















NOVITATES ZOOLOGICAE.

VOL. XXVII., 1920.



# NOVITATES ZOOLOGICAE.

A Journal of Zoology

*IN CONNECTION WITH THE TRING MUSEUM.*

EDITED BY

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

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

VOL. XXVII., 1920.

*(WITH SEVENTEEN PLATES.)*



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# NOVITATES ZOOLOGICAE.

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No. I.

## SUPPLEMENTAL NOTES TO MR. CHARLES OBERTHÜR'S *FAUNE DES LÉPIDOPTÈRES DE LA BARBARIE*, WITH LISTS OF THE SPECIMENS IN THE TRING MUSEUM.

(Continued from Vol. XXIV. p. 409 (1917).)

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

(PLATES XIV.—XVII.)

THE long-expected volume of Mr. Oberthür's *Etudes de Lépidoptérologie Comparée*, containing the *Noctuidae* of Algeria, has at last appeared. The date on the wrapper is **Octobre 1918**, but the volume was only received in **March 1919**, so the date of publication for the new names published therein must be taken as 1919.

It calls for various remarks. Mr. Oberthür has adopted Guenée's system of classification of the *Noctuidae*. Now, although the aim of Science is to establish uniformity of nomenclature and a single classificatory system, it is impossible to forbid the use of any system; we can only regret, therefore, that such a renowned entomologist as Mr. Oberthür adopts systems and methods abandoned by the majority of modern workers in Entomology. But while we can only regret this retrograde policy of Mr. Oberthür, we can and must strongly deprecate the reasons he has and gives for not adopting Sir George Hampson's classification. Whatever other objections Mr. Oberthür may have to the British Museum classification, he lays stress on one only, namely he harps upon the rather unfortunate error made by Sir George Hampson in placing *Phragmatobia breveti* Oberth. in the genus *Maenas*. This error has long ago been acknowledged by its author. Mr. Oberthür makes great capital out of the aquatic habits of certain American species of *Maenas* as opposed to the desert habitat of *breveti*, quite ignoring the fact that the genus *Maenas* contains many African and Indo-Malayan species as well as American, and these are, as far as we know, non-aquatic in their habits. Sir George Hampson was misled by the somewhat aberrant neurulation of *P. breveti*, which is almost identical with that of *Maenas*; moreover, *breveti* is not a *Trichosoma* as Mr. Oberthür asserts, but a true *Phragmatobia*. The abortive wings of the ♀ are not a generic character, but only specific, as can be seen in the case of *Cymbalophora rivularis* Mén., which has a ♀ with abortive wings, while *Cymbalophora pudica* Esp. and *C. oertzeni* Led. have the ♀ full winged. The aquatic habits of the larva are also only of secondary importance, for in the genus *Spilosoma* (*Diacrisia*) we find *Spilosoma* (*Diacrisia*) *metalkana* with a free swimming aquatic larva, while *sannio* and *amurensis*, which are very closely allied,

have ordinary terrestrial larvae. We cannot condemn a whole system simply because its author made one rather striking error.

I have adopted the British Museum classification because so far there does not appear to be a better one.

According to this classification, the family *Noctuidae* is divided into fifteen subfamilies, viz. :

*Agrotinae* ; *Hadeninae* ; *Cuculliinae* ; *Zenobiinae* (*Acronyctinae*) ; *Erastrinae* ; *Phlogophorinae* (*Euteliinae*) ; *Odontoninae* (*Stictopterinae*) ; *Sarrothripinae* ; *Westermanniinae* (*Acontiinae*) ; *Catocalinae* ; *Diptherinae* (*Mominae*) ; *Phytometrinae* ; *Noctuinae* ; *Polypogoninae* (*Hypeninae*) ; and *Hyblacinae*. Of these fifteen subfamilies, two, namely, the *Diptherinae* and *Hyblacinae*, have no representatives in Algeria, and three others, the *Phlogophorinae*, *Odontoninae*, and *Sarrothripinae*, have only one representative each.

Sir George Hampson, who is a great stickler for classical correctness, in the case of names forming subfamily appellations in which the ending is in "ia," insists on the subfamily being formed with the ending "ianae," such as *Cucullianae* from *Cucullia*. The International Rules, however, say the sub-family term is to be made by the addition of the ending "inae" to the word, and so I have made the families *Cuculliinae*, *Zenobiinae*, *Erastrinae*, and *Westermanniinae* end in "iinae" instead "ianae."

I am taking the species, in the first place, in the order Mr. Oberthür has placed them in, for the purpose of critical remarks where these may be necessary ; but at the end I am giving a full list of the species and genera in the order followed by the British Museum classification. I am giving a list of the Algerian, Tunisian, and Moroccan specimens in the British Museum as well as those at Tring.

### 1. *Bryophila petrea* Guen.

*Bryophila petrea* Guenée, *Hist. Nat. Ins. Spec. Gen. Lépid.* vol. v. *Noct.* vol. i. p. 25. No. 22 (1852) (Andalusia).

Mr. Oberthür records this species from Maafa and Lambessa ; we have received 35 from Guelt-es-Stel, 1 from Batna, and 1 El Kantara.

There are in the Tring Museum 18 ♂♂, 17 ♀♀ from Guelt-es-Stel. This series shows considerable variation in the forewings, some being pale grey with hardly any markings, while others are of a deeper brighter grey with conspicuous black markings, and a few have such dark grey forewings that the black markings show up hardly darker than the ground colour.

1 ♀ Environs de Batna, 1914 (A. Nelva) ; 1 ♂ El Kantara, August 1917 (V. Faroult).

