *Myiarchus fasciatus*³ upon some females or young males from Mendoza, W. Argentine. This supposed novelty was pronounced by Cabanis⁴ to be the female of *C. anthracinus* Heine, and, ever since, the Argentine birds passed under that name while the Bolivian species was almost universally called *C. aterrimus* Kaup. So matters stood when Hartert, in 1908, separated a smaller race with differently coloured female from Carabaya, S.E. Peru, as *K. aterrimus ockendeni*.⁵

While working on d'Orbigny's types at Paris I soon perceived that two distinct races had been confused by Lafresnaye and d'Orbigny under the name *Fluvicola nigerrima* (= *Knipolegus aterrimus* Kaup); the females from the western Yungas (Nos. 5, 6) being smaller, with the central rectrices blackish to the base, and paler, less ochraceous under-parts, clouded or flammulated with dusky grey on the breast; whereas that from Cochabamba was found to be larger, much brighter ochraceous underneath, with the basal portion of the median tail-feathers extensively rufous and the outer web of the third to sixth (or even eighth) primary basally margined with cinnamon. With the aid of my correspondents I was enabled to bring together large series from various parts of Bolivia, Argentine, and S.E. Peru. The study of this material not only confirmed the geographic nature of the above distinctions in the female sex, but also revealed certain differences among the adult males, those from central and southern Bolivia (Cochabamba, Samaipata, Valle Grande, Sucre, Tarija) being conspicuously larger and of a deeper, more glossy black.

Now the question arises, for which of the two races the specific name *aterrimus* should be retained? Kaup, as stated above, founded his species on the accounts of *Fluvicola* (*Ada*) *nigerrima* in the *Synopsis* and the ornithological portion of the *Voyage*. In the first-named place, the female only is characterised, and its diagnosis (cf. "supra fusco-brunnea, capite nigricante . . . ; cauda nigra, basi usque ad medium rufa . . .") has unquestionably been taken from specimen No. 3 ex Cochabamba. In the *Voyage*, however, the description of the female (cf. "queue noirâtre, les deux rectrices [add médianes] exceptées, toutes rousses à leur base, à leur côté interne") evidently refers to Nos. 5 and 6, from the western Yungas. The characters of the male, together with the erroneous measurements, as given in the *Voyage* and copied by Kaup, do not help us much; but in view of the fact that all of the adult males obtained by d'Orbigny prove to be of the large eastern form, I feel justified in selecting No. 3 as type of *Knipolegus aterrimus* Kaup, and taking Cochabamba as type locality.

Having thus disposed of Kaup's name, we will now consider *C. anthracinus* Heine, which, from the rather vague locality "Bolivia," might refer to either of the two races found in that country. Thanks to the courtesy of Dr. Stresemann, the type, a perfectly adult male, was forwarded to my inspection and proved to be an example of the small, dull-black form of the Yungas of La Paz, its wing-

¹ *Journ. f. Ornith.* 7, p. 334 (1859—"Bolivia"; descr. ♂ ad.).

² The diagnosis of the female was purely imaginary, as we gather from a note by Cabanis (*Journ. f. Ornith.* 26, 1878, p. 197).

³ *Journ. f. Ornith.* 13, p. 402 (1865—"Sumpfigegenden des Vistaflor östlich . . . von Melocoton, Mendoza, W. Argentine; descr. ♂ juv., ♀).

⁴ *Journ. f. Ornith.* 26, 1878, p. 197.

⁵ *Bull. B.O.C.* 23, p. 11 (1908—Ocoque, Carabaya, S.E. Peru).

measurement, 83 mm., being well within the limits of the large series from N.W. Bolivia. I therefore designate *Yungas of La Paz* as type locality of *C. anthracinus* Heine.

Birds from Carabaya and Marepata, S.E. Peru, are very slightly smaller, and the females have the dusky tips to the external rectrices somewhat less extended. These rather insignificant divergencies should, however, be confirmed by a larger series, and for the present I am not disposed to separate *K. a. ockendeni* from *K. a. anthracinus* of N.W. Bolivia.

The two races have thus to stand as follows :

(a) *Knipolegus aterrimus aterrimus* Kaup.

- Fluvicola nigerrima* (nec Vieillot) Lafr. & Orb., *Syn. Av.* i, in *Mag. Zool.* cl. ii, 1837, p. 59 (part.: Cochabamba, "Moxos, Chiquitos"; descr. ♀).
Ada nigerrima, d'Orbigny, *l'oy., Ois.*, p. 340 (part.: Ayupaya, Cochabamba, Chuquisaca; descr. ♂).
Knipolegus aterrimus Kaup, *Journ. f. Ornith.* 1, p. 29 (1853—ex d'Orbigny et Lafresnaye: Bolivia; — ♀ ad. from *Cochabamba*, E. Bolivia, coll. Paris Museum, designated as type); Slater & Salvin, *P.Z.S. Lond.* 1879, 611 (part.: Cochabamba, Chuquisaca, ex d'Orbigny).
Myiarchus fasciatus Leybold, *Journ. f. Ornith.* 13, p. 402 (1865—Mendoza, W. Argentine; descr. ♂ juv., ♀).
Knipolegus cyanirostris (errore) Burmeister, *Journ. f. Ornith.* 8, 1860, p. 246; idem, *Reise La Plata*, St. ii, 1861, p. 457 (Mendoza).
Knipolegus anthracinus (nec Heine) Cabanis, *Journ. f. Ornith.* 26, 1878, p. 197 (Sierra de Cordoba, Rio Guayquiraro); Salvin, *Ibis*, 1880, p. 356 (Salta); Slater, *Cat. B. Brit. Mus.* 14, 1888, p. 44 (Mendoza, "Pampas of Argentine," Cordoba, Salta); Koslowsky, *Rev. Mus. La Plata* 6, 1895, p. 280 (Chilecito, La Rioja); Salvadori, *Boll. Mus. Zool. Torino* 10, No. 208, 1895, p. 9 (Salta); idem, *l.e.* 12, No. 292, 1897, p. 12 (Tala, Lesser, Cara-huassi, prov. Salta); Stempelmann & Schulz, *Bol. Acad. Nac. Cienc. Cordoba* 10, 1890, p. 401 (Cordoba); Lillo, *Anal. Mus. Nac. Buenos Aires* 8, 1902, p. 183 (Rio Sali, prov. Tucumán); idem, *Revista letr. y cienc. soc. Tuc.* iii, 1905, p. 47 (Rio Sali); Lönnberg, *Ibis*, 1903, p. 455 (Tolomosa, prov. Tarija, S.E. Bolivia); Baer, *Ornis*, 12, 1904, p. 219 (Tapia, Criolla, prov. Tucumán); Bruch, *Revist. Mus. La Plata* 11, 1904, p. 255 (Rio das Pedras, prov. Salta); Dabbene, *Anal. Mus. Nac. B. Aires* 18, 1910, p. 319 (range in Argentine).
Knipolegus hudsoni (errore) White, *P.Z.S. Lond.* 1883, p. 39 (Cosquin, Cordoba; ♂ ad. in Mus. Berlepsch examined).
Knipolegus aterrimus aterrimus Hartert & Venturi, *Nor. Zool.* 16, 1909, p. 192 (prov. Tucumán).

Type locality: Cochabamba, E. Bolivia.

Hab.—Central and eastern Bolivia; Ayupaya, Cochabamba (d'Orbigny), Chuquisaca (d'Orbigny, Behn), Valle Grande, Samaipata (Garlepp), Tolomosa, prov. Tarija (Hofsten, Hermann). Western Argentine: Salta (Cachi, Rio das Pedras, Tala, Lesser, Cara-huassi); Tucumán (Rio Sali, Tapia, Criolla, Norco, Santa Ana); La Rioja (Chilecito); Cordoba (Cosquin, Rio Guayquiraro); Mendoza.

♂ ad. Black; basal half of inner web of remiges pure white. Bill bluish black or plumbeous, middle portion of upper mandible bluish grey or even ivory whitish. Wing, 85½–94; tail, 72–83; bill, 15–17 mm.

♀ ad. Outer web of primaries (third to sixth or eighth) for its basal half conspicuously margined with light cinnamon; outermost rectrix with exception of a blackish patch at tip of inner web wholly light rufous; the five other rectrices with basal portion of both webs for a distance of about 50 (penultimate) to 35 mm. (median pair) cinnamon-rufous, the rest blackish; under-parts bright ochraceous, foreneck rarely with a few indistinct greyish edges.—Wing, 81–88; tail, 70–77; bill, 15–16 mm.

Remarks.—Adult males from Argentine do not differ from typical Bolivian birds in the extent of the white area at the base of the quills nor in any other respect, as far as I can see. The female type of *K. aterrimus*, No. 3 ex Cochabamba, a female from Chuquisaca, and one from Samaipata have the pileum dull, sooty blackish, with brownish edges to the feathers of the forehead and anterior crown, and the back conspicuously brownish. A second female from Samaipata, one from Tarija, and two from Tucumán, N.W. Argentine, however, have the upper parts pale greyish brown, while the crown is but obsoletely spotted with dusky, thereby resembling the female of *K. a. anthracinus*. No. 4 of Orbigny's, said to be from "Chiquitos,"¹ is a young bird in change of plumage, with the rectrices undeveloped in the sheaths. The markings on the wings are pale cinnamon, the throat dotted with dusky, the flanks deeper fulvous than in the adult.

No. 1 of d'Orbigny's, an adult male in perfect plumage, with no other locality than "Yungas" on its label, must have been obtained in the eastern parts of Bolivia, as it is an extreme example of the large *K. aterrimus*.

Specimens from various localities measure as follows :

♂♂ ad.	Wing.	Tail.
Seven from Valle Grande and Samaipata, E. Bolivia	86, 86, 88, 89, 90½, 92½, 94	72, 74, 77, 78½, 79, 81, 82½ mm.
Two from Chuquisaca (= Sucre), C. Bolivia	92, 92	77, 83 "
One from Cochabamba, C. Bolivia . . .	92	75 "
Three from Tarija, S.E. Bolivia . . .	89, 90, 92	77, 80, 81 "
Eight from Tucumán, N.W. Argentine . .	85, 86, 86, 87, 87, 88, 89, 89	76, 77, 78, 79, 79, 79, 81, 81 "
One from Salta, N.W. Argentine . . .	90	79 "
One from Cordoba, W. Argentine . . .	90	80½ "
One from Mendoza, W. Argentine . . .	86	76 "
♀♀		
Four from Samaipata, E. Bolivia . . .	81½, 82½, 84½, 85	70, 73, 74, 75½ mm. "
One from Chuquisaca (= Sucre), C. Bolivia	83	73 "
One from Cochabamba, C. Bolivia (type) .	88	77 "
One from Tarija, S.E. Bolivia . . .	87	74 "
Two from Tucumán, N.W. Argentine . .	81, 84	71, 74 "

(b) *Knipolegus aterrimus anthracinus* Heine.

Fluvicola nigerrima (nec Vieillot) Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, 1837, p. 59 (part. : Yungas).

Ada nigerrima, d'Orbigny, *Voy.*, Ois., p. 340 (part. : Yungas ; descr. ♀).

Knipolegus anthracinus (ex Cabanis MS.) Heine, *Journ. f. Ornith.* 7, p. 334 (1859—"Bolivia" ; Yungas of *La Paz* designated as type locality ; descr. ♂ ad.) ; Taczanowski, *P.Z.S. Lond.*

¹ This is most probably a *lapsus* for Chuquisaca, since the species is not likely to occur in the plains of eastern Bolivia.

- 1874, p. 533 (Huanta, dept. Ayacucho, Peru); idem, *Ornith. Pérou*, ii, 1884, p. 208 (Huanta, Andamarca).
Myiarchus fasciatus (nec Leybold) Taczanowski, *P.Z.S. Lond.* 1874, p. 539 (Huanta, Peru; ♀ ad., juv.).
Cnipolegus aterrimus (errore) Selater & Salvin, *P.Z.S. Lond.* 1879, p. 611 (part.: Yungas (d'Orbigny), Sorata, Tilotilo, Yungas (Buckley)).
Cnipolegus aterrimus ockendeni Hartert, *Bull. B.O.C.* 23, p. 11 (1908—Oconeque, Carabaya, S.E. Peru).
Cnipolegus heterogyna ockendeni Chapman, *Bull. U.S. Mus.* No. 117, 1921, p. 89 (San Miguel Bridge, Torontoy, Urubamba Valley, S.E. Peru).

Type locality: Yungas of La Paz, W. Bolivia.

Hab.—N.W. Bolivia, Yungas of La Paz: Chaco, Chicani, Sandillani (Garlepp), Sorata, Tilotilo (Buckley); S.E. Peru, Carabaya, Cuzco (Urcos), Oconeque, Quispicanchio [Ockenden]; San Miguel Bridge, Torontoy, Urubamba Valley; S.W. Peru, South Ayacucho, Huanta (Jelski).

♂ ad. Similar to *K. a. aterrimus*, but smaller and duller black, especially above.—Wing, 81–85½; tail, 73–80½; bill, 15½–17 mm.

♀ ad. Outermost rectrix as in *K. a. aterrimus*, but blackish apical patch smaller; the four succeeding rectrices (of each side) with the basal portion of the inner web only cinnamon-rufous, this area being, however, on the second to the fourth pair (from outside) decidedly more extended than in *K. a. aterrimus*; central pair uniform blackish down to the base. No trace of cinnamon edges on outer web of primaries. Under-parts paler, less ochreous, chest flammulated with dusky greyish, crown of head never blackish.—Wing, 72–79½; tail, 64–73; bill, 15–16 mm.

Remarks.—The type of *C. anthracinus* in the Berlin Museum is a perfectly adult male,¹ agreeing in size with average specimens from N.W. Bolivia. Two adult males from Carabaya, S.E. Peru, are very slightly smaller; but Taczanowski² gives the wing of a male from Huanta, Ayacucho, S.W. Peru, as 86 mm., which is just the maximum reached in my Bolivian series. Three females from Carabaya and Cuzco (Urcos), including the type of *K. a. ockendeni*, also have slightly shorter wings, and, besides, the dusky patch on the lateral rectrices a trifle less extended. This slight variation requires confirmation by a larger series. Taczanowski's description of the female from Huanta³ clearly shows the Ayacucho birds to belong to the present form, and its wing-measurement, 78 mm., accords well with some of my Bolivian examples.

D'Orbigny's specimens from Yungas, Nos. 5 and 6, which have apparently served as models for the description of the female in the *Voyage*, agree in every respect, notably in pattern of tail, with the skins from Sandillani and Chicani. In the eight females of this form the upper parts are light greenish brown, sometimes faintly shaded with olive; the crown is never blackish (as frequently obtains in *K. a. aterrimus*), though occasionally the feathers of the anterior portion are centred with dusky; the lower rump and upper tail-coverts are bright cinnamon-rufous as in *K. a. aterrimus*.

Specimens from different localities measure as follows:

¹ This is quite evident from the colour of its bill. Upper mandible at base and tip bluish black, its middle portion yellowish-white with a bluish hue; lower mandible bluish-black. Cabanis (*Journ. f. Ornith.* 26, 1878, p. 197) erroneously attributed its small size to immaturity.

² *Orn. Pérou*, ii, p. 209.

♂♂ ad.	Wing.	Tail.
Nine from Yungas of La Paz (Chaco, Sandillani, Chicani, Luribay), N.W. Bolivia	81½, 83, 84, 84, 84½, 85, 85½, 85½, 85½	75, 75, 77, 78, 78, 79½, 79½, 80½ mm.
Type of <i>C. anthracinus</i> from "Bolivia"	83	74 "
Two from Carabaya, S.E. Peru	81, 81	73, 74 "
♀♀ ad.	Wing.	Tail.
Five from Yungas of La Paz (Sandil- lani, Chicani), N.W. Bolivia	75, 75, 75, 78, 79½	65, 67½, 69, 69, 73 mm.
Three from Carabaya and Cuzco, S.E. Peru	72, 73, 74	64, 64, 68 "

In this connection should be mentioned that a third form of this group inhabits the mountains of Northern Peru. This is :

(c) *Knipolegus aterrimus heterogyna* Berl.

Knipolegus aterrimus heterogyna Berlepsch, *Ornis*, 14, p. 471 (Feb. 1907—Cajabamba, N. Peru).

Knipolegus aterrimus (nec Kaup) Salvin, *Nor. Zool.* ii, 1895, p. 11 (Cajabamba, Chusgon, Huamachuco, Malca, Cajabamba).

Knipolegus aterrimus (nec Kaup) Ménégaux, *Rev. Franç. d'Orn.* I, No. 21, Dec. 1910, p. 322 (Huayllillas).

Type locality: Cajabamba, N. Peru.

Hab.—North-western Peru: provinces Cajamarca and Libertad.

♂ ad. Larger than *K. a. anthracinus*, and with the tail more strongly rounded.—Wing (7), 85½–88½; tail, 75½–81; bill, 16½–17½ mm.