### 2. *Bryophila aerumna* Culot.

*Bryophila aerumna* Culot, *Noct. et Géom. d'Eur.* pt. i. vol. i. p. 131, pl. 22. f. 17 (1912) (Géryville).

Monsieur Culot quotes this and a number of other new species as "Oberth." because he adopts the names suggested by Mr. Oberthür in his letters to him ; while Mr. Oberthür quotes them as "Culet (secundum Oberthür)." Both these methods are wrong ; the correct way of quoting is *Bryophila aerumna* Culot ; but if it is thought desirable to mention Mr. Oberthür's connection with these species, it should be done as follows : *Bryophila aerumna* Culot (Oberth. *in litt.*).



There are at Tring 32 specimens of this species from Sidi-bel-Abbès, September 1917 (M. Rotrou); Sebdeu, September 1918 (P. Rotrou); Perrégaux, September 1915 (V. Faroult); Aïn Draham, September 1911 (V. Faroult).

[**Bryophila aeton** Culot = **Catamecia mauretanica** Stdgr.

*Catamecia jordana* var. *mauretanica* Staudinger and Rebel, *Cat. Lepid. Pal. Faun.*, pt. i. p. 213. No 2192b (1901) (Biskra).

*Bryophila aeton* Culot, *Noct. et Géom. d'Eur.*, pt. i. vol. i. p. 132. pl. 22. f. 16 (1912) (El Outaya).

Neither Mr. Oberthür nor Mr. Culot have perceived that the type of *aeton* is only a heavily marked fine specimen of *Catamecia mauretanica* Stdgr.]

3. **Bryophila divisa oxybiensis** Mill.

*Bryophila oxybiensis* Millièrre, *Rev. Zool.* 1874, p. 242 (Cannes).

*Catamecia bryophiloides* Rothschild, *Novit. Zool.* vol. xxi. p. 336. No. 194 (1914) (Guelt-es-Stel).

The name *divisa* has one year's priority over that of *pomula*; Esper being 1791, while Borkhausen is 1792. Père Engramelle, it is true, is older, but he has "La Pomule" not *pomula*, so the date of *pomula* is that of Borkhausen, who latinised Père Engramelle's name.

In 1913 (*Novit. Zool.* vol. xx. p. 125, No. 52) I unfortunately identified some unicolorous grey specimens of this insect from the Oued Nça as *Bryophila pineti* Stdgr., which I then only knew from a drawing. I have now discovered this error, and I name these unicolorous specimens ab. **unicolor** ab. nov. The form of *divisa oxybiensis* most similar in coloration to typical *divisa* must bear the name ab. *rufitincta* Rothsch. (*Novit. Zool.* vol. xx. p. 125 (1913)), and the form with the basal two-thirds of the forewing below median fold black is ab. *distincta* Rothsch., and, lastly, the very dark form ab. *saturatior* Rothsch., both described on p. 125.

We have at Tring 1 Hammam R'hira June 1916, 1 Alger January 1914 (V. Faroult); 27 ♂♂, 21 ♀♀ Oued Nça, June 1912 (E. H. and C. H.); 5 ♂♂, 2 ♀♀ Guelt-es-Stel, August–September 1913 (V. Faroult); 4 ♂♂, 2 ♀♀ Aïn Sefra, June–July 1915 (V. Faroult); 4 ♂♂, 1 ♀ Les Pins, September 1918 (M. Rotrou); 1 ♀ Sidi-bel-Abbès, July 1916 (M. Rotrou); 1 ♂, 1 ♀ Sebdeu, July 1918 (P. Rotrou); 1 ♂ Glacières de Blida, June 1908 (W. P. and K. J.). Of the Aïn Sefra specimens 1 is ab. *rufitincta* and 1 the form of *oxybiensis* described by Staudinger as ab. *striata*, as is the Blida ♂.

In *Novit. Zool.* vol. xxi. I described 3 specimens from Guelt-es-Stel as *Catamecia bryophiloides*. These 3 (1 ♂, 2 ♀♀) are smaller than the 4 other Guelt-es-Stel specimens, the wings are narrower, they are of a brown-grey colour, and have almost obsolete markings. Both Sir George Hampson and Dr. Jordan, who have re-examined these specimens, consider they are only an extreme aberration of *d. oxybiensis*, with which I must agree. Therefore *bryophiloides* sinks as a synonym of *divisa oxybiensis*. The Tring series thus totals 70 specimens.

4. **Bryophila simulatricula** Guen.

*Bryophila simulatricula* Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* vol. v. *Noct.* vol. i. p. 26. No. 24 (1852) (Florence).

There has been considerable difference of opinion concerning the status of this insect. When Sir George Hampson wrote vol. vii. of his catalogue, he

considered it the same as *palliola* Borkh. = *fraudatricula* Hübn., and Mr. Oberthür appears to be of the same opinion. Sir George has, however, now come round to the opinion that it is a distinct species owing to the breeding of *simulatricula* and *palliola* from the egg by Herr Püngler and some of his friends.

I do not agree at all with Mr. Oberthür, nor does Sir George Hampson, that my *albomaculata* = *albimacula* Oberth. has anything to do with true *simulatricula*, of which I have four specimens from Guelt-es-Stel and Aïn Sefra agreeing very well with European specimens.

2 ♀♀ Guelt-es-Stel June—July 1913, 1 ♂, 1 ♀ Aïn Sefra June 1915 (V. Faroult); in the Tring Museum.

#### 5. *Bryophila albomaculata albomaculata* Rothschild.

*Bryophila albomaculata* Rothschild, *Novit. Zool.* vol. xxi. p. 333. No. 178 (1914) (Guelt-es-Stel).

*Bryophila simulatricula albimacula* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 9. pl. xd. f. 4033 (1919) (Batna).

There are two distinct races of this insect in Algeria, the typical form from East and Central Algeria, which is paler grey more or less washed with yellow, and a darker grey race with no yellow wash from West Algeria.

There are at Tring of the typical form: 1 ♂, 5 ♀♀ Guelt-es-Stel, September 1913 (V. Faroult); 3 ♀♀ Batna (Nelya coll.); 2 ♀♀ Metlili, S. of Laghouat, September 1917 (V. Faroult).

#### 6. *Bryophila albomaculata grisea* subsp. nov.

Differs from *a. albomaculata* in the darker grey of the forewings with no trace of yellow wash. The reniform stigma is generally white, but not always.

6 ♂♂, 5 ♀♀ Sebdu, September 1918 (P. Rotrou); 1 ♂, 3 ♀♀ Les Pins, September 1918 (M. Rotrou).

#### 7. *Bryophila algae* (Fabr.).

*Noctua algae* Fabricius, *Syst. Entom.* p. 614. No. 103 (1775) (Germany).

It is rather strange that I have received so few specimens of this species, which is very abundant in Algeria.

1 ♂, 1 ♀ Sidi-bel-Abbès, September 1917 (M. Rotrou); 1 ♂, 1 ♀ Environs de Batna, 1911–1912 (Nelya coll.); 1 ♂ Les Pins, August 1918 (P. Rotrou); 1 ♂ Aïn Draham, September 1911 (V. Faroult); 4 ♂♂, 2 ♀♀ Rabat, Morocco (A. Théry); 1 ♀ El Mahouna, September 1919 (V. Faroult).

#### 8. *Bryophila galathea* Mill.

*Bryophila galathea* Millière, *Rev. Zool.* 1874. p. 241 (Cannes).

This species appears to be very rare in Algeria, as I have only a single example. 1 ♀ Aïn Sefra, May 9, 1913 (W. R. and E. H.).

#### 9. *Bryophila bilineata* Rothschild.

*Bryophila bilineata* Rothschild, *Novit. Zool.* vol. xxi. p. 333. No. 179 (1914) (Guelt-es-Stel).

*Bryophila rosinans* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 10. pl. xd. Nos. 4034–4037 (1919) (Géryville).

This species = *rosinans* Oberth. and has five years' priority. It is quite distinct from *ravula* Hübn.



There are at Tring 84 specimens, Guelt-es-Stel, August—September 1913 (V. Faroult).

#### 10. *Bryophila ravula* (Hübner).

*Noctua ravula* Hübner, *Eur. Schmett. Noct.* f. 461 (1818) (Europe).

There are 84 specimens of this species at Tring from Aïn Draham, August—September 1911 (V. Faroult); Sidi-bel-Abbès, September 1917 (M. Rotrou); Sebdom, September 1918 (P. Rotrou); Forêt de Tenira, September 1918 (P. Rotrou); Perrégaux, September 1915 (V. Faroult); north side of Djebel Zaccar, August 1916 (V. Faroult); Environs de Taourirt, Morocco, July 1918 (M. Rotrou).

#### 11. *Bryophila anaemica* Hampson.

*Bryophila anaemica* Hampson, *Ann. Mag. Nat. Hist.* (8) xiii. p. 156. No. 3527a (1914) (Batna).

This species was described from a very worn specimen; it is quite probable that it is an extreme aberration of *albomaculata albomaculata*, but as my ♂ is quite fresh and is very different from that species, I keep it separate.

1 ♂ Batna (Nelva coll.).

1 ♂ type Batna, August 1910 (A. E. Eaton coll.) in British Museum.

#### 12. *Bryophila recepticula pallida* B. Baker.

*Bryophila pallida* Bethune Baker, *Trans. Entom. Soc. Lond.* 1894. p. 37. pl. 1. f. 4 (Alexandria).

The Algerian specimens, though very variable, are all referable to the form *pallida*.

There are 108 specimens at Tring: 49 Sidi-bel-Abbès, September—October 1917 (M. Rotrou); 3 Les Pins, September 1918 (M. Rotrou); 3 Sebdom, September 1918 (P. Rotrou); 1 Messer, Prov. Oran, September 1917 (M. Rotrou); 1 Perrégaux, September 1915 (V. Faroult); 13 Forêt de Tenira, September 1918 (P. Rotrou); 2 Environs de Batna, 1911–1912 (Nelva coll.); 7 Aïn Draham, September 1911 (V. Faroult); Rabat, Morocco, July—August 1913 (A. Théry); Messen, September 1917 (M. Rotrou); 2 El Mahouna, July—September 1919 (V. Faroult).

#### 13. *Bryophila antias* Culot.

*Bryophila antias* Culot, *Noct. et Géom. d'Eur.* pt. i. vol. i. p. 134. pl. 22. f. 13 (1912) (Sud Oranais).

3 ♀♀ are at Tring: Sebdom, September 1918 (M. Rotrou); Guelt-es-Stel, August 1913 (V. Faroult).

#### 14. *Bryophila pseudoperla* Rothschild.

*Bryophila pseudoperla* Rothschild, *Novit. Zool.* vol. xxi. p. 334. No. 180 (1914) (Guelt-es-Stel).

The ♀ type remained unique till 1919.

1 ♀ Guelt-es-Stel, 4 ♂♂, 1 ♀ Metlili, S. of Laghouat, September 1917 (V. Faroult).

#### 15. *Bryophila muralis* (Forster).

*Phalaena muralis* Forster, *Nor. Spec. Ins.* p. 74 (1771) (England).

Both *muralis* and the form *par* occur in Algeria as well as extreme forms like *par*, but with no vestige of green tint.