♀ ad. Differs from *K. a. anthracinus* in much darker, more blackish-brown upper-parts, buff instead of ochreous belly, and by having the upper tail-coverts as well as the light basal area of the rectrices buffy whitish or cinnamon-buff, instead of bright cinnamon-rufous. Besides, this pale zone is somewhat differently arranged, invading also the basal half of the outer web of the penultimate and the extreme base of the central rectrix.—Wing (8), 75–79; tail, 69½–72; bill, 15½–16½ mm.

N.B.—*Knipolegus hudsoni* Scl.,¹ which Count Berlepsch² believed to be a member of this group, is quite distinct specifically, and, together with *K. striaticeps* (Lafr. & Orb.) and *K. poecilocercus* (Pelz.), forms a separate section of the genus.

***Fluvicola cyanirostris* = *Knipolegus cyanirostris* (Vieill.).³**

Fluvicola cyanirostris (Vieill.); L. & O., *Syn. Av.* i, p. 59 (Corrientes; descr. ♀).

Ada cyanirostris, d'Orbigny, *Voy.*, Ois., p. 340 ("depuis le 31° degré sud jusqu'à Corrientes"; descr. ♂♀).

No. 1, "♂" ad. (skin): "No. 37. *Ada cyanirostris* Nob. Corrientes, d'Orbigny, juillet 1829."—Wing, 80; tail, 72; bill, 13½ mm.

¹ *Proc. Zool. Soc. Lond.*, 1872, p. 541, pl. xxxi (Rio Negro, Patagonia).

² *Ornis*, 14, 1907, p. 472.

³ *Muscicapa cyanirostris* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 21, p. 447 (1818—ex Azara, No. 181 (= ♂): Paraguay).

In another paper¹ I have shown *Cnipolegus unicolor* Kaup² to be a pure synonym of *K. cyanirostris*, since No. 1, the actual type of Kaup's species, does not differ in any way from Paraguayan examples. Kaup has been deceived by d'Orbigny's measurements, which, as usually in his work, are much too small. The Corrientes bird, on the contrary, is slightly larger than most of my Brazilian examples, while an adult male from Concepcion, R. Uruguay, Misiones, E. W. White³ coll., matches it in size.⁴

There is no female from Corrientes in the Paris Museum, but the description in the "Synopsis" perfectly fits that of *K. cyanirostris*.

This small *Cnipolegus*, in Argentine, appears to be chiefly confined to the states east of the Paraná (Entrerios, Corrientes, Misiones), though Venturi also obtained examples at Barracas al Sud (south of Buenos Ayres) and at S. Vicente, prov. Santa Fé. Besides, the species occurs in Paraguay and throughout south-eastern Brazil, from Rio Grande do Sul north to Minas Geraes (Lagoa Santa) and Espirito Santo (Braço do Sul, near Victoria).

Fluvicola icterophrys = *Satrapa icterophrys* (Vieill.).⁵

Fluvicola icterophrys (Vieill.) : L. & O., *Syn. Av.* i, p. 59 (Chuquisaca, Chiquitos, rep. Boliviana) (Montevideo, rep. oriental del Uruguay; Corrientes, rep. Argentina).

Suiriri icterophrys, d'Orbigny, *Voy.*, p. 338 (Montevideo, Buenos Ayres, Corrientes; Chuquisaca et Sicasica, Bolivia).

No. 1, "♂" ad. (mounted) : "No. 3894. de Buenos Aires, par d'Orbigny."

No. 2, "♀" juv. (skin) : "d'Orbigny, juillet 1829. No. 92. Corrientes. *Muscicapa icterophrys* Vieill. femelle."—Wing, 86; tail, 68; bill, 14 mm.

No. 3, adult (skin) : "No. 133. d'Orbigny, 1834. D. 43. de Chiquitos."—Wing, 86; tail, 74; bill, 15 mm.

No. 4, adult (skin) : "D. 43. Chuquisaca, d'Orbigny, 1834. *Muscicapa icterophrys* Vieill. No. 133."—Wing, 89; tail, 74; bill, 14 mm.

No. 5, "♂" ad. (skin) : "de Montevideo. Male. No. 43 des Pass. Envoi de M. d'Orbigny, 13. 9^{bre} 1829. *Musc. icterophrys* Vieill."—Wing, 86; tail, 71; bill, 14½ mm.

The Corrientes specimen, No. 2, in fairly good plumage, has the upper-parts decidedly greenish like freshly-moulted birds from S. Brazil, while the four others, in more or less abraded condition, are dull greyish-green above.

No. 2, from Corrientes, which the greenish pileum as well as the fluffy texture of the nuchal feathers and under tail-coverts pronounce to be a young bird, differs from Nos. 1, 3 to 5, and ten other skins from Bahia and Rio de Janeiro by smaller, more abruptly defined, pure white (instead of pale-greyish) apical spots on the median and greater upper wing-coverts and inner secondaries; paler yellow throat and foreneck; by possessing obsolete dark greyish-brown longitudinal streaks on jugulum and chest. In all these points it resembles

¹ *Nov. Zool.* 13, 1906, pp. 317-18.

² *Journ. f. Ornith.* i, p. 29 (1853—based on *Fluvicola cyanirostris* Lafr. & Orb. and *Ada cyanirostris* d'Orbigny, ex Corrientes, Argentina).

³ *Cnipolegus aterrimus* (errore) White, *Proc. Zool. Soc. Lond.* 1882, p. 604 (Misiones).

⁴ Males from S. Brazil (Espirito Santo, Rio, São Paulo, Rio Grande do Sul) have the wing from 75 to 78, the one from Misiones 82 mm.

⁵ *Muscicapa icterophrys* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 21, p. 458 (1818—ex Azara; No. 183: Paraguay).

Sisopygis hellmayri Chubb,¹ which, I feel sure, is only the juvenile stage of *S. icterophrys*.² This view is also supported by the fact that the adult bird from Chuquisaca, Bolivia, No. 4, which should belong to the western species, does not exhibit any of its supposed diagnostic characters, being in every respect identical with Argentine examples. There is no trace of dusky stripes on the chest; the markings on the wing-coverts and tertials are broad and dingy greyish, etc., exactly as in typical *S. icterophrys*. It should be added that the Chuquisaca bird is quite adult, with the cap dark-grey.

The skins from Chiquitos (No. 3) and Montevideo (No. 5), both adults with grey pileum and plain (unstriped) yellow under-parts, are in no way distinguishable. Both are in very worn plumage, the superciliaries being so faded as to appear nearly white, etc.

I am thus compelled to conclude that the birds inhabiting Paraguay, Argentine, Bolivia, central and eastern Brazil belong to a single species, viz. *S. icterophrys*.³

There seems to be no reason for rejecting the generic term *Satrapa* Strickl.,⁴ which is long anterior to *Sisopygis* Cab. & Heine, 1859.

Fluvicola leucophrys = Ochthoeca leucophrys leucophrys (Lafr. & Orb.).

Fluvicola leucophrys Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 60 (1837—Sicasica in Bolivia; descr. orig.); d'Orbigny, *Voy.*, Ois., p. 345, pl. xxxviii, fig. 1 ("sur le versant occidental des Andes, aux environs d'Enquisivi, prov. Sicasica").

No. 1, adult (mounted): "Bolivie; D'Orbigny, 1834. No. 151. *Ochthoeca leucophrys* d'O. & Lafr. type."—Wing, 74; tail, 67; bill, 12½ mm.

No. 2, imm. (mounted): "Bolivie, Sicasica. D'Orbigny, D. 447.—1834. No. 151. Type. *Ochthoeca leucophrys* d'O. & Lafr."—Wing, 71; tail, 65; bill, 12 mm.

The first-named example is an adult bird in perfect plumage and agrees well with another from La Paz, Bolivia, in the Berlepsch Collection. Both have the upper-parts (except the sooty pileum) nearly uniform raw umber, the rump being just a shade more rufescent, while the tail-coverts are somewhat lighter sooty than the crown. The apical spots to the median and greater wing-coverts are about 4 mm. long and of a clear cinnamon-rufous colour, the edges on the inner secondaries white, those of the tertials pale rufescent.

The young bird has a shorter, broader bill, paler brown back, shorter rufous tips on the wing-coverts, and more whitish edges on the tertials.

O. l. leucophrys is only known as an inhabitant of the mountains of western Bolivia (Sicasica, La Paz, Tilotilo).

In the Andes of western Argentine it is replaced by *O. leucophrys tucumana* Berl.,⁵ which differs in the rufous-brown rump, much broader as well as deeper castaneous wing-bands, and cinnamon edges to the secondaries. This well-characterised form, of which we have several examples from Norco, was discovered by White at Fuerte de Andalgala, Catamarca.⁶ Afterwards Koslowsky⁷ met

¹ *Bull. B.O.C.* 29, p. 63 (1907—Tapacari [prov. Cochabamba], Bolivia).

² See also the description of the young *Sisopygis icterophrys* by Grant, *Ibis*, 1911, p. 112.

³ Venezuelan specimens which I have not seen should be carefully re-examined.

⁴ *Ann. Mag. Nat. Hist.* 13, 1844, p. 414 (type by orig. desig.: *Suiriri* ? *icterophrys* (Vieill.)).

⁵ *Bull. B.O.C.* 16, p. 98 (1906—Norco, Tucumán).

⁶ *O. leucophrys*, White, *Proc. Zool. Soc. Lond.* 1882, p. 603.

⁷ *O. leucophrys*, Koslowsky, *Revist. Mus. La Plata* 6, 1895, p. 280.

with it at Chilecito, prov. Rioja, and Dinelli obtained specimens at various localities¹ in the province of Tucumán.

Fluvicola rufi-pectoralis = Ochthoeca r. rufipectoralis (Lafr. & Orb.).

Fluvicola rufi-pectoralis Lafresnaye & d'Orbigny, *Syn. Av. i*, in *Mag. Zool.* cl. ii, p. 60 (1837—Ayupaya, Bolivia; descr. orig.); d'Orbigny, *Voy., Ois.*, p. 345, pl. xxxvii, fig. 1 (Palca, prov. Ayupaya).

No. 1, adult (mounted): "Bolivie. D'Orbigny, 1834. D. 291. Ayupaya. *Type. Ochthoeca rufipectoralis* O. & Lafr."—Wing, 71; tail, 61; bill, $11\frac{1}{2}$ mm.

The type, like a male from Marcapata, S.E. Peru, has no trace of rufous wing-bands, the wing-coverts being all uniform sooty brown. It differs only by its darker back and deeper as well as more extended rufous on the chest. These small differences are very likely individual, since the Peruvian bird is immature.

O. r. rufipectoralis appears to be confined to south-eastern Peru and northern Bolivia.

Fluvicola oenanthoides = Ochthoeca oenanthoides oenanthoides (Lafr. & Orb.).

Fluvicola oenanthoides Lafresnaye & d'Orbigny, *Syn. Av. i*, in *Mag. Zool.* cl. ii, p. 60 (1837—La Paz, Bolivia; descr. orig.); d'Orbigny, *Voy., Ois.*, p. 344, pl. xxxviii, fig. 2 ("Vallée de La Paz").

No. 1 (♂), ad. (mounted): "No. 3891. La Paz, Bolivie. D'Orbigny 1834. No. 140. = *Type. Ochthoeca oenanthoides* Lafr. & Orb."—Wing, 81; tail, $68\frac{1}{2}$; bill, $13\frac{1}{2}$ mm.

In another paper² I have discussed the status of this species and its allies, so I need not dwell further on the subject. Suffice it to state that the type of *F. oenanthoides* turned out to belong to the form separated by Count Berlepsch as *O. polionota pacifica*, and to be totally different from *O. oenanthoides* auct. which I have, accordingly, named *O. fumicolor berlepschi*.³ *O. o. oenanthoides* is restricted to western Bolivia and N.W. Argentine.

Muscigralla brevicauda Lafr. & Orb.

Muscigralla brevicauda Lafresnaye & d'Orbigny, *Syn. Av. i*, in *Mag. Zool.* cl. ii, p. 61 (1837—"Tacna, in littoribus rep. Peruviana"; descr. orig.); d'Orbigny, *Voy., Ois.*, p. 354 (Tacna).

No. 1, adult (skin): "Muscicapidae humicolae aut saxicoloides Nob. Genus *Muscigralla*, Nob. *Muscigralla brevicauda* Nob. d'Orbigny, janvier 1831, de Pérou."—Wing, 66; tail, 39; bill, 14 mm.

This peculiar species, whose systematic position is not yet definitely settled, inhabits the arid littoral zone of western South America, ranging from N.W. Chili (Tacna) north to the Guayaquil district in S.W. Ecuador.

Pepoaza polyglotta = Taenioptera cinerea (Vieill.).⁴

Pepoaza polyglotta (Licht.);⁵ L. & O., *Syn. Av. i*, p. 62 (Corrientes, rep. Argentina; Chiquitos, Bolivia); d'Orbigny, *Voy.*, p. 346 (same localities).

No. 1, adult (skin): "d'Orbigny, juillet 1829. No. 75. Corrientes. *Pepoaza polyglotta* Nob."

¹ Yerba Buena, Cebil Redondo, Tafi Viejo, Norco, La Ciénaga, etc.

² *Nov. Zool.* 21, 1914, pp. 162-168.

³ *L.c.* p. 167.

⁴ *Tyrannus cinereus* Vieillot, *Analyse nouv. Ornith. élém.* p. 68 (1816—"l'Amérique méridionale").

⁵ *Muscicapa polyglotta* Lichtenstein, *Verz. Dubl. Berliner Mus.* p. 54 (1823—San Paulo, S.E. Brazil).

Nos. 2, 3, adults (skin): "No. 190. d'Orbigny, 1834. D. 22. Chiquitos. *Pepoaza polyglotta* Nob."

No. 4, adult (mounted): "d'Orbigny. No. 190. Bolivie, 1834."

Wing, 135-137; tail, 91, 96, 96 mm.

These birds agree in coloration and size with others from Brazil and northern Argentine.

This species, long known to naturalists under the inapplicable name "*T. nengeta*," ranges from the northern parts of Argentine (Buenos Ayres, Entrerios, Corrientes, Santa Fé, Cordoba) north to eastern Bolivia and central Brazil (Goyaz, Mattogrosso, Piaulhy, Maranhão). Birds from the island of Marajó (mouth of the Amazons) are smaller and may constitute a recognisable race.¹

***Pepoaza dominicana* = *Taenioptera dominicana* (Vieill.).²**

Pepoaza dominicana (Vieill.); L. & O., *Syn. Av.* i, p. 62 (Buenos Ayres, rep. Argentina; Montevideo, Maldonado, Uruguay); d'Orbigny, *Voy.*, Ois., p. 347 (Montevideo, Maldonado; Buenos Ayres, Corrientes).

No. 1, adult (mounted): "No. 3902a. ♂ ad., de Buenos Ayres, 'Uruguay,' par d'Orbigny."

No. 2, adult (mounted): "No. 3902b. ♂ ad. 'Paraguay' [= Corrientes, fide Catalogue], d'Orbigny, No. 74."

This fine species has rather a limited range, which extends from the vicinity of Buenos Ayres as far north as Chaco and Paraguay, and in the east to the S. Brazilian state of Paraná.

***Pepoaza velata* = *Taenioptera velata* (Licht.).³**

Pepoaza velata (Licht.); L. & O., *Syn. Av.* i, p. 62 (Santa Cruz, Bolivia); d'Orbigny, *Voy.*, p. 347 (Santa Cruz de la Sierra).

No. 1, adult (skin): "D. 322. Santa Cruz. *Pep. velata* Nob. No. 128. d'Orbigny, 1834."

This and other specimens from Santa Cruz in the Berlepsch Collection are identical with topotypical skins from São Paulo, S.E. Brazil.

***Pepoaza nivea* = *Taenioptera irupero* (Vieill.).⁴**

Pepoaza nivea (Spix);⁵ L. & O., *Syn. Av.* i, p. 62 (Chiquitos, Bolivia; Corrientes, rep. Argentina, Montevideo, rep. orient. Uruguayensi),

Pepoaza irupero, d'Orbigny, *Voy.*, Ois., p. 348 (près de La Plata, Chiquitos).

No. 1 (♂) ad. (skin): "D. 49. Chiquitos, d'Orbigny, 1834. No. 153. *Pepoaza irupero* Az."—Wing, 109; tail, 84; bill, 16½ mm.

No. 2, imm. (skin): "d'Orbigny, juillet 1829. No. 103. Corrientes. *Pepoaza irupero* Az."—Wing [moulting]; tail [moulting]; bill, 16 mm.

¹ Cf. Hellmayr, *Nov. Zool.* 15, 1908, p. 40.

² *Tyrannus dominicanus* Vieillot, *Tabl. enc. méth.*, *Ornith.* ii, livr. 93, p. 856 (1823—ex Azara, No. 203: Paraguay).