Of the form *muralis* there are at Tring 16 specimens from Tunis; Aïn Draham, August 1911, north side of Djebel Zaccar, August 1916 (V. Faroult); Environs de Batna (Nelva coll.); Sidi-bel-Abbès, July–September 1917 (M. Rotrou); Les Pins, August 1918 (M. Rotrou); Sebdou, July–September 1918 (P. Rotrou); Forêt de Tenira, September 1918 (P. Rotrou). Of the form *par* and extremes, there are at Tring 8 specimens from Hussein Dey, May (Captain Holl); Sidi-bel-Abbès, August–September 1916–1917 (M. Rotrou).

#### 16. *Oederemia precisa* (Warr.).

*Metachrostis precisa* Warren in Seitz Grossschm. Erde, vol. iii. p. 23 (1909) (Mazagan).

*Jugurthia salmonea* Culot, Noct. et Géom. d'Eur. pt. i. vol. i. p. 124. pl. 22. f. 12. (1912) (Zebch, nr. Sebdou).

*Catamecia subperla* Rothschild, Novit. Zool. vol. xxi. p. 336. No. 195 (1914) (Guelt-es-Stel).

The genus *Jugurthia* was founded by Monsieur Culot (Noct. et Géom. d'Eur. p. 124) to receive the 3 species *microglossa*, *salmonea* = *precisa*, and *subplumbeola*, and consists of the mixture of the two genera of Sir George Hampson *Oederemia* (Cat. Lep. Het. Brit. Mus. vol. vii. p. 405) type *lithopasta* Hmps. and *Oedibrya* founded on *cinnamomina* Rothschild. = *subplumbeola* Culot. As *Oederemia* antedates *Jugurthia* by four years, M. Culot's genus becomes a synonym. Mr. Warren's specific name *precisa* antedates *salmonea* by three years, and therefore both Mr. Culot's name and my *subperla* also become synonyms.

There are at Tring, including the types of *precisa* and *subperla*, 347 specimens from Mazagan, Morocco, September–October 1902 (W. Riegenbach); Lalla Marnia, Oran, September–October 1914 (V. Faroult); Sebdou, September 1918 (P. Rotrou); Merchich, Oran, September 1918 (P. Rotrou); Perrégau, October 1915 (V. Faroult); Sidi-bel-Abbès, September–October 1917 (M. Rotrou); Guelt-es-Stel, August–October 1913 (V. Faroult).

This insect is extremely variable in ground-colour, varying from brown-grey to cinnamon-orange.

1 ♂, 1 ♀ in the British Museum (Guelt-es-Stel, received from Tring Museum).

#### 17. *Oedibrya subplumbeola* (Culot).

*Jugurthia subplumbeola* Culot, Noct. et Géom. d'Eur. p. 125. pl. 22. f. 14 (1912) (Géryville).

*Catamecia cinnamomina* Rothschild, Novit. Zool. vol. xxi. p. 336 (1914) (Guelt-es-Stel).

When I wrote my paper on the Guelt-es-Stel lepidoptera I had not got Mr. Culot's book, which accounts for my redescribing this insect. It is tolerably widely spread in Algeria, though nowhere very common.

We have at Tring 29 specimens, including the types of *cinnamomina* and the aberrations *suffusa*, *griseola*, and *fasciata*, the latter = ab. *precisa* Culot, from Guelt-es-Stel, September 1912–1913 (V. Faroult); Sidi Ferruch (A. Théry); Sidi-bel-Abbès, September 1917 (M. Rotrou); Sebdou, September 1918 (P. Rotrou); Les Pins, September 1918 (M. Rotrou); Aflou, September–October 1916 (V. Faroult); Lambessa, 1914 (Nelva coll.).

#### 18. *Pseudamathes volloni* (D. Lucas).

*Amathes volloni* Daniel Lucas, Bull. Soc. Entom. France, 1907. p. 342 (Kebili).

This species was described from South Tunisia, and placed originally by Sir George Hampson in the genus *Amathes*. There are two specimens in the

British Museum, and on more careful examination they prove to belong to a new genus *Pseudamathes*, which comes next to *Pseudohadena* in the *Zenobiinae*. It appears to be rare in Algeria, as I have only received a single ♂ from Aflou, October 10th, 1916 (Victor Faroult).

### 19. *Craniophora pontica* (Stdgr.).

*Acronycta pontica* Staudinger, *Hor. Soc. Entom. Ross.* vol. xiv. p. 364 (1879) (Kerasdere).

This insect is fairly abundant in Algeria. We have at Tring 58 specimens from Seb dou, May—June 1918 (P. Rotron); Hammam R'hira, May—June 1916–1917 (V. Faroult); Sakamodi, August 1912 (V. Faroult); Hammam Meskoutine, April 1914 (W. R. and K. J.); Batna, July 1912 (Nelva coll.); Aïn Draham August–September 1911, north side of Djebel Zaccar August 1916, Environs de Setif 1911 (Victor Faroult).

Monsieur Oberthür says that his specimens from Seb dou are suffused with pink; the few I have from there have no pink shade and are very dark.

### 20. *Acronycta tridens* (Schiff. & Den.).

*Noctua tridens* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 67 (1775) (Vienna),

We have at Tring 11 ♂♂, 15 ♀♀ from Aïn Draham, July—September 1911 (Victor Faroult); Bou Saada, March—May 1912 (V. Faroult); Batna (Nelva coll.); Environs de Setif, 1911 (V. Faroult); Hammam Meskoutine, April 1914 (W. R. and K. J.); 2 ♂♂ Hammam R'hira, May 1917 (V. Faroult).

### 21. *Acronycta psi* (Linn.).

*Phalaena psi* Linnaeus, *Syst. Nat.* edit. x. p. 514 (1758).

This species is not recorded from Algeria by Mr. Oberthür nor Mr. Culot. It was bred on cherry trees by Mr. M. Rotrou.

We have 6 ♂♂, 5 ♀♀ (1 cripple) from Sidi-bel-Abbès, Messer, and Aïn Fezza, May—September 1917 (M. Rotrou).

### 22. *Acronycta rumicis pallida* subsp. nov.

Differs from *r. rumicis* in being distinctly paler, but not so pale as *rumicis turanica* Stdgr. M. Oberthür has noticed the paler coloration, but did not give the Mauretanian form a name.

We have at Tring 126 specimens from Sidi-bel-Abbès, May—October 1917–1918 (M. Rotrou); Hammam R'hira, May—August 1916 (Victor Faroult); Environs de Setif, 1911 (V. Faroult); Batna, July 1912 (Nelva coll.); Aïn Draham, July—September 1911 (V. Faroult).

In the British Museum 1 ♂, Tangier, July 1902, Lord Walsingham.

### 23. *Copicucullia oberthuri* (Culot).

*Simyra oberthuri* Culot, *Noct. et Glom. d'Eur.* pt. i. vol. i. p. 26, pl. 3. f. 1 (1909) (Aflou).

Both Mr. Oberthür and Mr. Culot have placed this insect in the genus *Simyra*, with which it has nothing to do. It certainly has a slight resemblance to *Simyra*

*dentinosa* Frr., but it is a true Cuccullid, and in spite of its pectinated antennae belongs with *cyrtana* Mab. to the genus *Copicucullia*.

We have at Tring 181 specimens of this insect from Guelt-es-Stel October 1912–November 1913, Hassi Baba November 1917 (Victor Faroult). There are 3 ♂♂ (Guelt-es-Stel, October 1912) in the British Museum ex Tring Museum.

#### 24. *Lycophotia mansoura* (Chrét.).

*Agrotis mansoura* Chrétien, *Ann. Soc. Entom. France*, vol. 79, p. 498 (1910) (Gafsa).

I have this species from Guelt-es-Stel in some numbers. The general run of the specimens appear to have less sharply defined markings than is stated in Mr. Chrétien's description. This insect is placed by Mr. Oberthür in the genus *Simyra*, but it has not the remotest relationship with that genus: it is a true *Agrotid*, and together with the following species belongs to the genus *Lycophotia* of the subfamily *Agrotinae*, while *Simyra* is a genus of the *Zenobiinae* (*Acronyctinae*).

There are at Tring 149 specimens from Guelt-es-Stel, October 1912 (V. Faroult).

#### 25. *Lycophotia agrotina* (Rothsch.).

*Actinotia agrotina* Rothschild, *Novit. Zool.* vol. xxi, p. 316, No. 61 (1914) (Guelt-es-Stel).

This species differs from *mansoura* in its much broader wings and more accentuated marking; it is figured in vol. xxvi, pl. i.

There are at Tring, including the type, 23 ♂♂, 3 ♀♀ from Guelt-es-Stel, October 1912 (V. Faroult).

#### 26. *Simyra autumnata* Chrét.

*Simyra autumnata* Chrétien, *Ann. Soc. Entom. France*, vol. 79, p. 497 (1910) (Gafsa).

This appears to be the only true *Simyra* occurring in Mauretania; it is nearest to *dentinosa* Frr.

I have not received this species, nor have I ever seen a specimen.

Mr. Oberthür mentions it after *Sesamia cretica*, having evidently added it as an afterthought.

#### 27. *Argyrospila musculosa* (Hübner).

*Noctua musculosa* Hübner, *Europ. Schmett. Noct.* f. 363 (1808).

I recorded vol. xxi, p. 337, No. 198, *Oria myodea* Ramb. The specimen was very greasy and turns out to be a very heavily marked *musculosa*.

We have at Tring 396 Mauretanian specimens from Environs d'Alger, May 1908, etc. (W. R. and K. J., Dr. Nissen and Captain Holl); Batna (Nelva coll.); Tunis; Guelt-es-Stel, May–June 1913 (V. Faroult); Hammam Meskoutine, May 1914 (W. R. and E. H.); Khenchela, June 1911 (V. Faroult); El Kantara, June 1911 (V. Faroult); Sidi-bel-Abbès, June 1917 (M. Rotrou); Zmila, Prov. Oran, June 1913 (V. Faroult); Sebdu, June 1918 (P. Rotrou); Forêt de Tenira, May 1918 (P. Rotrou); Masser Mines May 1914, Lalla Marnia May 1914 (V. Faroult); Hammam R'hira, May 1913 (W. R. and E. H.); Hammam R'hira, May 1916 (V. Faroult); El Mesrane, June 1913 (V. Faroult); El Hamel, May 1912 (V. Faroult); Bou Saada and Djebel Kerdada, May 1912 (V. Faroult);



Terres Blanches, May 1913 (V. Faroult); Forêt de Djelfa, June 1913 (V. Faroult); El Mahouna, June—July 1919 (V. Faroult).

### 28. *Sideridis lithargyria argyritis* (Ramb.).

*Leucania argyritis* Rambur, *Cat. Syst. Lépid. Andal.* pl. 8. f. 2 (1858) (Andalusia).

Mr. Oberthür considers this insect a distinct species from *lithargyria*, but it is the general consensus of opinion that it is the Mediterranean subspecies of that species.

The Tring Museum possesses 77 specimens from Sidi-bel-Abbès, September 1916–1917 (M. Rotrou); Seb dou September 1918, and Forêt de Tenira August 1918 (P. Rotrou); Environs de Setif, 1911 (V. Faroult); Ain Draham, August—September 1911 (V. Faroult).