³ *Muscicapa velata* Lichtenstein, *Verz. Dubl. Berliner Mus.* p. 54 (1823—San Paulo).

⁴ *Tyrannus irupero* Vieillot, *Tabl. enc. méth.*, *Ornith.* ii, livr. 93, p. 856 (1823—ex Azara, No. 204: Paraguay).

⁵ *Muscicapa nivea* Spix, *Av. Bras.* ii, p. 20, pl. xxix, fig. 1 (1825—Joazeiro, Riv. São Francisco: Bahia, E. Brazil).

On comparing some twenty examples from Paraguay (Villa Concepcion), Argentine (Entrerios, Corrientes, Tucumán, Salta), eastern Bolivia (Chiquitos) and Uruguay (Montevideo), I am unable to perceive, either in size or colour, any constant difference connected with particular geographic areas. As I have shown in the review of Spix's types,¹ *M. nirea* Spix, based upon an adult male from Joazeiro, E. Brazil, is evidently not different from *T. irupero*. Three additional specimens from the type locality which I have lately had an opportunity of inspecting—though all immature or moulting—do not exhibit a single character that may not be found as well in Argentine or Paraguayan examples of similar age. Yet the examination of a series of adults from eastern Brazil seems desirable.

***Pepoaza rixosa* = *Machetornis rixosa rixosa* (Vieill.).²**

Pepoaza rixosa (Vieill.); L. & O., *Syn. Av.* i, p. 62 (Corrientes, rep. Argentina; Mojos, Bolivia); d'Orb., *Foy.*, p. 350 (Buenos Ayres, Corrientes, Argentina; Santa Cruz de la Sierra, Chiquitos, Mojos, Bolivia).

No. 1, adult (skin): "No. 93. *Pepoaza rixosa* Nob. Corrientes, d'Orbigny, juillet 1829."

No. 2, adult (skin): "D. 50, de Mojos, par d'Orbigny, 1834. No. 120."

Besides, there are two mounted specimens from "Argentine, par d'Orbigny."

There is no difference between specimens from Argentine and Paraguay on one side and those from eastern Bolivia and Brazil (Cuyabá, Mattogrosso; Bahia, Piahy) on the other.

Birds from Venezuela (Orinoco valley; Rio Maméra, near Caracas) are easily separable by having the throat yellow (instead of whitish or creamy white) like the breast, and the belly of a somewhat darker tint. They have been distinguished by Todd as *M. rixosa flavigularis*.³ According to Todd, this form extends westwards to the Santa Marta district of Colombia.

***Pepoaza pyrope* = *Taenioptera pyrope* (Kittl.).⁴**

Pepoaza pyrope (Kittl.); L. & O., *Syn. Av.* i, p. 63 (Valparaiso, Chili); d'Orb., *Foy.*, p. 348 (Valparaiso),

No. 1, adult (skin): "d'Orbigny, de Valparaiso, 1830. No. 6. *Pepoaza pyrope* Nob. No. 136."—Wing, 114; tail, 95 mm.

This species is common throughout southern Chili and Tierra del Fuego. It has also been met with in western Neuquen (Lago Nahuel Huapi) by Venturi,⁵ in western Chubut by Gerling on the Lago General Paz,⁶ and by Koslowsky in the Valle del Lago Blanco.

¹ *Abhandl. Bayr. Akad. Wiss.*, ii, Kl., 22, iii, 1906, p. 653.

² *Tyrannus rixosus* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 35, p. 85 (1819—ex Azara, No. 197: Paraguay).

³ *Ann. Carnegie Mus.* 8, No. 2, p. 210 (1912—Tocuyo, Estado Lara, N. Venezuela).

⁴ *Muscicapa pyrope* Kittlitz, *Mém. Acad. Sci. St. Pétersb.* (sav. étr.) i, p. 191, pl. x (1830—"bei Tomé in der Bay von Concepcion," Chili).

⁵ *Nov. Zool.* 16, 1909, p. 190.

⁶ Lynch, *Anal. Mus. Nac. Buenos Aires* 8, 1902, p. 164.

Pepoaza murina = Taenioptera murina (Lafr. & Orb.).

Pepoaza murina Lafresnaye & d'Orbigny, *Syn. Av.* in *Mag. Zool.* cl. ii, p. 63 (1837—"in Patagonia"; descr. orig.); d'Orbigny, *Voy., Ois.*, p. 348 (près du Rio Negro, Patagonie).

No. 1 (♂) ad. (mounted): "No. 3913A. Patagonie, d'Orbigny, No. 138. *Taenioptera murina* d'Orb. *Type.* (♀.) par d'Orbigny. 1831."—Wing, 102; tail, 79; bill, $17\frac{1}{2}$ mm.

This is an adult male with the tip of the two outer primaries strongly emarginate and attenuated. The plumage is soiled to such a degree that its original coloration can hardly be imagined. In proportions the type agrees with an adult male in worn breeding plumage, taken by Weiske on December 8, 1910, at the Laguna del Rio Limay, one of the main tributaries of the Rio Negro, and preserved in the Munich Museum. Two other specimens from the Rio Limay (December 2, 3) are slightly smaller.

Ten skins from western Argentine (Tucumán, Salta), all in good fresh plumage, are decidedly paler above, and much less brownish on the breast. A female from Tucumán, May 20, 1904, however, in its dark coloration, is precisely similar to the Limay birds. The differences are no doubt seasonal, as all the Patagonian specimens were taken in the southern summer (December, February), those from Salta and Tucumán in winter (May to August). Size and shape of the bill are exceedingly variable in different individuals.

There exists some uncertainty about the breeding-places of this species, and its eggs are yet unknown. As far as I can make out from published records, the birds appear to pass the summer (October to March) in Patagonia (Rio Negro, Neuquen). In the northern states of Argentine (Entrerios, Cordoba, Rioja, Catamarca, Tucumán, Salta, Jujuy) they have only been met with from March to October.

Specimens from various localities measure as follows:

	Wing.	Tail.	Bill.
Two adult males from Rio Limay, Neuquen	98, 102	75, 79	18, $18\frac{1}{2}$ mm.
Five adult males from Tucumán	99-102	78-82	16-17 "
One female from Rio Limay, Neuquen	95	75	19 "
Three females from Tucumán	95-96	76-79	$16\frac{1}{2}$ -18 "
Two females from Salta	96, 97	77	17 "

Pepoaza variegata Lafr. & Orb. = **Myiotheretes rufiventris** (Vieill.).¹

Pepoaza variegata Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 63 (1837—"in Patagonia"; descr. orig. juv.); d'Orbigny, *Voy., Ois.*, p. 349, pl. xxxix, fig. 2 ("dans l'île de los Javalis, à la baie de San Blas, Patagonie").

No. 1, juv. (skin): "d'Orbigny, février 1831. Patagonie. No. 36. *Pepoaza variegata* Nob. *P. varié.*"—Wing, 147; tail, 91; bill, $21\frac{1}{2}$ mm.

The type of *P. variegata* is a young bird (without emargination on outer primaries), and agrees tolerably well with another from Bahía Blanca in the Munich Museum.

This fine bird breeds in Patagonia (Bahía Blanca, San Blas, Chubut) and Tierra del Fuego (Possession Bay, Missionares, Useless Bay). In winter it migrates northward and then appears in great numbers at the mouth of the La Plata

¹ *Tyrannus rufiventris* Vieillot, *Tabl. enc. méth., Ornith.* ii, livr. 93, p. 856 (1823—ex Azara, No. 205: Montevideo, Uruguay).

(Buenos Ayres, Maldonado, Montevideo, Soriano) and adjacent districts (Cordoba, Misiones, Entrerios).¹ The Munich Museum has lately received from E. Weiske a number of specimens, secured in January 1911, at Bahia Blanca, Buenos Ayres.

Pepoaza coronata = Taenioptera coronata (Vicill.).²

Pepoaza coronata (Vicill.); d'Orbigny, *Voy.*, Ois., p. 350 (Corrientes, Buenos Ayres).

No. 1, adult (mounted): Buenos Ayres, par d'Orbigny.

This fine species is widely distributed throughout Argentine from the province of Buenos Ayres up to the Bolivian frontier. Specimens from different localities vary somewhat in size, but my series is too small (and entirely deficient in birds from the type locality Paraguay) to admit of definite conclusions.

Pepoaza livida = Agriornis livida livida (Kittl.).³

Pepoaza livida (Kittl.); D'Orbigny, *Voy.*, Ois., p. 351 ("aux environs de Valparaiso, Chili").

Nos. 1-5, adult and immature (skins): "No. 153. *Pepoaza gutturalis*. Valparaiso, d'Orbigny, 1830. No. 7."

The typical race inhabits northern and central Chili, from Atacama down to Valdivia.

In western Patagonia (Lago Nahuel Huapi, Neuquen; Lago Blanco, Chubut) and Tierra del Fuego it is replaced by a larger, stout-billed, lighter-coloured race, *A. livida fortis* Berl.² When compared with birds from the northern parts of Chili (Valparaiso, Coquimbo, Copiapó) the characters of the southern form are well pronounced. Specimens from Valdivia, S. Chili, are, however, somewhat intermediate.

Two adults from Tierra del Fuego in Mr. Crawshaw's collection agree perfectly with the types of *A. l. fortis* in the Tring Museum.

The dimensions of the two races are clearly shown by the subjoined figures.

A. livida livida (Kittl.).

	Wing.	Tail.	Bill.
Six males from Valparaiso, Coquimbo .	129-134	107½-116½	28½-32 mm.
One female from Coquimbo . . .	127	114	29½ ..

A. livida fortis Berl.

	Wing.	Tail.	Bill.
Three males from Lago Blanco, Chubut	136½-147	120-125	30½-32 mm.
One male from Tierra del Fuego . .	145	123	31½ ..
Two females from Nahuel Huapi, Neuquen	142-143	113-118	31-33 ..
One female from Tierra del Fuego . .	137½	115	31½ ..

¹ Oustalet's statement (*Miss. Scient. Cap Horn*, vi, Zool. p. B. 52) that the Paris Museum possesses a specimen from Yungas (Bolivia) through d'Orbigny is a mistake. The bird described by d'Orbigny under the name *Tyrannus rufiventris* is referable to *Orodynastes s. straticollis* (Scl.). See above, p. 23.

² *Tyrannus coronatus* Vieillot, *Tabl. enc. m th., Ornith.* ii, livr. 93, p. 855 (1823—ex Azara, No. 202; Paraguay).

³ *Tamnophilus lividus* Kittlitz, *Mém. Acad. Sci. S. Pétersb.* (sav. étr.) ii, p. 465, pl. i (1835—"auf den flachen Höhen um Valparaiso," Chili).

⁴ *Ornis* 14, p. 352 (1907—Valle del Lago Blanco, Chubut).

Pepoaza gutturalis = Agriornis microptera¹ andecola (Orb.).

Pepoaza gutturalis (nec Eyndoux & Gervais):² L. & O., *Syn. Av.* i, p. 64 ("in summis Andibus, rep. Boliviana").

Pepoaza andecola d'Orbigny, *Voy., Ois.*, p. 351 (betw. 1838 and 1847—"sur les parties les plus élevées du plateau des Andes").

No. 1, adult (mounted): "Bolivie, Sommet des Andes. D'Orbigny, 1834. No. 100—188. *Agriornis andecola* D'Orb. *Type*."—Wing, 116; tail, 102; bill, 27 mm.

The type agrees minutely with an example from La Paz, W. Bolivia, in the Berlepsch collection. The type of *Agriornis andecola pazñae* Ménég.,³ which I have carefully compared in the Paris Museum, I consider to be merely a freshly-moulted example of *A. m. andecola*. It has the breast of a very pale greyish-brown colour and looks at first sight rather different; but on closely examining the bird from La Paz (which is in worn breeding plumage) one discovers on the breast some newly grown feathers showing exactly the same tinge. The late Count Berlepsch, who had seen the typical example, fully concurred with my view.

The Bolivian form is closely allied to *A. m. microptera* (= *A. striatus*), of Argentine, and differs mainly by the narrower, duller striping of the throat and more buffy brownish under-parts.⁴

Birds from the north-western provinces (Tucumán, Salta, Jujuy) I am unable to separate from typical *A. microptera*,⁵ although some have slightly weaker bills. Lönnberg's record of *A. andicola* from Moreno, Jujuy,⁶ refers, of course, to *A. m. microptera*. The type of *A. striatus* Gould,⁷ which I have examined in the British Museum, is merely the adult bird of the so-called *A. microptera*.

The range of the two races would appear to be as follows:

(a) *A. microptera microptera* Gould.

E. Patagonia: Santa Cruz, S. Julian, Puerto Deseado (Desire), Rio Negro, Rio Limay (Neuquen),⁸ Rio Colorado; prov. Buenos Ayres: Lomas de Zamora⁹; prov. Córdoba (Rio Cuarto); prov. Catamarca (Pilciao); prov. Tucumán (Capital, Tafi, Tapia); prov. Salta (Valle de Lerma, Rosario-Frontera); prov. Jujuy (Moreno).

(b) *A. microptera andecola* (Orb.).

High Andes of western Bolivia (La Paz, Sajama, Pazña).

Perhaps these birds are only subspecifically distinct from *A. livida*, but more information about their geographic distribution is required to settle this question.

¹ *Agriornis micropterus* Gould (in Darwin, *Zoology "Beagle,"* iii, Birds, Part 6, Jan. 1839, pl. xii) is the earliest name for the bird commonly called *A. striatus* Gould, whose description was published in Part 9, July 1839, p. 56, while the letterpress of *A. micropterus* appeared in Part 11, Nov. 1839, p. 57. The coloured plate alone is, however, quite sufficient to recognize the species.

² *Tyrannus gutturalis* Eyndoux et Gervais, *Mag. Zool.* cl. ii, pl. lxiii (1836—Chili).

³ *Bull. Mus. d'Hist. Nat. Paris* 14, p. 340 (Jan. 1909—"chemin de Pazña à Urmiri (pres du lac Poopo), 3694 m., dept. Oruro, W. Bolivia).

⁴ See also Berlepsch, *Ornis*, 14, 1907, p. 464.

⁵ The type locality is the eastern coast of Patagonia (Port Desire and San Julian).

⁶ *Ibis*, 1903, p. 450.

⁷ In Darwin, *Zoology of the "Beagle,"* iii, Birds, Part 9, p. 56 (July 1839—Santa Cruz, E. Patagonia).

⁸ A young female, Dec. 21, 1910, obtained by E. Weiske, in the Munich Museum.

⁹ *A. striata* Withington, *Ibis*, 1888, p. 464 (♂: June 30, 1883; ♀: April 29, 1884).

Pepoaza montana Lafr. & Orb. = juv. } **Agriornis montana montana**
Pepoaza maritima Lafr. & Orb. = ad. } (Lafr. & Orb.).

Pepoaza montana Lafresnaye & d'Orbigny, *Syn. Av. i*, in *Mag. Zool.* cl. ii, p. 64 (1837—Chuquisaca, rep. Boliviana; descr. orig. juv.); d'Orbigny, *Voy., Ois.*, p. 352 (La Paz, Enquisivi (prov. Sicasica), et près de Palca).

Pepoaza maritima *idem*, l.c. p. 65 (1837—Cobija, rep. Boliviana; descr. orig. adult); d'Orbigny, *Voy.*, p. 353 ("Cobija en Bolivie").

No. 1, juv. (skin): "No. 192. d'Orbigny, 1834.—No. 108. *Pepoaza montana* Nob." According to the registers, from "Chuquisaca, Bolivie."—Wing, 129; tail, 105; bill, 23 mm.

No. 2, "♂" ad. (mounted): "3897A. Bolivie, Cobija. D'Orbigny, 1831. ♂. *Agriornis maritima* (Lafr. & Orb.). *Type*."—Wing, 122½; tail, 93; bill, 26½ mm.

The type of *P. montana*, No. 1—according to the registers of the Paris Museum the only specimen of that species brought home by d'Orbigny—is a young bird in fluffy plumage, with the two outer primaries normally shaped, not at all attenuated.

The type of *P. maritima*, on the other hand, is an adult male in good condition, having the tips of the first and second primary strongly excised for about 15 mm.

The principal reasons which induced Lafresnaye and d'Orbigny to separate the Chilian (Cobija) bird from *P. montana* were its smaller size and the emargination of the outer primaries. The last-named character has no specific value, being a peculiarity of the adult male. Moreover, it is extremely well developed in two adults from Chuquisaca, the type locality of *P. montana*, while a young bird from Cobija, the type locality of *P. maritima*, shows no traces of this peculiarity.

In comparing four adults and one young from Bolivia (*P. montana*) with seven skins from Chili (*P. maritima*) I notice that the latter have generally shorter wings and tail, larger bills, darker brownish breast, and rather longer white tips to the lateral rectrices. Birds from western Argentine (Mendoza, Tucumán, Jujuy) agree with the Bolivian ones, although one or two, by their darker breast, point towards the Chilian race. With the present, not very satisfactory material I do not venture to advocate the recognition of a separate western form which were to be called *Agriornis montana maritima* (Lafr. & Orb.).

Young birds from both Chili and Bolivia, besides lacking the emargination of the primaries, are much darker, as well as more rufescent above and below, while the bill, uniform black in the adult, has wholly or partly yellowish under mandible.

Specimens from different localities measure as follows:

"A. montana"—Bolivia.							
	Wing.	Tail.	Bill.	White tip to outermost rectrix.			
Two adult ♂♂ from Chuquisaca, C. Bolivia	132, 134	101, 105	25½, 28	30	mm.		
One adult ♂ from Vacas, N. Bolivia	133	103	25	32	„		
One adult ♂ from La Paz, N. Bolivia	134	103	25	29	„		
One unsexed young from Chuquisaca (type)	129	105	23	34	„		

" *A. montana* "—W. Argentine.

One adult ♂ from Jujuy (Maimara) .	129	100	28	26	mm.
One adult ♀ from Jujuy (Maimara) .	131	102	25½	30	„
One young ♂ from Mendoza (Challao) .	125½	95	25	28	„
Two young ♂♂ from Tucumán (Lara) .	123, 127	94, 99	25, 27	29, 31	„

" *A. maritima* "—Chili.

One adult ♂ from Cobija (type) .	123	93	26½	35	mm.
One unsexed young from Cobija .	110	83	27	—	„
One adult ♂ from "Chilian Andes" (Reed) .	128	101	28	42	„
One immature ♂ from "Chilian Andes" (Reed) .	130	101	27	40	„
Two immature ♂♂ from "Chili" (Leybold) .	120, 126	94, 102	27½	—	„
One young ♀ from "Chili" (Reed) .	129	100	25	30	„

A. m. montana (sensu latiore) inhabits the Cordilleras of Chili from Tarapacá to Santiago, the Andes of western and central Bolivia (La Paz, Chuquisaca), and the mountains of western Argentine, from Jujuy south to the Sierras of Mendoza and Cordoba.

In the plains of eastern Patagonia, from Pto. Tambo, Chubut, to Santa Cruz, it is replaced by a smaller, darker race, *A. montana leucura* Gould¹. It is probably this race which was met with by Barrows² in the Sierra de la Ventana, prov. Buenos Ayres.

Muscisaxicola rufivertex = $\left\{ \begin{array}{l} \textit{Muscisaxicola rufivertex} \text{ Lafr. \& Orb.} \\ \textit{Muscisaxicola occipitalis} \text{ Ridgw.}^3 \end{array} \right.$

Muscisaxicola rufivertex Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 66 (1837—"Cobija, La Paz, in Bolivia, in summis Andibus"; deser. orig.); d'Orbigny, *Voy., Ois.*, p. 354, pl. xl, fig. 2 ("au bord de la mer à Cobija . . . sur les plateaux les plus élevés des Andes à 4,600 m. alt. . .").

No. 1, ad. (skin). "d'Orbigny, janvier 1831. de Cobija. No. 165, de d'Orbigny. *Muscisaxicola rufivertex* Nob."—Wing, 100; tail, 72; bill, 17 mm. = *M. rufivertex* Lafr. & Orb.⁴

No. 2, imm. (skin): "d'Orbigny, janvier 1831. No. 8. Cobija (Bolivia). No. 165. *Muscisaxicola rufivertex* Nob."—Wing, 96; tail, 66; bill, 17 mm. = *M. rufivertex* Lafr. & Orb.

No. 3, imm. (skin), without original label, but according to preparation and colour doubtless from Cobija.—Wing, 99; tail, 69; bill, 16½ mm. = *M. rufivertex* Lafr. & Orb.

No. 4 (♀), ad. (skin): "202. d'Orbigny, 1834. No. 165. La Paz. *Musc. rufivertex* Nob."—Wing, 106; tail, 74; bill, 15¾ mm. = *Muscisaxicola occipitalis* Ridgw.

¹ *Agriornis leucurus* Gould, in Darwin, *Zool. of the "Beagle,"* iii, Birds, Part 6, pl. xiii (Jan. 1839—type, as determined by Scott, *Bull. E.O.C.* 10, 1900, pl. lxiv, from Port Desire, E. Patagonia).

² *A. maritima* Barrows, *Bull. Nutt. Orn. Cl.* 8, 1883, p. 137.

³ *Proc. U.S. Mus.* 10, "1887," p. 430 (1888—Lake Titicaca).

⁴ Designated as type of the species.

The three skins from Cobija, Nos. 1-3, agree with several others collected by Reed in the neighbourhood of Santiago. All the Chilean birds have the back light cinereous, without the least trace of brownish suffusion, the upper tail-coverts and rectrices decidedly blackish, the coronal patch hazel, and the lower surface pure white. No. 1 is a perfectly adult male, with very full rufous crown-patch, while in the two other (immature) specimens this patch is barely indicated. No. 2 shows pale rufescent apical spots to the median wing-coverts as remains of the juvenile plumage.

The adult bird from La Paz, No. 4, a couple from the same locality in the Berlepsch collection, four examples from Chicani, W. Bolivia, and a large series from various parts of Peru differ by having the back light brownish-grey, the tail less blackish, the crown-patch much darker rufous, the under-parts washed with dull greyish, and by their decidedly longer wings.¹ The series agrees very well with the description of *M. occipitalis*, which is certainly a well-characterised form (or even species), although its validity has been questioned by some authors.

D'Orbigny's description has evidently been taken from the Cobija birds. The passage in the *Synopsis*—"supra tota pallide cinerea"—can only apply to the littoral form, while the figure (pl. xl. fig. 2) is also a good representation of No. 1. We therefore designate the adult male, No. 1, from Cobija, N.W. Chili, as type of *M. rufivertex*. The geographical distribution of the two species is as follows:

M. rufivertex inhabits the Cordilleras of northern and central Chili, but is also found in western Bolivia (Sajama) and western Argentine (Tucumán, Salta, Mendoza). It is obviously divisible into two races, about which more will be said in another connection.

M. occipitalis I have seen from the high mountains of N. Bolivia (La Paz, Chicani, Lake Titicaca), S.E. Peru (Cuzco, Marcapata), central Peru (Hacienda Queta, Tarma), and northern Peru (Santiago, Dept. Libertad).²

¹ Specimens of the two species measure as follows:

<i>M. rufivertex</i> Lafr. & Orb.				
	Wing.	Tail	Bill.	
One adult (not sexed) from Colija, Chili . . .	109	72	17	mm.
Two adults (not sexed) from Santiago, Chili . . .	100, 102	69, 72	17, 17	"
Two adult males from Sajama, W. Bolivia . . .	110, 112	76, 78	16, 17	"
One adult female from Sajama, W. Bolivia . . .	103	72	17	"
One adult male from Tucumán (Cerro Muñoz) . . .	106	73	17	"
One adult male from Mendoza (coll. Burmeister) . . .	105	74	16	"
<i>M. occipitalis</i> Ridgw.				
Three adult males from La Paz, N.W. Bolivia . . .	110-112	74-75	17-17½	mm.
Two adult males from Chicani, N.W. Bolivia . . .	115, 118	78, 80	16, 16½	"
Two adult males from Tarma, C. Peru . . .	109½, 114	72, 75½	15½, 16	"
Three adult males from Cuzco, S.E. Peru . . .	112-117	72-77	16-17	"
One adult male from Libertad, N. Peru . . .	115	80	16	"
One adult female from La Paz, N.W. Bolivia . . .	106½	75	16½	"
Two adult females from Chicani, N.W. Bolivia . . .	108, 108½	74, 75	15½, 16½	"
One adult female from Tarma, C. Peru . . .	103	69	15½	"
One adult female from Libertad, N. Peru . . .	105	74	14½	"

² *Muscisaxicola rufivertex ruficrissa* Cory (*Field Mus. Nat. Hist. Publ.* No. 190, Aug. 1916, p. 342: type from Macate, "central" Peru [= Dept. Ancachs, W. Peru]) appears to be a synonym of *M. occipitalis*, in which the under tail-coverts are indeed either pure white or tinged with fulvous, more strongly so in immature birds. Two adults from near the type locality (Santiago, Dept. Libertad) in the Munich Museum differ in no way from specimens obtained in southern Peru.

M. albilora Lafr.¹ is totally different from *M. occipitalis*. It is very nearly as large, but has the upper parts more brownish and is, furthermore, distinguished by its larger, broader bill, duller rufous crown-patch, less conspicuous crest, etc. The examples I have examined are from Chili, Central (Maraynioc, Chanchamayo) and S.E. Peru (Anta, Cuzco).

***Muscisaxicola mentalis* = *M. macloviana mentalis* Lafr. & Orb.**

Muscisaxicola mentalis Lafresnaye & d'Orbigny, *Syn. Av.* i, in *Mag. Zool.* cl. ii, p. 66 (1837—Cobija, in Bolivia; Arica, atque in Patagonia; descr. orig.); d'Orbigny, *Voy.*, Ois., p. 355, pl. xl, fig. 1 ("bords du Rio Negro (Patagonie), en hiver"; Cobija, Bolivia; Arica, Pérou).

Nos. 1, 2, adults (skin): "D'Orbigny, janvier 1831, de Cobija (Bolivie). *Muscisaxicola mentalis* Nob."—Wing, 101, 104; tail, 64, 68; bill, 13½, 13¾ mm.

Nos. 3-5, adult and imm. (skin): "D'Orbigny, janvier 1831, d'Arica, No. 166. *M. mentalis* Nob."—Wing, 97, 97½, 100; tail, 65, 65, 66; bill, 13¾, 14, 14 mm.

Nos. 6, 7, adults (skin): "d'Orbigny, février 1831, de Patagonie. *M. mentalis* Nob."—Wing, 95, 102; tail, 61, 67; bill, 13, 13½ mm.

There is no difference between specimens from such widely separated localities as N.W. Chili (Arica, Cobija), Tierra del Fuego, and Patagonia (Rio Negro). One skin each from Cobija, Arica, and Patagonia lack the rufous-brown chin-spot, while this mark is well developed in the remaining specimens. It is probably a matter of age.

This species, which has a wide range in southern South America, the most northerly recorded occurrence being Islay, on the coast of S.W. Peru, is generally assumed to breed only in Tierra del Fuego and southern Patagonia and to migrate northwards in winter.² However, it should be remembered that, according to Withington,³ this bird is "very abundant" at Lomas de Zamora, prov. Buenos Ayres, "breeds with us and lays three or four eggs." Holland⁴ mentions it as a winter visitor at Santa Elena, Entrerios. This naturalist shot a male on June 16, 1893, which was identified by the late P. L. Selater.

More information about the breeding quarters of the species appears, therefore, most desirable.

The relations of *M. mentalis* to *M. macloviana* (Garnot),⁵ of the Falkland Islands, are still unsettled. Garnot's types do not any longer exist in the French National Collection, and the specimens in the British Museum I unfortunately omitted to examine. Yet there is hardly any doubt that *M. macloviana*, like the majority of the resident land-birds of the Falklands, will prove to be sub-specifically separable from its mainland relative.⁶

¹ *Muscisaxicola albilora* Lafr. *Rev. Mag. Zool.* (2) vii, p. 60 (1855—locality not stated; Bangs and Penard (*Bull. Mus. Comp. Zool.* 63, No. 2, 1919, p. 27) suggest Santiago, Chili); = *Muscisaxicola rubricapilla* Phil. & Landb. 1865.

² See Schallow, *Zool. Jahrb.*, Suppl. iv, 1898, p. 716.

³ *Ibis*, 1888, p. 465.

⁴ *Ibis*, 1895, p. 215.

⁵ *Sylvia macloviana* Garnot, in *Voyage "Coquille," Zool.* 1, ii, p. 540 (July 1829—"Iles Malouines: dans les environs de la baie de l'Huile, du port Duperrey, et les vallées qui avoisinent l'Aiguade").

⁶ This supposition has since been corroborated by Bangs and Penard (*Bull. Mus. Comp. Zool.* 63, No. 2, June 1919, p. 26).

***Muscisaxicola maculirostris maculirostris* Lafr. & Orb.**

Muscisaxicola maculirostris Lafresnaye & d'Orbigny, *Syn. Av. i*, in *Mag. Zool.* cl. ii, p. 66 (1837—La Paz, in Bolivia; descr. orig.); d'Orbigny, *Voy., Ois.*, p. 356, pl. xli, fig. 1 ("aux environs de La Paz, Bolivie, à 3,800 metr. alt.").

No. 1, vix adult (skin): "*Muscisaxicola maculirostris* Nob. 201. d'Orbigny, 1834. D. 199. La Paz, Bolivie."—Wing, 83; tail, 62; bill, 15 mm.

The type is slightly immature, having the under tail-coverts rufescent buff (instead of white as in adults), and the upper wing-coverts more distinctly edged with rusty. On carefully examining a large series from northern Peru (Cajamarca), S.E. Peru (Lucre, Cuzco), western Bolivia (La Paz, Chicani), Chili, and N.W. Argentine (Jujuy, Tucumán), I am unable to separate any local races of this wide-ranging bird which was met with by Durnford¹ as far south as the Rio Sengelen, Terr. del Chubut, in Central Patagonia.

The West Ecuadorian form, *M. m. rufescens* Berl. & Stolz.,² however, is easily distinguishable by its conspicuously rufescent, instead of dull whitish, under-parts.

***Muscisaxicola striaticeps* = *Knipolegus striaticeps* (Lafr. & Orb.).**

Muscisaxicola striaticeps Lafresnaye & d'Orbigny, *Syn. Av. i*, in *Mag. Zool.* cl. ii, p. 66 (1837—"La Paz (Bolivia)"; descr. orig. ♀); d'Orbigny, *Voy., Ois.*, p. 356, pl. xli, fig. 1 ("sur les plateaux des Cordillères de Bolivie et près de La Paz, à 4,000 m.").

No. 1 (♀), ad. (mounted): "*Geositta (Muscisaxicola) striaticeps* (Lafr. & Orb.). *Type.* Bolivie, Chiquitos. D'Orbigny, 1834. No. 3921 = 1380."—Wing, 56; tail, 53; bill, 11½ mm.

As I have shown in an earlier paper,³ *M. striaticeps* had been based upon a female example of the species afterwards described by Selater as *Knipolegus cinereus*.⁴

Although in the *Synopsis*, as well as in the *Voyage*, La Paz is given as habitat, the type is marked as having been obtained in the Chiquitos plains of E. Bolivia. This locality is much more likely to be correct, since the late Prof. Behn secured a female on June 19, 1847, at San Miguel, in the same district, which is now in the Berlin Museum. Moreover, in Argentine this species has been met with only at moderate elevations, not exceeding 600 mm. above sea-level. It appears to be not uncommon in the western states—Cordoba, Santiago del Estero, Tucumán, Salta, and Jujuy. A single female was taken by Graham Kerr on the lower Pilcomayo, Gran Chaco,⁵ and another by Foster at Sapucay, Paraguay,⁶ on April 25, 1903. The type of *C. cinereus* was procured at Corumbá, Mattogrosso, which is the only record from Brazil.

K. striaticeps, together with *K. hudsoni* Sel. and *K. poecilocercus* (Pelz.), forms a natural group which possibly even deserves generic rank (*Phaeotriccus* Ridgw.).

¹ *Ibis*, 1878, p. 395 (one couple taken on December 2).

² *Proc. Zool. Soc. Lond.* 1896, p. 359 (1896—Yacon, W. Ecuador).

³ *Nov. Zool.* 13, July 1906, pp. 318-19.

⁴ *Proc. Zool. Soc. Lond.* 1870, p. 58 (1870—Corumbá, Rio Paraguay, S.W. Mattogrosso; Capt. Page coll.).

⁵ *Knipolegus cinereus* Kerr, *Ibis*, 1892, p. 129.

⁶ *Knipolegus striaticeps* Chubb, *Ibis*, 1910, p. 575.

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CONTENTS OF NO. IV.