### 29. *Sideridis albipuncta* (Schiff. & Den.).

*Noctua albipuncta* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 84 (1775) (Vienna).

Not so abundant as *vitellina*, but very plentiful in certain localities.

The Tring series from Mauretania consists of 160 specimens from Sidi-bel-Abbès, September—October 1917 (M. Rotrou); Seb dou, June 1918 (P. Rotrou); Forêt de Tenira, June—July 1918 (P. Rotrou); Les Pins, July 1918 (M. Rotrou); Environs de Setif and Oued Hamidou, June 1912 (V. Faroult); Khenchela, May 1912 (W. R. and K. J.); Blida, March 1916 (V. Faroult); Hammam R'hira, April—August 1912–1916 (W. R., E. H. and K. J., and V. Faroult); Masser Mines June 1914, north side of Djebel Zaaccar August 1916 (V. Faroult); El Mahouna, June—September 1919 (V. Faroult).

### 30. *Cirphis sicula* (Treit.).

*Leucania sicula* Treitschke, *Schmett. Eur.* vol. x. pt. 2. p. 90 (1835) (Sicily).

This species varies considerably in the amount of black along the median vein and fold, and also in the size and distinctness of the black and white discocellular stigma.

We have at Tring 143 Mauretanian specimens from Sidi-bel-Abbès, September 1917 (M. Rotrou); Seb dou and Forêt de Tenira, September—October 1918 (P. Rotrou); Masser Mines, June 1914 (V. Faroult); Mazagan, Morocco, March 1902 (W. Riegenbach); Guellet-es-Stel, April—October 1912–1913 (V. Faroult); Hammam R'hira, May 1908–1916 (V. Faroult, and W. R. and K. J.); Hammam Meskoutine, April—May 1914 (W. R. and K. J.); Batna, May 1915 (Nelva coll.); Biskra, April 1908 (W. R. and E. H.); Environs d'Alger, May 1908 (W. R. and K. J., and Captain Holl); Souk Ahras, April 1914 (W. R. and K. J.); Ain Draham August—September 1911, north side of Djebel Zaaccar August 1916 (V. Faroult); Belvédère, Tunis, August—September 1915 (M. Blanc); El Mahouna, September 1919 (V. Faroult).

The extreme form with heavy black colouring along median vein and fold is very similar to the insect described by Bellier de la Chavignerie (*Ann. Soc. Entom. France*, ser. 4, vol. iii. p. 42, pl. ix. f. 5 (1863)) as *Leucania hispanica*, which Sir George Hampson has placed as a synonym of *Cirphis prominens* (Walk.). Mr. Oberthür treats the dark Algerian *sicula* as *hispanica*, but I have not yet seen a true *hispanica* from Algeria.

[*Cirphis fuscilinea* (Grasl.).

*Leucania fuscilinea* Graslén, *Ann. Soc. Entom. France*, ser. 2. vol. 10. p. 411. pl. 8. i. f. 2 (1852) (France).

I cannot agree with Mr. Oberthür and Sir George Hampson that this is a synonym of *sicula*. The strongly marked post-median curved line of black spots is **not** present in a single one of my 120 Algerian, etc. *sicula*, nor in 12 European ones I have; and my solitary Central Italian *fuscilinea* stands out most plainly from all the 132 in this character.]

31. *Leucania languida* Stdgr.

*Leucania languida* Standinger, *Iris*, vol. x. p. 284. pl. ix. f. 15 (1897) (Jordan Valley).

Mr. Oberthür records a single specimen from Biskra. I have never had one from Mauretania.

32. *Cirphis algerica* (Oberth.).

*Leucania algerica* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 19. pl. xd. ff. 4045, 4046 (1919) (Batna).

I have received 43 specimens of this species, 16 from Sidi-bel-Abbès, June—September 1917 (M. Rotrou); and 2 from Aïn Sefra July 1915, Hammam R'hira June 1917 (V. Faroult); Forêt de Tenira, October 1918 (P. Rotrou).

33. *Cirphis punctosa* (Treit.).

*Sinyra punctosa* Treitschke, *Schmett. Eur.* vol. v. pt. 2. p. 287 (1825) (S. France).

We have at Tring 250 Mauretanian specimens, 181 Guelt-es-Stel, August—October 1912–1913 (V. Faroult); and 53 from Sebdou and Forêt de Tenira, September 1918 (P. Rotrou); Sidi-bel-Abbès, September 1917 (M. Rotrou); Les Pins, September 1918 (M. Rotrou); Perrégaux October 1915, Aflou October 1916 (V. Faroult); Batna, 1913–1914 (Nelva coll.); El Mahouna, September 1919 (V. Faroult).

34. *Cirphis putrescens* (Geyer).

*Noctua putrescens* Geyer in Hübner, *Samml. Eur. Schmett. Noct.* ff. 730–731 (1827).

We have 392 specimens at Tring from Guelt-es-Stel, August—September 1913 (V. Faroult); Sebdou and Forêt de Tenira, September 1918 (P. Rotrou); Sidi-bel-Abbès, September 1917 (M. Rotrou); Aflou October 1916, Perrégaux October 1915, Metlili, S. of Laghouat, September 1917 (V. Faroult).

35. *Cirphis loreyi* (Dup.).

*Noctua loreyi* Duponchel, *Lépid. France*, vol. vii. p. 81. pl. 105. f. 7 (1827) (France).