	PAGES
ALPHABETICAL INDEX	335—350
TITLE AND CONTENTS OF VOL. XXXII	i—vii

INDEX.

abdelkader (*Satyrus*), 205.
 abencerragus (*Lycaena*), 213.
 aberrans (*Trichoglossus*), 123.
 Abraxas, 46, 47.
 absimilis (*Prasinocyma*), 35.
 absona (*Epifidonia*), 53.
 abyssinicus (*Falco*), 264.
 academica (*Muscipeta*), 28.
 acamas (*Apharitis*), 79, 83, 86, 95.
 Accipiter, 121, 267-270.
 acerbus (*Ceratophyllus*), 111.
 Acherontia, 217.
 Acidaliastis, 36.
 Acorynus, 290, 291.
 Acridotheres, 312.
 acteon (*Adopaea*), 215.
 Actinodura, 301.
 addendus (*Cacomantis*), 155, 168.
 adelma (*Delias*), 283.
 Adopaea, 214, 215.
 Aegithaliscus, 308.
 Aegotheles, 157.
 aegrota (*Somabrachys*), 226.
 aenea (*Chaptia*), 312.
 — (*Homophylotis*), 231.
 aequatorialis (*Spizitornis*), 192.
 aeruginosus (*Cacomantis*), 166.
 aesia (*Abraxas*), 46.
 aethiops (*Lybius*), 138.
 Aethopyga, 309.
 affinis (*Boarmia*), 58.
 — (*Catoria*), 58.
 — (*Coracias*), 296.
 — (*Heterogynis*), 221.
 — (*Tchitrea*), 305.
 Agalope, 237.
 Agathia, 32.
 Agriornis, 328-331.
 aharonii (*Bubo*), 263.
 ahmed (*Hesperia*), 216.
 Alauda, 310.
 alberti (*Eudynamis*), 153.
 albertisi (*Gymnophaps*), 120.
 albescens (*Ocnogyna*), 226.
 albiceps (*Elaenia*), 28.
 — (*Muscipeta*), 28.
 albicilla (*Muscicapa*), 183, 304.

albicollis (*Muscipeta*), 27.
 — (*Rhipidura*), 305.
 — (*Tyrannus*), 27.
 albidice (*Leucochloe*), 198.
 albidinucha (*Domicella*), 121.
 albidiventris (*Centropus*), 153.
 albifrons (*Caprima*), 233.
 — (*Pteronetta*), 273.
 albilora (*Muscisaxicola*), 333.
 albitorques (*Tityra*), 15.
 albiventer (*Fluvicola*), 314.
 albociliaris (*Saltator*), 7.
 Alcedo, 296.
 Aleippe, 303.
 Aleurus, 306.
 Alcyone, 125.
 aldabrensis (*Fregata*), 275.
 Alektoris, 137.
 Alecturus, 187, 188.
 Alex, 31.
 alexis (*Lycaena*), 213.
 alfredi (*Otus*), 262.
 algeriensis (*Diplura*), 224.
 algira (*Zygaena*), 220.
 algerica (*Euchloe*), 199.
 — (*Eumenis*), 205.
 — (*Lycaena*), 213.
 — (*Melitaea*), 203.
 — (*Notolophus*), 222.
 — (*Procris*), 221.
 — (*Satyrus*), 205.
 ali (*Hesperia*), 217.
 allardi (*Cigaritis*), 72, 210.
 Alophogaster, 230.
 amabilis (*Phoenicotheraupis*), 9.
 Amatidae, 221.
 amaura (*Alex*), 31.
 ambiguus (*Carduelis*), 311.
 amherstiae (*Chrysolophus*), 292.
 Amorpha, 218.
 Ampelis, 12, 13.
 amurensis (*Butorides*), 294.
 Anas, 273.
 anatoliae (*Dryobates*), 148.
 anchietae (*Buccanodon*), 141.
 andecola (*Agriornis*), 329.
 andrewsi (*Fregata*), 275.

- anglicus (*Dryobates*), 147.
 angolense (*Tricholaema*), 139, 142.
 angolensis (*Centropus*), 153.
 — (*Procaviopsylla*), 102.
 angustirostris (*Muscicapa*), 183.
 — (*Phylloscartes*), 183.
 — (*Phytotoma*), 10.
 animosus (*Tyrannus*), 24.
 Anisodes, 36, 37.
 annectens (*Campethera*), 148.
 anonymus (*Centropus*), 152.
 Anseres, 272–273.
 Anthipes, 305.
 anthracinus (*Cnipolegus*), 316–319.
 Anthus, 310.
 Antimimistis, 42.
 antipnoa (*Eumelea*), 31.
 aoroptila (*Lasiophanes*), 41.
 Apaidia, 229.
 Apantesis, 227.
 Aphantoecephala, 230, 231.
 Apharitis, 70, 78–95.
 Aphneus, 70.
 apinus (*Heteropan*), 235.
 Aplonis, 135.
 Apolecta, 257.
 Aporia, 196.
 appollinaria (*Problepsis*), 37.
 arabicus (*Ctenocephalus*), 97.
 — (*Milvus*), 266.
 arabum (*Arctia*), 227.
 Arachnothera, 309.
 Arhocola, 292.
 arcanioides (*Coenonympha*), 207.
 Arctia, 227.
 Arctiidae, 226–229.
 Ardea, 272.
 Ardeola, 294.
 arfakianus (*Cacomantis*), 170.
 Argynnis, 202, 203.
 armillata (*Muscipeta*), 30.
 Arremon, 3.
 Artamus, 136.
 Arundinicola, 187.
 aspersus (*Acorynus*), 290.
 aspricosta (*Sauris*), 44.
 assimilis (*Mallorhynchus*), 254.
 asterias (*Rhaphitropis*), 251.
 Astur, 267–270.
 atalanta (*Pyrameis*), 202.
 ateralbus (*Centropus*), 127.
 aterrimus (*Cnipolegus*), 316, 322.
 Athene, 261.
 Atinellia, 252.
 atlantica (*Liparis*), 223.
 — (*Saturnia*), 225.
 atlanticus (*Smerinthus*), 218.
 Atlapetus, 4.
 atra (*Saltator*), 9.
 atra (*Schistochlamys*), 9.
 atricapilla (*Munia*), 311.
 — (*Tityra*), 15.
 atricapillus (*Psaris*), 15.
 atriceps (*Tyrannus*), 20.
 atricollis (*Saltator*), 8.
 atronuchalis (*Sarcogrammus*), 293.
 atropos (*Acherontia*), 217.
 atrosericeus (*Ramphocelus*), 1.
 atrox (*Ceratophyllus*), 112.
 Attila, 21.
 atylus (*Tophoderes*), 242.
 audax (*Hadrostromus*), 16.
 — (*Psaris*), 16.
 — (*Tyrannus*), 18.
 Augiades, 215.
 aurantiicinctus (*Capito*), 141.
 aurantirostris (*Ramphastos*), 143.
 — (*Saltator*), 7.
 aurantio-atro-cristatus (*Empidonomus*), 23.
 — (*Tyrannus*), 23, 24.
 aureola (*Pipra*), 12.
 auresiana (*Argynnis*), 203.
 auricapillus (*Basileuterus*), 180.
 austauti (*Amorpha*), 218.
 — (*Coenonympha*), 207.
 australis (*Busarellus*), 267.
 — (*Carcharodus*), 216.
 auxostira (*Phthonoloba*), 43.
 Aviceda, 265.
 avis (*Callophrys*), 209.
 azarae (*Saltator*), 5.
 bacchus (*Ardeola*), 294.
 bakeri (*Cuculus*), 155.
 — (*Pomatorhinus*), 299.
 bailus (*Thestor*), 209.
 Bambusicola, 292.
 barakae (*Campethera*), 148.
 Barbatula, 140.
 bargei (*Tyto*), 260.
 basalis (*Chalcites*), 158.
 Basileuterus, 180–181.
 Baza, 121, 265.
 becki (*Speotyto*), 260.
 beesoni (*Xylinaes*), 240.
 beleinia (*Euchloe*), 201.
 belia (*Euchloe*), 198.
 belladonna (*Delias*), 284.
 bellatrix (*Apharitis*), 79, 88.
 bellicosa (*Hirundinea*), 24.
 bengalensis (*Alcedo*), 296.
 — (*Centropus*), 295.
 benghalensis (*Rostratula*), 293.
 benuncas (*Augiades*), 215.
 berinda (*Delias*), 282.
 berlepschi (*Merganetta*), 272.
 — (*Polioptila*), 189.
 Bernicla, 273.

bhamoensis (Stachyridopsis), 301.
 Bhringa, 312.
 bicolor (Cissopis), 10.
 — (Fluvicola), 314.
 — (Mallorhynchus), 256.
 — (Saltator), 10.
 bieti (Proparus), 301.
 bibagi (Cacomantis), 155.
 bimaculatus (Empidochanes), 29.
 — (Empidonax), 30.
 bismarckii (Baza), 121.
 bivittata (Culicivora), 189.
 bivittatus (Basileuterus), 181.
 blandus (Cacomantis), 154, 168.
 blythi (Muscicapa), 304.
 Boarmia, 58.
 boeticus (Polyommatus), 211.
 belivianus (Attila), 21.
 — (Pitangus), 17.
 — (Saurophagus), 17.
 — (Tyranniscus), 186.
 borneonensis (Cyanops), 140.
 bougainvillei (Accipiter), 268.
 boyleae (Delias), 283.
 Brachylophus, 149, 150.
 Brachypteryx, 301.
 brachyurus (Micropternus), 146.
 — (Surniculus), 156.
 Branta, 273.
 brassicae (Ganoris), 196.
 breveti (Phragmatobia), 227.
 brevicauda (Muscigralla), 324.
 brevipes (Tringa), 116.
 brevirostris (Muscipeta), 175.
 — (Scaephaethon), 276.
 brevis (Directarius), 238.
 britannicus (Falco), 264.
 browni (Reinwardtoena), 120.
 brunnea (Paradoxornis), 308.
 — (Pipra), 30.
 brunnescens (Charaxes), 288.
 brunneus (Elaenia), 30.
 brunniceps (Setophaga), 178.
 Buarremom, 4.
 Bnbe, 263.
 Bubuleus, 294.
 Buccanodon, 141.
 Bucco, 144.
 Bucconidae, 144.
 bucephalina (Phalera), 222.
 buehanani (Apharitus), 79, 93.
 — (Lybius), 138.
 budongoensis (Camipethera), 148.
 budytoides (Stigmatura), 190.
 bürgersi (Accipiter), 270.
 burmanicus (Molpastes), 307.
 buruensis (Accipiter), 269.
 Busarellus, 267.
 Butco, 266, 267.

Butorides, 271, 294.
 buturlini (Dryobates), 147.

cabacus (Charaxes), 288.
 cabanisi (Dryobates), 296.
 Cacomantis, 127, 154, 155, 164–174, 295.
 caedens (Ceratophyllus), 104.
 caeruleiceps (Centropus), 152.
 caesia (Muscicapa), 22.
 caesius (Heteropan), 234.
 — (Thamnomanes), 22.
 — (Tyrannus), 22.
 e-album (Polygonia), 202.
 californica (Sula), 274.
 Callophrys, 209.
 Caloenas, 120.
 calonyx (Eurystomus), 297.
 Campephaga, 306.
 Campethera, 148, 149.
 Campostoma, 186.
 canifrons (Spizixos), 306.
 caniola (Ilema), 228.
 cantans (Myiarchus), 19.
 cantoroides (Aplonis), 135.
 Capito, 141.
 Capitonidae, 138–143.
 Caprima, 232–234.
 Capsiempis, 186.
 capucinus (Rhopitropis), 248.
 carbo (Ramphocelus), 1.
 Careharodus, 216.
 Carduelis, 311.
 cardui (Pyrameis), 202.
 carlo (Cerchneis), 264.
 — (Falco), 264.
 carolinensis (Lanius), 24.
 carteretia (Macropygia), 119.
 Casiornis, 22.
 casta (Caprima), 233.
 castaneiventris (Cacomantis), 170–172.
 castaniceps (Pseudominla), 301.
 castissima (Celerio), 218.
 cathoeus (Dicrurus), 312.
 Catoria, 58.
 cavifer (Stiboderes), 243.
 cavimargo (Elphos), 54.
 cayana (Cotinga), 13.
 — (Saltator), 9.
 — (Tityra), 14.
 cayanensis (Myiozetetes), 27.
 cayanus (Psaris), 14.
 cayellii (Tyto), 259.
 cayennensis (Muscipeta), 27.
 Cediopsylla, 103.
 Cedus, 239.
 Celama, 229.
 Celerio, 218, 219.
 celerio (Hippotion), 219.
 Celeus, 146.

- celtis (Libythea), 208.
 Centetipsylla, 99.
 centralis (Gymnoschizorhis), 151.
 Centropus, 127, 152, 153, 295.
 Cephalopterus, 12.
 cephalotes (Myiarchus), 18.
 Ceratophyllus, 104, 105–113.
 Cerchneis, 264.
 Cereyonis, 205, 206.
 Cerura, 221.
 ceylonensis (Culicicapa), 304.
 Ceyx, 125.
 Chalcites, 154, 158–163.
 Chalcophaps, 120.
 chalybeocephalus (Monarcha), 129.
 Chaptia, 312.
 chara (Hadrionella), 232.
 Charadrius, 116, 293.
 Charaxes, 202, 288, 289.
 charlonia (Euchloe), 199.
 charmetanti (Nygmia), 223.
 Charmosynopsis, 122.
 Chazara, 204.
 Chelidorynx, 304.
 cheopis (Xenopsylla), 113.
 chitralensis (Apharitis), 90.
 chilamitulalis (Celama), 229.
 chorepiscus (Myiarchus), 18.
 chloromeros (Pipra), 11.
 Chloronerpes, 149.
 chloronotus (Muscicapa), 179.
 Chloropsis, 307.
 chloroticus (Mesopicos), 146.
 Chonderostega, 224.
 chretieni (Somabrachys), 226.
 chrotodon (Ingena), 69.
 chrysocephala (Euprepia), 228.
 Chrysochloroma, 33.
 Chrysococeyx, 154.
 Chrysolophus, 292.
 chrysomela (Monarcha), 129.
 Chrysophanus, 211.
 chrysorrhoea (Delias), 286.
 Cigaritis, 70–95, 210.
 cilissa (Apharitis), 79, 80, 95.
 Cilix, 225.
 cineracea (Lathria), 12.
 cineracens (Cacomantis), 172–174.
 cinerascens (Camptostoma), 186.
 cinerea (Querula), 12.
 — (Taenioptera), 324.
 cinereum (Todiostrostrum), 25.
 cinereus (Cnipolegus), 334.
 — (Microsarcops), 293.
 — (Todus), 25.
 — (Tyrannus), 324.
 cinnamomea (Muscipeta), 178.
 — (Pyrrhomyias), 178.
 cinnamomina (Ninox), 261.
 Cinnerys, 134.
 Circus, 271, 294, 295.
 cirtana (Procris), 221.
 Cissopis, 10.
 Cisticola, 134.
 Clamator, 156.
 cleopatra (Gonepteryx), 201.
 Cleora, 56, 57.
 cleora (Apolecta), 257.
 — (Caprima), 233.
 Cnipolegus, 316, 322, 334.
 coccinea (Myzomela), 133.
 Cochlidion, 221.
 coeles (Pachygastria), 224.
 codeti (Cochlidion), 221.
 Coenonympha, 207, 208.
 coerulea (Procnias), 13.
 — (Tersina), 13.
 coeruleotincta (Leioptila), 301.
 coerulescens (Saltator), 5.
 Colaptes, 146.
 colensoi (Phalacrocorax), 273.
 Colias, 201.
 collaris (Aphantoecephala), 231.
 Collix, 41.
 Collocalia, 128.
 colossus (Pergesa), 219.
 Columba, 118, 120, 294.
 comma (Augiades), 215.
 comminatus (Dryobates), 147.
 Comostola, 35.
 concolor (Microscelis), 306.
 confusa (Cigaritis), 77.
 confusus (Dryocopus), 145.
 conjuncta (Paidia), 229.
 connatus (Ctenocephalus), 98.
 connectens (Ramphocelus), 1.
 consobrinus (Ceratophyllus), 106.
 contempta (Tyto), 260.
 continentalis (Veniliornis), 146.
 convolvuli (Herse), 217.
 copsychnus, 298.
 eor (Raphitropis), 249.
 Coracias, 296.
 corinna (Cinnerys), 134.
 coromandus (Bubulcus), 294.
 coronata (Muscipeta), 27.
 — (Pepoaza), 328.
 — (Taenioptera), 328.
 coronatus (Onychorhynchus), 27.
 — (Tyrannus), 328.
 Corvus, 136, 313.
 Corymca, 66.
 Cossidae, 229.
 Cotinga, 13.
 crameri (Euchloe), 199.
 Craspedosis, 49.
 crassirostris (Chalcites), 163.
 eratacpus (Ctenocephalus), 98.

- erinitus (Tyrannus), 18.
 cristata (Muscicapa), 183.
 cristatellus (Acridotheres), 312.
 cristatus (Lanius), 307.
 croceus (Colias), 201.
 cruralis (Brachypteryx), 301.
 Cryptolopha, 304.
 Ctenocephalus, 96-99, 113.
 Cuculus, 155, 156, 295.
 Culicicapa, 304.
 Culicivora, 189, 190-194.
 cuneisparsa (Ectropis), 59.
 cyaneus (Circus), 294.
 Cyanidia, 234.
 cyanirostris (Fluvicola), 321.
 — (Knipolegus), 321.
 cyaniventer (Tesia), 297.
 Cyanops, 140, 296.
 Cymbalophora, 227.
 cyphonides (Uncifer), 253.
 cypriaca (Apharitis), 89.

 dabryi (Aethopyga), 309.
 dacotiae (Falco), 264.
 dahli (Rhipidura), 130.
 dampieri (Accipiter), 121.
 darjellensis (Dryobates), 296.
 davisoni (Phylloscopus), 304.
 debilis (Xenopsylla), 101.
 degens (Butorides), 271.
 delavoiei (Dicranura), 221.
 Delias, 279-287.
 Dendrocitta, 312.
 Dendrocopus, 147.
 Dendromus, 148.
 Dendronanthus, 310.
 deningeri (Phoenicophaeus), 151.
 deparcata (Problepsis), 37.
 deserticola (Celerio), 218.
 — (Melitaea), 204.
 desgodinsi (Leioptila), 301.
 despica (Ozola), 32.
 detorta (Tyto), 260.
 devillii (Arremon), 3.
 devittata (Domicella), 122.
 diademata (Yuhina), 303.
 Dicaeum, 134, 309.
 Dichorda, 33.
 Dicranostreptus, 136.
 Dicranura, 221.
 Dicrurus, 311, 312.
 dido (Apantes), 227.
 difficilis (Xenopsylla), 101.
 diffinis (Ceratophyllus), 111.
 — (Uncifer), 253.
 diluta (Ilema), 228.
 dimorpha (Egretta), 271.
 Dinopium, 146.
 Dinopsyllus, 113.
 Diplura, 224.
 Directarius, 238.
 disertus (Mallorhynchus), 257.
 dispar (Porthetria), 223.
 dissimilis (Turdus), 299.
 Dissoleucas, 252.
 dives (Argynnis), 203.
 divisa (Apharitis), 79, 86, 95.
 dohertyi (Nadagara), 65.
 Domicella, 121, 122.
 dominicana (Pepoaza), 325.
 — (Taenioptera), 325.
 dominicanus (Tyrannus), 325.
 d'orbignii (Arremon), 3.
 dörriesi (Cerchneis), 264.
 doto (Xylopteryx), 61.
 Drepana, 225.
 Drymoea, 47.
 Dryobates, 146-148, 296.
 Dryocopus, 145.
 Ducula, 117.
 dumetorum (Cacomantis), 169.
 dumicola (Polioptila), 189.
 Dupetor, 120.
 Dysauxes, 221.
 Dyspessa, 229.

 ecaudatum (Todiostrostrum), 27.
 ecaudatus (Orchilus), 27.
 Echidnophaga, 96, 97.
 Ectropis, 59, 60.
 Edolisoma, 132.
 egea (Polygonia), 202.
 Egretta, 271, 294.
 egyptiaca (Apharitis), 88.
 eichhorni (Collocalia), 128.
 — (Monarcha), 129.
 — (Philemon), 133.
 — (Prasinocyma), 35.
 Elaenia, 28-30, 182, 183.
 electrica (Chrysocloroma), 33.
 elegans (Muscicapa), 182.
 — (Uliocnemis), 32.
 eleus (Chrysophanus), 211.
 ellena (Nytha), 204.
 — (Satyrus), 204.
 Elphos, 54.
 elwesi (Zosterops), 309.
 Emberiza, 1, 310.
 Embernagra, 1-4.
 emphatica (Luxiaria), 63.
 Empidocheanes, 29.
 Empidonax, 28, 30.
 Empidonomus, 23.
 Enicurus, 297.
 epargyros (Apharitis), 79, 83, 95.
 Epicnaptera, 224.
 Epifidonia, 53.

- Epinephele, 206, 207.
 Episteira, 43.
 eremita (Megapodius), 115.
 erigens (Helminthoceras), 44.
 — (Sauris), 44.
 ernestina (Craspedosis), 49.
 erubescens (Phaëthon), 275.
 erythrea (Cigaritis), 77, 95.
 erythromelas (Vanessa), 202.
 erythrorhyncha (Urocissa), 312.
 erythrothorax (Porzana), 292.
 Erythrura, 135.
 esculenta (Collocalia), 128.
 ethelogus (Perierocotus), 305.
 Euchloe, 198–201.
 Euchlornis, 13.
 Eucrotes, 35.
 eudiabolus (Accipiter), 270.
 Eudynamis, 153, 154, 295.
 eugeniae (Myiophonus), 298.
 euleri (Empidonax), 30.
 Eumelea, 31.
 Eumenis, 205.
 eunomus (Turdus), 298.
 Euprepia, 228.
 Eurystomus, 297.
 euryxantha (Eucrotes), 35.
 Euscarthmus, 25, 26.
 Eusphalera, 235, 236.
 everetti (Cacomantis), 166.
 — (Ectropis), 60.
 — (Eudynamis), 154.
 excitus (Cacomantis), 155, 173.
 exigua (Zygaena), 220.
 exilis (Cisticola), 134.
 — (Uncifer), 252.
 eximium (Dicaeum), 134.
 exsul (Dinopium), 146.
 extensipennis (Nadagara), 65.
 exter (Prinia), 304.
 exultans (Aethopyga), 309.

 Falco, 264, 265, 295.
 falklandicus (Nycticorax), 272.
 falloui (Euchloe), 200.
 falsa (Lalage), 131.
 fascellina, 52, 53.
 fasciata (Pipra), 12.
 fasciicauda (Milvus), 266.
 — (Pipra), 12.
 fatma (Lycaena), 214.
 favonia (Zygaena), 219.
 feisthameli (Papilio), 195.
 felis (Ctenocephalus), 98, 99, 113.
 felix (Zygaena), 220.
 ferocior (Myiarchus), 18, 20.
 ferox (Tyrannus), 18.
 ferranti (Tophoderes), 242.
 ferrugineus (Colaptes), 146.

 fervida (Callophrys), 209.
 fidia (Satyrus), 205.
 finschi (Pachycephala), 132.
 — (Psittacula), 296.
 finschii (Ducula), 117.
 firasa (Ardea), 272.
 flammiceps (Myiophobus), 176.
 flaveola (Capsiempis), 186.
 flaveolus (Basileuterus), 181.
 flavigastra (Cimmyris), 134.
 flaviordinata (Nothomiza), 68.
 flavirostris (Arremon), 3.
 — (Spizitornis), 192.
 flaviventris (Alecturus), 188.
 — (Myiosympotes), 188.
 floris (Spizaetus), 266.
 Fluvicola, 314–316, 321–324.
 forbesi (Munia), 135.
 forresti (Lanthocieucla), 299.
 — (Streptopelia), 293.
 fortior (Cacomantis), 154, 168.
 fortirostris (Myiarchus), 20.
 fortunata (Sauris), 44.
 fotus (Ceratophyllus), 107.
 franklini (Cyanops), 296.
 Franklinia, 303.
 frantzii (Elaenia), 29.
 Fregata, 274, 275.
 fujiyamae (Accipiter), 267.
 fuliginosus (Otus), 262.
 fuligula (Nyroca), 294.
 fulviventris (Saltator), 6.
 fulvus (Charadrius), 116, 293.
 fumicosta (Eumelea), 31.
 fumigatus (Myiochanes), 21.
 funebris (Cigaritis), 77.
 furus (Xylinaes), 245.
 fusca (Halcyon), 296.
 fuscatus (Elaenia), 30.
 — (Empidochanes), 29.
 — (Phylloscopus), 304.
 fytchii (Bambusicola), 292.

 gaimardii (Elaenia), 183.
 Gallicolumba, 118.
 Gallinago, 293.
 Ganoris, 196, 197.
 gardullensis (Lybius), 139.
 garzetta (Egretta), 294.
 Gecinus, 149, 150.
 Gegenes, 215.
 genestieri (Schoeniparus), 300.
 Gennaeus, 292.
 gibba (Rhaphitropis), 249.
 gilletti (Apharitis), 79, 85, 95.
 girrenera (Haliastur), 121.
 glabripes (Otus), 295.
 glacialis (Hoplopsyllus), 103.
 gladiolus (Ceratophyllus), 108.

- glaucata (Cilix), 225.
 Glaucidium, 260.
 Globicera, 117.
 glochinophora (Boarmia), 58.
 Gonepteryx, 201.
 goodfellowi (Erythrura), 135.
 gracilirostris (Tyto), 260.
 gracilis (Franklinia), 303.
 — (Leioptila), 301.
 graeca (Alectoris), 137.
 grandis (Acridotheres), 312.
 — (Niltava), 305.
 granti (Sula), 274.
 Graucalus, 132, 306.
 graueri (Gymnogenys), 271.
 gravis (Mallorhynchus), 255.
 griseotincta (Yuhina), 303.
 Gubernetes, 314.
 guianensis (Odontriorchis), 265.
 guillemini (Muscipeta), 29.
 guirayetapa (Alecturus), 187.
 Gulameutus, 246.
 gulare (Todiostrostrum), 25.
 gularis (Euscarthmus), 25.
 guttaticollis (Paradoxornis), 307.
 guttatus (Enicurus), 297.
 gutturalis (Hirundo), 297.
 — (Pepoaza), 329.
 Gymnobucco, 140.
 Gymnogenys, 271.
 Gymnophaps, 120.
 Gymnoschizorhis, 151.
 gyroleuca (Craspedosis), 49.

 Habrura, 185.
 Hadrionella, 231, 232.
 Hadrostomus, 16.
 haematorhynchus (Ramphastos), 143.
 Haematospiza, 311.
 haesitandus (Accipiter), 268.
 hainanus (Rhopodytes), 152.
 Haleyon, 125-127, 296.
 Haliastur, 121.
 hampsoni (Xanthorhoë), 39.
 hamula (Xenopsylla), 99.
 hamza (Adopaea), 214.
 haploscelis (Collix), 41.
 hardwickii (Chloropsis), 307.
 haringtoni (Oreicola), 298.
 haroldi (Cymbalophora), 227.
 Harpactes, 151.
 harrisi (Nannopterum), 274.
 — (Phalacrocorax), 274.
 harterti (Buteo), 266.
 — (Circus), 271.
 — (Eudynamis), 154.
 — (Melitaea), 204.
 — (Mülleripicus), 145.
 — (Picumnus), 144.

 harterti (Strix), 295.
 hebetis (Satyrus), 205.
 Hectopsylla, 96.
 hedybia (Delias), 286.
 Heliochera, 12, 13.
 Helminthoceras, 44.
 Hemerophila, 56.
 hemiphanes (Cleora), 56.
 Hemiscia, 231.
 henleyi (Ceratophyllus), 113.
 herbida (Chrysochloroma), 33.
 herculeana (Thaumetopoea), 222.
 Herse, 217.
 Hesperia, 216, 217.
 hesperoides (Drymoëa), 47.
 heterogyna (Knipolegus), 321.
 Heterogynidae, 221.
 Heterogynis, 221.
 Heteropan, 234, 235.
 heuglini (Dryobates), 147.
 hilaris (Mallorhynchus), 254.
 himalayensis (Dendrocitta), 312.
 Himantopus, 293.
 himantopus (Himantopus), 293.
 Hippotion, 219.
 Hirundinea, 24.
 Hirundo, 13, 297.
 hispanus (Bubo), 263.
 hodgsoni (Columba), 294.
 — (Motacilla), 310.
 holli (Coenonympha), 207.
 — (Parnara), 215.
 — (Satyrus), 205.
 Homophylotis, 231.
 Hoplopsyllus, 103.
 hormosticta (Synegia), 67.
 horsfieldi (Delias), 285.
 hottentotta (Dicrurus), 311.
 howelli (Ceratophyllus), 109.
 huegenini (Oenogyna), 226.
 humilis (Xenopsylla), 101.
 huonis (Caprima), 234.
 Hybocampa, 221.
 hybridum (Tricholaema), 142.
 Hylemera, 50.
 hypargyros (Apharitis), 87, 95.
 Hypochrosis, 50, 51.
 Hypocometa, 43.
 hypoleucos (Tringa), 115.
 hypoxantha (Chelidorynx), 304.
 — (Zosterops), 133.

 Ianthocimela, 299, 300.
 iberica (Zephyrus), 208.
 icarus (Lycæna), 212.
 Ichthyura, 222.
 icterophrys (Fluvicola), 322.
 — (Muscicapa), 322.
 — (Satrappa), 322.

ida (Epinephele), 207.
 ignipectus (Dicaeum), 309.
 ignotinca (Minda), 302.
 Ilema, 228.
 imitaria (Synegia), 67.
 immaculatus (Cigaritis), 78.
 inaequalis (Cediopsylla), 103.
 indepressa (Sterrha), 38.
 indica (Saxicola), 298.
 Indicator, 138.
 indicus (Dendronanthus), 310.
 — (Rhaphitropis), 248.
 indiligens (Ectropis), 60.
 ines (Melanargia), 206.
 inexpectatus (Podargus), 157.
 infaustus (Cacomantis), 167.
 infuscata (Somabrachys), 226.
 Ingena, 69.
 ingens (Dryobates), 146.
 — (Iyngipicus), 146.
 inquisitor (Psaris), 15.
 — (Tityra), 15.
 insignis (Artamus), 136.
 insulana (Piaya), 152.
 insularis (Corvus), 136.
 insulindae (Cuculus), 156.
 intensior (Passer), 310.
 intercedens (Celus), 146.
 intermedia (Pachypasa), 224.
 intermedius (Capito), 141.
 — (Centropus), 153.
 — (Corvus), 313.
 — (Cuculus), 295.
 — (Gymnobucco), 140.
 — (Podargus), 157.
 interposita (Ilema), 228.
 — (Melitaea), 204.
 interpositus (Bubo), 263.
 interrupta (Cediopsylla), 103.
 interscapularis (Megalurus), 134.
 interpersa (Cerura), 221.
 interstinctus (Falco), 295.
 intrepidus (Tyrannus), 24.
 Iole, 307.
 iredalei (Fregata), 275.
 irupero (Taenioptera), 325.
 isolatella (Notolophus), 222.
 isus (Ceratophyllus), 110.
 ithiela (Delias), 286.
 ituriensis (Barbatula), 140.
 — (Pogoniulus), 140.
 Iyngipicus, 146, 147.
 Iynx, 144.

jacapa (Ramphocelus), 1.
 janiroides (Epinephele), 207.
 japonica (Alauda), 310.
 jason (Charaxes), 202.
 javanicus (Phalacrocorax), 294.

javensis (Thalassodes), 34.
 jerdoni (Charadrius), 116.
 jugurtha (Cigaritis), 75.
 — (Falco), 264.
 jurtina (Epinephele), 206.
 Jyngipicus, 147.
 Jynx, 144.
 kaffensis (Campethera), 148.
 — (Dendromus), 148.
 kalidupae (Otus), 262.
 — (Pisorhina), 262.
 kalinowskii (Thriponax), 145.
 karu (Lalage), 131.
 kauriensis (Spelaecornis), 297.
 kelungensis (Cuculus), 155.
 kinabaleusis (Ectropis), 60.
 kivnanus (Charaxes), 288.
 kivuensis (Ruwenzorornis), 151.
 kleini (Alectoris), 137.
 Knipolegus, 316, 321, 334.
 krefftii (Mino), 135.
 kroumira (Phragmatobia), 227.

laetus (Mallorhynchus), 256.
 Lalage, 131.
 Lambessa, 224.
 lambessanus (Satyrus), 206.
 lanceolata (Ianthocinclia), 300.
 Lanius, 10, 14–17, 24, 307.
 Lasiocampidae, 224–225.
 Lasiophanes, 40, 41.
 latens (Ceratophyllus), 105.
 lathonia (Argynnis), 203.
 Lathria, 12.
 latirostre (Todiostrotrum), 25.
 latirostris (Euscarthmus), 25.
 — (Sayornis), 20.
 lativitta (Delias), 279.
 laurenti (Anthipes), 305.
 layardi (Chalcites), 160.
 laysanensis (Anas), 273.
 lefeburei (Gegenes), 215.
 Legatus, 27.
 Leioptila, 301.
 Leiothrix, 300.
 Lemonia, 225.
 Lemoniidae, 225.
 léotaudi (Celus), 146.
 lepidus (Heteropan), 235.
 leucocephala (Arundinicola), 187.
 leucocephalus (Alecturus), 187.
 leucoceraea (Thalassodes), 34.
 Leucochloe, 198.
 leucophaeus (Legatus), 27.
 — (Platyrhynchus), 27.
 leucophrys (Fluvicola), 323.
 — (Mecocerculus), 185.
 — (Ochthocca), 323.