The Mauretanian series at Tring consists of 116 specimens from Sidi-bel-Abbès, August—October 1917 (M. Rotrou); Sebdou and Forêt de Tenira, June—July 1918 (P. Rotrou); Perrégaux, October 1915 (V. Faroult); Aflou, October 1916 (V. Faroult); Guelt-es-Stel, September 1912—June 1913 (V. Faroult); Le Kreiden (M. Rotrou); Masser Mines June 1914, Batna 1911–1912 (Nelva coll.); Tilghem April 1912, El Kantara August 1917 (V. Faroult); El Golea, March 1912 (Hartert and Hilgert); Biskra, March 1908–1911 (W. R. and E. H., V. Faroult); Environs de Setif, 1911 (V. Faroult); Oued Hamidou June 1912, Aïn

Draham July 1911 (V. Faroult); Bou Saada, April 1912 (V. Faroult); Hammam R'hira, May 1913 (W. R. and E. H.); Environs d'Alger (Captain Holl and Dr. Nissen); El Mahouna, June 1919 (V. Faroult).

In the British Museum are 1 ♀ Central Plains, Morocco, June 1901, Meade Waldo; 1 ♂ Biskra, December 1896, A. E. Eaton.

### 36. *Cirphis l. album* (Linn.).

*Phalaena l. al'um* Linnaeus, *Syst. Nat.* edit. xii. p. 850 (1767) (Europe).

The Mauretanian series at Tring consists of 130 specimens from Environs d'Alger, February—May 1908 (W. R., E. H., and K. J.); Hammam R'hira, May 1908—June 1916 (W. R., E. H., and K. J., and V. Faroult); Guelt-es-Stel, April—October 1913 (V. Faroult); Laghouat, April 1911 (W. R. and E. H.); Blida les Glacières, June 1908 (W. R. and K. J.); Biskra, February—April 1908–1911 (W. R. and E. H.); Environs de Batna, April—August 1912–1914 (Nelva coll.); Lambessa, July 1912 (Nelva coll.); Khenchela, May 1912 (W. R. and K. J.); Aïn Draham, August—September 1911 (V. Faroult); Perrégaux, October 1915 (V. Faroult); Masser Mines, June 1914 (V. Faroult); Messer, September 1917 (M. Rotrou); Sidi-bel-Abbès, September 1917 (M. Rotrou); Forêt de Tenira, June—August 1918 (P. Rotrou); Sebdom, May 1918 (P. Rotrou); Aflou, October 1916 (V. Faroult); Bou Saada, March—April 1911 (Victor Faroult).

### 37. *Cirphis congrua* (Hübner).

*Noctua congrua* Hübner, *Samml. Europ. Schmett. Noct.* f. 616 (1827).

This appears to be very rare in Algeria, as Mr. Oberthür only received 1 and I have only 3 specimens.

1 ♀ Hammam R'hira, August 28th, 1916 (V. Faroult); 1 ♂ Hammam Meskoutine, April 1914 (W. R. and K. J.); 1 ♂ Sidi-bel-Abbès, October 1917 (M. Rotrou).

### 38. *Sideridis vitellina* (Hübner).

*Noctua vitellina* Hübner, *Samml. Europ. Schmett. Noct.* ff. 379, 539 (1827).

Both Warren's ab. *pallida* and my *Borolia lacteicolor* are the pale form of this insect. It is strange that this pale form is almost invariably smaller than the darker more strongly marked typical form.

The series of Mauretanian examples at Tring consists of 319 specimens, 218 typical *vitellina* and 101 ab. *pallida* Warr. from Environs d'Alger, May 1908 (W. R., E. H., and K. J.); Blida les Glacières, June 1908 (W. R. and K. J.); Khenchela, May 1912 (W. R. and K. J.); Hammam Meskoutine, April 1914 (W. R. and K. J.); Hammam R'hira, May—June 1908–1913 (W. R., E. H., and K. J.); Guelt-es-Stel, April—May 1912–1913 (W. R. and K. J., and V. Faroult); Batna, September 1910—August—September 1912 (Nelva and V. Faroult); Bou Saada, April—May 1912 (V. Faroult); Oran, April 1913 (W. R. and E. H.); Sidi-bel-Abbès, May 1918 (M. Rotrou); Aïn Sefra, May 1913 (W. R. and E. H.); Forêt de Tenira, June 1918 (P. Rotrou); Sebdom, May 1918 (P. Rotrou); Titen Yaya, May 1915 (M. Rotrou); Messer, September 1917 (M. Rotrou); Aïn Draham, August—September 1911 (V. Faroult); Environs de Setif, 1911 (V. Faroult); El Mahouna, September 1919 (V. Faroult).

39. *Cirphis riparia* (Ramb.).

*Leucania riparia* Rambur, *Ann. Soc. Obs.* 1829. p. 261. pl. 6. f. 6.

I have 8 Mauretanian examples of this species from Moroccan Frontier; 15 km. west of Lalla Marnia, May 1914 (V. Faroult); Ain Sefra, May 1915 (V. Faroult); Batna (Nelva coll.); Sidi-bel-Abbès, September 1917 (M. Rotrou).

Not recorded by Mr. Oberthür.

40. *Cirphis zeae* (Dup.).

*Noctua zeae* Duponchel, *Lépid. France*, T. vii. (*Noct.* vol. 4. pt. 1) p. 363. pl. 122. f. 4 (1827) (France).

This species is not mentioned by Mr. Oberthür.

The Mauretanian series at Tring consists of 13 specimens from Sidi-bel-Abbès, August—October 1917 (M. Rotrou); and 1 ♀ Forêt de Tenira, August 1918 (P. Rotrou).

41. *Cirphis unipuncta* (Haw.).

*Noctua unipuncta* Haworth, *Lépid. Brit.* p. 174 (1809) (Great Britain).

This is also not mentioned by Mr. Oberthür.