- leucophrys (Porzana), 116.
 leucopias (Aviceda), 265.
 leucopsis (Motacilla), 310.
 leucopterus (Phoenicurus), 298.
 leucura (Notodela), 298.
 leucurus (Agriornis), 331.
 leuzae (Hesperia), 216.
 levata (Comostola), 35.
 leveriana (Cissopis), 10.
 libellulalis (Obeidia), 45.
 libera (Agathia), 32.
 libyssa (Euprepia), 228.
 Libythea, 208.
 Lichenops, 315.
 lilacinus (Apharitis), 79, 94.
 lilit (Athene), 261.
 Limacodidae, 221, 222.
 limbalis (Rhopitropis), 247.
 — (Xylinaes), 245.
 limitans (Picus), 150.
 — (Zygaena), 220.
 Linnaetus, 266.
 Liparidae, 222-223.
 Liparis, 223.
 listeri (Fregata), 275.
 litae (Chloronotus), 149.
 lithina (Ruttellera), 60.
 Litocerus, 239.
 littoralis (Cigaritis), 75.
 livida (Agriornis), 328.
 — (Pepoza), 328.
 livornica (Celerio), 219.
 longipecten (Alex), 31.
 longipennis (Picus), 150.
 Loriculus, 123.
 Lorius, 125.
 lorquini (Zizera), 214.
 loveridgei (Campethera), 149.
 loyselis (Zygaena), 219.
 lucens (Sauris), 44.
 luciae (Otus), 262.
 lucidus (Chalcites), 159.
 lucifera (Obeidia), 45.
 ludia (Hadrionella), 232.
 ludius (Alophogaster), 230.
 ludovicata (Eumecia), 31.
 lugens (Delias), 286.
 lugubris (Abraxas), 46.
 — (Phylloscopus), 304.
 lujai (Gulamentus), 246.
 Luxiaria, 62-64.
 Lybius, 138, 139.
 Lycaena, 212-214.
 lyllus (Coenonympha), 208.
 lypusus (Dinopsyllus), 113.
 lysimon (Zizera), 214.
 mabirae (Cuculus), 156.
 macariata (Ozola), 32.
 Machetornis, 326.
 macloviana (Sylvia), 333.
 macrocerus (Cacomantis), 127, 168.
 Macroglossum, 218.
 Macropygia, 119.
 maculatus (Chalcites), 159.
 — (Myiodynastes), 18.
 maculirostris (Muscisaxicola), 334.
 macandrata (Somatina), 38.
 magna (Arachnothera), 309.
 magnificens (Fregata), 274.
 magnirostris (Pnoepyga), 297.
 — (Sasia), 144.
 major (Satyrus), 204.
 malayana (Eudynamis), 295.
 — (Synegia), 67.
 malayanus (Chalcites), 160.
 malayorum (Picumnus), 145.
 Mallorhynchus, 254-257.
 manusi (Tyto), 259.
 margaritaceiventer (Cuscarthmus), 26.
 — (Todiostrostrum), 26.
 marginalis (Apharitis), 84.
 marginatus (Pachyrhynchus), 16, 17.
 — (Todus), 16.
 maritima (Agriornis), 331.
 — (Pepoza), 330.
 marmorata (Dyspessa), 229.
 maroccanus (Phalacrocorax), 273.
 marshalli (Dryobates), 148.
 martini (Lycaena), 212.
 matina (Trichopsylla), 103.
 matthias (Anisodes), 37.
 maura (Pieris), 197.
 mauretanica (Aporia), 196.
 — (Celerio), 218.
 — (Epinephele), 206.
 — (Ganoris), 197.
 — (Jynx), 144.
 — (Lycaena), 214.
 — (Melitaea), 203.
 — (Pachygastris), 224.
 — (Papilio), 195.
 — (Thais), 196.
 — (Thecla), 209.
 mauretanicus (Thestor), 210.
 maxima (Apharitis), 79, 81, 95.
 — (Tanagra), 9.
 maximiliani (Pitangus), 17.
 — (Saurophagus), 17.
 maximus (Saltator), 9.
 Mecocerculus, 185.
 Medasina, 55.
 medionubis (Synegia), 68.
 meeki (Cacomantis), 155, 173.
 — (Ninox), 261.
 — (Podargus), 157.
 — (Tyto), 259.
 megal (Aviceda, Baza), 265.

- Megalurus, 134.
 Megapodius, 115.
 megarhynchus (*Dieranostreptus*), 136.
 megera (*Pararge*), 206.
 melachistos (*Campephaga*), 306.
 melaleuca (*Rhipidura*), 130.
 Melanargia, 206.
 melancholicus (*Tyrannus*), 23.
 melanicterus (*Melophus*), 310.
 melanochoera (*Dneula*), 117.
 melanoleucus (*Circus*), 295.
 melanope (*Motacilla*), 310.
 melanopsis (*Tanagra*), 9.
 melanotis (*Pteruthius*), 303.
 melanozanthus (*Mycerobas*), 311.
 Melierax, 267.
 meligerys (*Fascellina*), 52.
 melinus (*Ceratophyllus*), 107.
 Melitaea, 203, 204.
 Melophus, 310.
 mentalis (*Muscisaxicola*), 333.
 meone (*Pararge*), 206.
 Merganetta, 272.
 meridionalis (*Cigaritis*), 72.
 — (*Gonepteryx*), 201.
 merulina (*Staetocichla*), 300.
 merulinus (*Cacomantis*), 164, 165.
 mesogona (*Apaidia*), 229.
 Mesopicos, 146.
 meyerii (*Calcites*), 163.
 Micropsitta, 124, 125.
 Micropternus, 146.
 micropterus (*Agriornis*), 329.
 Microsarops, 293.
 Microscelis, 306.
 Milionia, 48, 49.
 Milvus, 266.
 minima (*Apharitis*), 81.
 — (*Branta*), 273.
 Minla, 302.
 Mino, 135.
 minor (*Cissopis*), 10.
 — (*Fregata*), 275.
 — (*Platypsaris*), 16.
 — (*Querula*), 16.
 minorata (*Anisodes*), 36.
 minutillus (*Chalcites*), 161.
 Mioneetes, 179, 180.
 misoriensis (*Chalcites*), 162.
 mitorrhaphes (*Luxiaria*), 64.
 modesta (*Elaenia*), 28.
 modestus (*Sublegatus*), 175.
 mohammed (*Hesperia*), 216.
 mölleri (*Terpna*), 32.
 Molpastes, 307.
 moluecarum (*Butorides*), 271.
 Monarcha, 129.
 monilis (*Ramphastos*), 143.
 — (*Taphrodes*), 244.
 montana (*Agriornis*), 330.
 — (*Pepoaza*), 330.
 Monticola, 298.
 mortyi (*Aecipiter*), 269.
 Motacilla, 310, 315.
 muleata (*Ceyx*), 125.
 Mülleripicus, 145.
 multicolor (*Eusphalera*), 236.
 munda (*Serpophaga*), 183.
 Munia, 135, 311.
 munroii (*Bernicla*), 273.
 murina (*Pepoaza*), 327.
 — (*Taenioptera*), 327.
 Museicapa, 12, 18, 20, 22-30, 178-186, 304,
 314, 316, 321, 322, 324-326.
 Museigralla, 324.
 Museipeta, 27, 28-30, 175-178.
 Muscisaxicola, 331, 332-334.
 Muscivora, 23.
 musicus (*Cuculus*), 156.
 Musophagidae, 151.
 mutus (*Saltator*), 6.
 Myadestes, 30.
 Mycerobas, 311.
 Myiarchus, 18, 19.
 Myiochanes, 21.
 Myiodynastes, 18.
 Myiophobus, 176.
 Myiophonus, 298.
 Myiosympotes, 188.
 Myiotheretes, 23, 327.
 Myiozetetes, 27.
 myrmecophila (*Apharitis*), 79, 81.
 Myzomela, 133.
 Nadagara, 64, 65.
 Nannopterum, 274.
 nattereri (*Attila*), 21.
 naumanni (*Turdus*), 299.
 nebularia (*Tringa*), 293.
 nebulosa (*Sitta*), 309.
 necopina (*Caprima*), 232.
 necopinata (*Mieropsitta*), 124.
 necopinus (*Ceratophyllus*), 110.
 negligens (*Uliocnemis*), 32.
 nereidaria (*Comostola*), 35.
 nesophilus (*Dupetor*), 120.
 neumanni (*Melierax*), 267.
 nicholasi (*Coenonympha*), 208.
 nicobarica (*Caloenas*), 120.
 nigerrima (*Fluvicola*), 316.
 — (*Museicapa*), 316.
 nigrescens (*Dierurus*), 312.
 nigricans (*Dryobates*), 147.
 — (*Sayornis*), 20.
 — (*Serpophaga*), 188.
 — (*Tachuris*), 188.
 nigriceps (*Lanius*), 307.
 nigrirostris (*Macropygia*), 119.

- Niltava, 305.
 Nilus (Apharitis), 79, 92, 95.
 Nimia (Elphos), 54.
 Ninox, 121, 261.
 nipalensis (Aethopyga), 309.
 nitida (Aplonis), 135.
 — (Melitaea), 203.
 nivea (Pepoaza), 325.
 nodifica (Gallicolumba), 118.
 Nonnula, 144.
 nostradamus (Gegenes), 215.
 notabilis (Ceratophyllus), 106.
 notata (Procris), 220.
 Nothomiza, 68.
 Notodela, 298.
 Notolophus, 222, 223.
 nouna (Teracolumba), 201.
 novaeiberniae (Halcyon), 125.
 — (Pitta), 128.
 nubicus (Xenopsylla), 113.
 Nucifraga, 312.
 numida (Hesperia), 217.
 nycthemerus (Genuaeus), 292.
 Nycticorax, 272.
 Nygmia, 223.
 Nyroca, 294.
 Nytha, 204.

 Obeidia, 45.
 oberthueri (Cigaritis), 75.
 oberthuri (Apantes), 227.
 — (Satyrus), 205.
 obiensis (Accipiter), 269.
 oblitus (Cacomantis), 167.
 oblivia (Medasina), 55.
 oblongus (Rhapitropis), 246.
 obnubilata (Agathia), 32.
 obscura (Muscipeta), 29.
 obscurata (Apharitis), 89.
 obscurior (Dryobates), 147.
 obscurus (Turdus), 299.
 observaudus (Gecinus), 149.
 obsolescens (Euchloe), 200.
 obsoleta (Muscicapa), 186.
 occidentalis (Centropus), 152.
 — (Cigaritis), 72.
 — (Procnias), 14.
 — (Tersina), 14.
 occipitalis (Muscisaxicola), 331.
 Ochthoeca, 323, 324.
 Oeneria, 223.
 Ocnogyna, 226, 227.
 oerophus (Tringa), 293.
 odicus (Pomatorhinus), 299.
 Odontriorehis, 265.
 oenanthoides (Fluvicola), 324.
 — (Ochthoeca), 324.
 oleagineus (Mionectes), 179.
 olivacea (Muscicapa), 186.
 olivaceum (Dicaeum), 309.
 olivaceus (Saltator), 9.
 olivascens (Embernagra), 1.
 omissus (Dryobates), 296.
 omnicolor (Tachuris), 188.
 onopordi (Hesperia), 217.
 Onychorhynchus, 27.
 Ophthalmodes, 61.
 orbipuncta (Nadagara), 64.
 Orchilus, 27.
 Orcicola, 298.
 oreophilus (Buteo), 267.
 — (Cacomantis), 168.
 oribates (Rhinoprora), 42.
 orientalis (Cigaritis), 76.
 — (Streptopelia), 294.
 orientis (Ctenocephalus), 99.
 Oriolus, 311.
 ornatus (Cephalopterus), 12.
 — (Taphrodes), 244.
 Orodynastes, 23.
 Otus, 262, 263, 295.
 Ozola, 32.

 Pachycephala, 132.
 Pachygastris, 224.
 Pachypasa, 224.
 Pachyrhynchus, 14, 17.
 pagenstecheri (Charaxes), 288.
 Paidia, 229.
 pallescens (Cigaritis), 78.
 pallida (Aviceda), 265.
 — (Baza), 265.
 — (Dyspessa), 229.
 pallidiceps (Columba), 118.
 pallidior (Charmosynopsis), 122.
 — (Hirundinea), 24.
 pallidiventris (Saltator), 9.
 pallidus (Myiotheretes), 23.
 — (Synosternus), 113.
 panumicra (Cleora), 57.
 pandoo (Monticola), 298.
 pansus (Ceratophyllus), 109.
 Papilio, 195.
 papuanus (Accipiter), 270.
 Paradoxornis, 307, 308.
 paraguayensis (Embernagra), 1.
 Pararge, 206.
 parvus (Mallorhynchus), 255.
 pardalina (Apolecta), 257.
 Parodontis, 103.
 Parnara, 215.
 parroti (Centropus), 152.
 — (Dryobates), 147.
 parulus (Spizitornis), 192.
 Parus, 308.
 parvirostris (Buceo), 144.
 — (Suya), 303.
 Passer, 310.

- passerinus (Cacomantis), 165.
 patagonicus (Spizitornis), 192.
 patua (Delias), 279.
 pechi (Euchloe), 199.
 pectoralis (Habura), 185.
 pellax (Taphrodes), 244.
 pelzelni (Myiarchus), 18, 19, 20.
 — (Tityra), 15.
 pембанус (Charaxes), 289.
 Peпоаа, 324–330.
 peregrinus (Falco), 264.
 Pergesa, 219.
 Perierocotus, 305, 306.
 perilis (Echidnophaga), 97.
 permeata (Xypochrosis), 51.
 pernitens (Eusphalera), 235.
 perplexus (Spilornis), 266.
 persimile (Glaucidium), 260.
 perspicillata (Fluvicola), 315.
 — (Lichenops), 315.
 perspicua (Delias), 282.
 peruviana (Rupicola), 11.
 Phaëthon, 275.
 Phaethontidae, 275–276.
 Phalacrocoracidae, 273, 274.
 Phalacrocorax, 273, 274, 294.
 Phalera, 222.
 phelus (Litocerus), 239.
 Philemon, 133.
 philippina (Epinephcle), 207.
 phillipsi (Ceratophyllus), 107.
 philopalus (Lemonia), 225.
 phlaeas (Chrysophanus), 211.
 phoebe (Sayornis), 20.
 Phoenicophaea, 151.
 Phoenicotheraps, 9.
 Phoenicurus, 297, 298.
 Phragmatobia, 227.
 Phthonoloba, 43.
 Phylloscartes, 183.
 Phylloscopus, 304.
 Phytotoma, 10, 11.
 Piaya, 152.
 Pica, 313.
 pica (Fluvicola), 314.
 picatus (Lanius), 10.
 Pici, 144–150.
 Picumnus, 144, 145.
 Picus, 149, 150, 296.
 Pieris, 197.
 piger (Ceratophyllus), 105.
 pipiri (Tyrannus), 24.
 Pipra, 11, 12, 30.
 Pisorhina, 262.
 Pitta, 128.
 pityocampa (Thaumetopoea), 222.
 placida (Xanthorhoe), 40.
 placidus (Charadrius), 293.
 — (Raphitropis), 247.
 plagosus (Chalcites), 159.
 platensis (Embernagra), 1.
 Platypsaris, 15.
 Platyrrhynchus, 27, 28.
 plesiobapta (Milionia), 49.
 plumbea (Muscicapa), 12.
 pluvius (Picus), 150.
 Pnoepyga, 297.
 Podargus, 157.
 poccilurus (Chalcites), 161.
 Pogoniulus, 140.
 polionotus (Arremon), 3.
 Polioptila, 189.
 poliotis (Paradoxornis), 308.
 polychopterus (Pachyrhynchus), 17.
 polycryptus (Accipiter), 268.
 polyglotta (Pepoaza), 324.
 Polygonia, 202.
 Polymnatus, 211.
 polytropa (Milionia), 48.
 Pomatorhinus, 299.
 porphyretica (Acidaliastis), 36.
 porphyropis (Dichorda), 33.
 Porthetria, 223.
 Porzana, 116, 292.
 powelli (Chouderostega), 224.
 — (Cymbalophora), 227.
 — (Hybocampa), 221.
 — (Ichthyura), 222.
 — (Lycaena), 213.
 — (Otus), 263.
 — (Satyrus), 205.
 practicus (Tarsiger), 298.
 Prasinocyna, 35.
 priuri (Satyrus), 204.
 Prinia, 304.
 Prolepsis, 37.
 Procaviopsylla, 102.
 Procnias, 13, 14.
 Procris, 220, 221.
 profugus (Hoplopyllus), 103.
 pronus (Picus), 150.
 Proparus, 301.
 prosthetocneca (Abraxas), 47.
 proto (Hesperia), 216.
 Psaris, 14–16.
 Pseudominla, 301.
 Pseudoptynx, 263.
 Psittacula, 296.
 Pteronetta, 273.
 Pteruthius, 303.
 Ptilinopus, 116.
 pudens (Ocnogyna), 227.
 pudica (Cymbalophora), 227.
 pulchella (Myzomela), 133.
 — (Utetheisa), 228.
 pulcher (Aegothelus), 157.
 pulchricollis (Jynx), 144.
 punctifera (Lycaena), 213.

punica (Melitaea), 203.
 purpurilita (Collix), 41.
 pusilla (Emberiza), 310.
 Pycnonotus, 307.
 Pyrameis, 202.
 pyrina (Zeuzera), 229.
 Pyrocephalus, 27.
 pyrope (Pepoaza), 326.
 — (Taenioptera), 326.
 Pyrotrogon, 296.
 Pyrrhomyias, 178.
 pyrrhophanus (Cacomantis), 174.
 Pyrrhula, 311.
 pyrsea (Epifidonia), 53.

Querula, 12, 16.
 querula (Muscicapa), 28.
 querula (Muscipeta), 28.
 querulus (Cacomantis), 165, 295.

ralloides (Myadestes), 30.
 Ramphastos, 143.
 Ramphocelus, 1.
 rara (Phytotoma), 10.
 rebuti (Hylemera), 50.
 recensata (Hypochrosis), 50.
 rectangula (Nothomiza), 68.
 regia (Muscipeta), 27.
 reguloides (Culicivora), 194.
 — (Spizitornis), 194.
 reichenowi (Collocalia), 128.
 Reinwardtoena, 120.
 remifer (Bhringa), 312.
 remotum (Edolisoma), 132.
 repanda (Taragama), 225.
 rex (Buccanodon), 141.
 Rhamphastidae, 143–144.
 Rhaphitropis, 246–252.
 Rhinoprora, 42.
 Rhipidura, 130, 305.
 rhodeogyna (Eumelea), 31.
 Rhopodytes, 152.
 richardi (Anthus), 310.
 richardsi (Dryocopus), 145.
 ricketti (Pteruthius), 303.
 — (Pyrrhula), 311.
 ridgwayi (Fregata), 275.
 riefferii (Euchloris), 13.
 riggenbachii (Astur), 267.
 — (Phalacrocorax), 274.
 ripponi (Actinodura), 301.
 risorus (Alectrurus), 187.
 rivolii (Ptarmigan), 116.
 rixosa (Machetornis), 326.
 — (Pepoaza), 326.
 rixosus (Tyrannus), 326.
 robustus (Ceratophyllus), 105.
 rodgeri (Brachylophus), 149.
 — (Gecinurus), 149.

rodgeri (Picus), 149.
 Roeselia, 229.
 rooki (Accipiter), 268.
 roseatus (Anthus), 310.
 roseicollis (Psaris), 15, 16.
 Rostratula, 293.
 rothschildi (Fregata), 275.
 — (Phaethon), 276.
 rouxi (Yuhina), 303.
 rubea (Oeneria), 223.
 rubescens (Cyanops), 140.
 rubianae (Accipiter), 268.
 rubica (Phoenicotheraupis), 9.
 rubicus (Saltator), 9.
 rubinus (Pyrocephalus), 27.
 rubra (Phoenicotheraupis), 9.
 rubricera (Ducula), 117.
 rubrigastra (Tachuris), 188.
 rubrigularis (Charmosynopsis), 122.
 rubrocapilla (Pipra), 11.
 rubrocristata (Heliochera), 12, 13.
 rufa (Casiornis), 22.
 — (Tityra), 15.
 rufecula (Apsidia), 229.
 rufescens (Carcharodus), 216.
 — (Tyrannus), 21.
 ruficollis (Chalcites), 163.
 ruficrisa (Muscisaxicola), 332.
 rufilauta (Ophthalmodes), 61.
 rufiloris (Phoenicophaea), 151.
 rufinucha (Atlapetes), 4.
 — (Embernagra), 4.
 rufi-pectoralis (Fluvicola), 324.
 rufipectoralis (Ochthoeca), 324.
 rufitergum (Tadorna), 273.
 rufiventris (Myiotheretes), 327.
 — (Saltator), 8.
 — (Tyrannus), 23, 327.
 rufivertex (Muscisaxicola), 331.
 rufomerus (Chalcites), 154, 162.
 rufoschistaceus (Accipiter), 268.
 — (Astur), 268.
 rufotibialis (Accipiter), 270.
 rufus (Platypsaris), 15.
 — (Psaris), 16.
 — (Rhamnophilus), 22.
 — (Tyrannus), 22.
 Rupicola, 11.
 russatus (Chalcites), 161.
 ruthenus (Bubo), 263.
 rutila (Rhytotoma), 11.
 Ruttelorona, 60.
 Ruwenzorornis, 151.

Saltator, 5–10.
 salvadorii (Chalcites), 162.
 — (Eudynamis), 153.
 Salvadorina, 273.
 sanaca (Delias), 281.

- sannio (*Ianthocincla*), 299.
 sarasinorum (*Centropus*), 152.
 Sarcogrammus, 293.
 Sasia, 144.
 Satrapa, 322.
 saturata (*Rupicola*), 11.
 Saturnia, 225.
 Satyrus, 204–206.
 saularis (*Copsychus*), 298.
 Sauris, 44.
 Saurophagus, 17.
 savana (*Tyrannus*), 23.
 Saxicola, 298.
 Saxornis, 20.
 Scaephaethon, 276.
 Scardamia, 66.
 schistaceigularis (*Cacomantis*), 174.
 schistaceus (*Enicurus*), 297.
 schistacinus (*Accipiter*), 270.
 Schistochlamys, 9.
 schistochlamys (*Accipiter*), 270.
 schistogynus (*Thamnomanes*), 22.
 schmitzi (*Tyto*), 260.
 Schoeniparus, 300.
 aclateri (*Graucalus*), 132.
 — (*Nonnula*), 144.
 Scops, 262.
 scotabathra (*Lasiophanes*), 40.
 seitzii (*Argynnis*), 202.
 selenis (*Caprima*), 234.
 semicolon (*Adopaea*), 214.
 semifasciata (*Tityra*), 14.
 semifasciatus (*Psaris*), 14.
 semimacula (*Prasinocyma*), 35.
 seminigra (*Scardamia*), 66.
 Semipullata (*Cleora*), 57.
 senafensis (*Lybius*), 139.
 senegalensis (*Indicator*), 138.
 senex (*Atinellia*), 252.
 sepulchralis (*Cacomantis*), 165.
 serica (*Pica*), 313.
 seriziati (*Zygaena*), 219.
 Serpophaga, 183, 188.
 servula (*Dysauxes*), 221.
 Setophaga, 178.
 setosa (*Rhipidura*), 130.
 sharpei (*Chrysococcyx*), 154.
 — (*Ianthocincla*), 300.
 siamensis (*Graucalus*), 306.
 — (*Lanius*), 307.
 sibynus (*Ceratophyllus*), 110.
 signata (*Euchloris*), 13.
 silens (*Embernagra*), 3.
 silvanus (*Acorynus*), 290.
 similis (*Iole*), 307.
 — (*Saltator*), 8.
 simplex (*Agalope*), 237.
 — (*Zosterops*), 309.
 simus (*Cacomantis*), 174.
 sinuae (*Phoenicurus*), 297.
 Sinomus (*Ceratophyllus*), 110.
 aipahi (*Haematospiza*), 311.
 Siphax (*Cigaritis*), 76, 95, 210.
 Sitta, 309.
 Siva, 302, 303.
 Smerinthus, 218.
 solaris (*Pericrocotus*), 306.
 solitaria (*Aphantocephala*), 230.
 — (*Gallinago*), 293.
 solitarius (*Myiodynastes*), 18.
 solitudinis (*Athene*), 261.
 solomonensis (*Bubo*), 263.
 — (*Lorius*), 125.
 — (*Pseudopteryx*), 263.
 Somabraculidae, 226.
 Somabrachys, 226.
 somalicus (*Trachyphonus*), 141.
 Somatina, 38.
 sordidior (*Lambessa*), 224.
 — (*Picus*), 296.
 spadicea (*Attila*), 21.
 sparveriioides (*Cuculus*), 295.
 spatiosa (*Corymista*), 66.
 speciosus (*Pericrocotus*), 305.
 Spelaeornis, 297.
 Speotyto, 260.
 Sphenurus, 293.
 sphenurus (*Accipiter*), 267.
 Spilornis, 266.
 Spilospizias, 268.
 Spindasis, 70.
 spixii (*Pachyrhynchus*), 17.
 Spizaetus, 266.
 Spizitornis, 192–194.
 Spizixos, 306.
 squamata (*Ianthocincla*), 299.
 Stachyridopsis, 301.
 Staectocichla, 300.
 stauderi (*Carcharodus*), 216.
 staudingeri (*Lambessa*), 224.
 Steirophora, 43.
 stellatarum (*Macroglossum*), 218.
 stephani (*Chalcophaps*), 120.
 stephanus (*Rhaphitropis*), 251.
 Sterna, 38.
 stevensi (*Rhaphitropis*), 250.
 Stiboderes, 243.
 Stigmatura, 190–192.
 stolzmanni (*Elaenia*), 29.
 stomis (*Hectopsylla*), 96.
 stramineiventris (*Muscicapa*), 185.
 streichi (*Falco*), 264.
 Streptopelia, 293, 294.
 stresemanni (*Cacomantis*), 166.
 striaticeps (*Knipolegus*), 334.
 — (*Muscisaxicola*), 334.
 striaticollis (*Mionectes*), 180.
 — (*Muscicapa*), 180.

- striaticollis (Orodynastes), 23.
 striatus (Alcurnus), 306.
 Striges, 259-264.
 Strix, 259-261, 295.
 strongylus (Ctenocephalus), 98, 113.
 styani (Ianthocincla), 299.
 subaffinis (Phylloscopus), 304.
 subcristata (Serpophaga), 183.
 suberifolia (Epicnaptera), 224.
 subjugis (Pariodontis), 103.
 Sublegatus, 175.
 sublineatus (Graucalus), 132.
 subnubila (Delias), 281.
 subteracta (Antimimistis), 42.
 subterminalis (Hemcrophila), 56.
 subtilis (Stiboderes), 243.
 subviridis (Parus), 308.
 Suiriri, 27, 178.
 suiriri (Suiriri), 178.
 Sula, 274.
 sulaensis (Otus), 262.
 — (Pisorhina), 262.
 Sulidae, 274.
 sulphuratus (Tyrannus), 17.
 sumbaensis (Tyto), 259.
 sundara (Niltava), 305.
 superbus (Ptilinopus), 116.
 supereiliaris (Saltator), 6.
 — (Suya), 303.
 superciliosus (Phylloscopus), 304.
 superior (Ninox), 121.
 supra-impunctata (Cigaritis), 78.
 Surniculus, 156.
 surpresa (Delias), 287.
 Suya, 303.
 swinhoei (Dryobates), 147.
 Sylvia, 333.
 sylvicola (Satyrus), 205.
 Synegia, 67, 68.
 Synneurodes, 43.
 Synosternus, 103, 113.
 syracusia (Zygaena), 220.
 Syrnium, 261.
 Tachuris, 188.
 Tadorna, 273.
 Taenioptera, 23, 324-328.
 talifuensis (Aegithaliscus), 308.
 tambillana (Elacnia), 29.
 tamilis (Rhaphitropis), 250.
 tamnophiloides (Tyrannus), 22.
 Taphrodes, 243, 244.
 taprobanus (Clamator), 156.
 Taragama, 225.
 tarda (Echidnophaga), 96.
 Tarsiger, 298.
 Tarucus, 212.
 Tchitrea, 305.
 telephonus (Cuculus), 295.
 telicanus (Tarucus), 212.
 tempestatis (Otus), 262.
 tener (Loriculus), 123.
 tenuirostris (Oriotus), 311.
 tephrocephala (Cryptolopha), 304.
 tephronotus (Lanius), 307.
 Teraculus, 201.
 Terpna, 32.
 tersa (Tersina), 13.
 Tersina, 13.
 Tesia, 297.
 Thais, 196.
 thalassina (Muscicapa), 304.
 Thalassodes, 34.
 Thamnouanes, 22.
 thamnophiloides (Muscicapa), 22.
 Thamnophilus, 22.
 Thaumetopoea, 222.
 Thecla, 209.
 theophrastus (Tarucus), 212.
 theryi (Zygaena), 220.
 Thestor, 209, 210.
 thevestis (Zygaena), 219.
 thiogaster (Lybius), 139.
 threnodes (Cacomantis), 164.
 Thriponax, 145.
 tibetanus (Parus), 308.
 Tiga, 146.
 tigrata (Obeidia), 45.
 tinnunculus (Falco), 264, 295.
 titanis (Phthonoloha), 43.
 Tityra, 14, 15.
 Todirostrum, 25-27.
 Todus, 16, 25, 27.
 togatalis (Roeselia), 229.
 topela (Munia), 311.
 Tophoderes, 242.
 torquata (Buarremon), 4.
 — (Embernagra), 4.
 torqueola (Arboricola), 292.
 Trachlyphonus, 141.
 trailli (Oriolus), 311.
 transcaspica (Apharitis), 84.
 transiens (Notolophus), 223.
 traversi (Phalacrocorax), 274.
 triangularis (Zygaenodes), 240.
 Trichoglossus, 123.
 Tricholaema, 139, 142.
 Trichopsylla, 103.
 tricolor (Alectrurus), 187.
 tricrista (Anisodes), 37.
 Tringa, 115, 116, 293.
 Trogones, 151.
 Tropideres, 239.
 tuberculifer (Myiarchus), 21.
 — (Tyrannus), 21.
 tucumanus (Picumnus), 145.
 Turdus, 18, 298, 299.
 typicus (Gymnogenys), 271.

typus (Casiornis), 22.
 Tyranniscus, 186.
 tyrannulus (Myiarchus), 18.
 Tyrannus, 17, 18, 20-24, 324-329.
 tyrannus (Lanius), 24.
 — (Muscicapa), 23.
 — (Muscivora), 23.
 — (Tyrannus), 23, 24.
 Tyto, 259, 260.

Uliocnemis, 32.
 umbripennis (Motolophus), 222.
 Uncifer, 252-254.
 uncinula (Drepana), 225.
 undatus (Lybius), 139.
 uniola (Ilema), 228.
 Urocissa, 312.
 usambiro (Trachyphonus), 141.
 Utetheisa, 228.

valens (Cedus), 239.
 valida (Cyanidia), 234.
 validus (Saltator), 8.
 vallantiui (Lemonia), 225.
 Vanessa, 202.
 vanheysti (Picus), 150.
 variegata (Ninox), 121.
 — (Pepoza), 327.
 variolosus (Cacomantis), 165-170.
 velata (Taenioptera), 325.
 venezuelensis (Myadestes), 30.
 Veniliornis, 146.
 ventralis (Muscicapa), 186.
 vermivora (Muscicapa), 180.
 versiformis (Luxiaria), 63.
 versuta (Xenopsylla), 100.
 verticalis (Monarcha), 129.
 — (Setophaga), 178.
 vexabilis (Xenopsylla), 100.
 vicina (Aphantoccephala), 230.
 vigens (Hemiscia), 231.
 — (Tropideres), 239.
 vinotincta (Anisodes), 36.
 violaceus (Centropus), 127.
 virescens (Cacomantis), 166.
 — (Picus), 150.
 — (Platyrrhynchus), 28.
 virgata (Muscipeta), 176.
 virgatus (Accipiter), 270.
 viridescens (Basileuterus), 180.
 viridicata (Elaenia), 182.

viridiceps (Euscarthmus), 25.
 viridifascia (Hypochrosis), 51.
 viridifrons (Micropsitta), 125.
 viridis (Ampelis), 13.
 — (Tersina), 13, 14.
 waigiuensis (Salvadorina), 273.
 waigoui (Cuculus), 155.
 waterstoni (Ceratophyllus), 104.
 websteri (Alcyon), 125.
 — (Cacomantis), 154, 168.
 — (Sula), 274.
 weiskei (Cacomantis), 155, 171.
 wellsii (Ianthocincla), 299.
 whiteheadi (Harpactes), 151.
 — (Syrnium), 261.
 wiepkeni (Strix), 261.
 wilemani (Delias), 281.
 wingatei (Siva), 303.

Xanthorhoë, 39.
 xanthorhous (Pycnonotus), 307.
 xanthorhynchus (Chalcites), 159.
 xanthorroea (Nygma), 223.
 Xenopsylla, 99-103, 113.
 Xylinales, 240, 245.
 Xylopteryx, 61.

yamakanensis (Pyrotrogon), 296.
 yetapa (Gubernetes), 314.
 — (Muscicapa), 314.
 yperu (Gubernetes), 314.
 Yuhina, 303.
 yunnanensis (Alcippe), 303.
 — (Anthus), 310.
 — (Leiothrix), 300.
 — (Nucifraga), 312.
 — (Parus), 308.
 — (Siva), 302.
 — (Sphenurus), 293.

zelima (Delias), 285.
 Zephyrus, 208.
 Zeuzera, 229.
 Zizera, 214.
 zohra (Cigaritis), 73, 74, 75, 95, 210.
 Zosterops, 133, 309.
 zuleima (Zygaena), 219.
 Zygaena, 219, 220.
 Zygaenodes, 240.



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