1 ♂ Ain Draham, August 1911 (V. Faroult); 1 ♀ Sidi-bel-Abbès, October 1917 (M. Rotrou).

42. *Leucania obsoleta* (Hübner).

*Noctua obsoleta* Hübner, *Samml. Europ. Schmett. Noct.* f. 233 (1827).

Mr. Oberthür has not recorded this species.

1 ♀ Batna, July 1912 (Nelva coll.).

43. *Sesamia vuteria* (Stoll).

*Phalaena vuteria* Stoll, *Suppl. Cram. Pap. Exot.* p. 161. pl. 36. f. 5 (1783) (Cape Colony).

Mr. Oberthür records this species under Lefebvre's name of *nonagrioides*, the date of which is 1827. I have received only females of *vuteria*.

We have at Tring 10 ♀♀ from Sidi-bel-Abbès, May—September 1917–1918 (M. Rotrou); Sebdu and Forêt de Tenira, September 1918 (P. Rotrou); Blida, March 1916 (V. Faroult); Oued Hamidou, June 1912 (V. Faroult).

In the British Museum are 1 ♂, 1 ♀ Algeria, Mrs. Nicholl and Leech coll.; 1 ♀ Hammam-es-Salahin, March 1904, Lord Walsingham.

44. *Sesamia cretica* Led.

*Sesamia cretica* Lederer, *Noct. Europ.* p. 225 (1857) (Crete).

Mr. Oberthür only records by name 2 species, but throws out a hint that Staudinger's var. et ab. *striata* is probably a distinct species; my series not only shows this to be the case, but I have also a fourth species *calamistis* Hmps. I only have 8 typical *cretica*.

1 ♂, 2 ♀♀ Sidi-bel-Abbès, June 1916–1917 (M. Rotrou); 1 ♀ (dwarf) Perrégaux, September 1915 (V. Faroult); 2 ♀♀ Sebdu, July—September 1918 (P. Rotrou); 1 ♂ Ain Draham, September 1911 (V. Faroult).



45. *Sesamia striata* Stdgr.

*Sesamia cretica* var. et ab. *striata* Staudinger, *Stett. Entom. Zeit.* 1888. p. 27 (Fergana).

I have 2 ♂♂, 3 ♀♀, all of which are much paler than *cretica*, show no trace of pink ground-colour, and all have the dark median band from base to termen.

2 ♂♂, 3 ♀♀ from Sidi-bel-Abbès, June 1916–1917 (M. Rotrou); Seb dou and Forêt de Tenira, June–July 1918 (P. Rotrou); Aïn Draham, August–September 1911 (V. Faroult).

46. *Sesamia calamistis* Hmps n.

*Sesamia calamistis* Hampson, *Cat. Lepid. Phal. Brit. Mus.* vol. ix. p. 325. No. 4754. pl. cxliv. f. 18 (1910) (Grahamstown).

This species, like *vuteria*, was first described from South Africa, and evidently like that species has a much larger range than we at first suspected. The 3 specimens sent by Mr. Rotrou are quite typical.

1 ♂, 2 ♀♀ Sidi-bel-Abbès, September 1917 (M. Rotrou).

47. *Argyrospila striata* Stdgr.

*Argyrospila striata* Staudinger, *Iris*, vol. x. p. 265. pl. 4. f. 4 (1897) (Chellala).

Two insects have been mixed up under this name by subsequent authors, viz. *Timora albida* Hmps n. and the present species. This has been caused by both species having longitudinal white streaks on the forewings, and nobody having both species until we collected them.

The Tring Museum series consists of 317 specimens from Guelt-es-Stel May 1913, Puits Baba May 1913, Terres Blanches May 1913 (Victor Faroult); Aïn Sefra, May 1913 (W. R. and E. H.); Zuilla, June 1913 (V. Faroult); Seb dou, June 1918 (P. Rotrou).

48. *Timora albida* Hmps n.

*Timora albida* Hampson, *Ann. Mag. Nat. Hist.* (7) xv. p. 450 (1905) (Algeria).

This insect has been much confused with the previous one.

The series at Tring consists of 81 specimens from Aïn Sefra, May 1913–1915 (W. R. and E. H. and V. Faroult); halfway between Ouargla and El Golea, March 1912 (Hartert and Hilgert); Guelt-es-Stel and Terres Blanches, May 1913 (V. Faroult); Hassi Dinar, El Alia, Guerrara, El Arich, Hassi Sidi Mahmud, and Oued Nça, April 1914 (Hartert and Hilgert).

2 ♀♀ Hammam-es-Salahin, April 1904 (Lord Walsingham), are in British Museum.

49. *Argyrospila dulcis* Oberth.

*Argyrospila dulcis* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 23. pl. xdi. ff. 4052, 4053 (1919) (Géryville).

I do not possess this species.

50. *Arenostola deserticola* (Stdgr.).

*Calamia deserticola* Staudinger, *Iris*, vol. xii, p. 371, pl. 5, f. 10 (1900) (Biskra).

I have received a male and female of this species from Aïn Sefra, June 1915 (V. Faroult); Environs de Batna, 1914 (A. Nelva).

The British Museum has 1 ♂ Hammam-es-Salahin, April 1904, Lord Walsingham.

51. *Arenostola mabiliei* (D. Lucas).

*Tapinostola mabiliei* Daniel Lucas, *Bull. Soc. Entom. France*, 1907, p. 342 (Le Tarf).

I have 1 ♀ Forêt de Tenira, November 1918 (P. Rotrou).

52. *Oria fulva africana* (Oberth.).

*Tapinostola fulva africana* Oberthür, *Etud. Lépid. Comp.* fasc. xvi, p. 26, pl. xdi, ff. 4048-4050 (1919) (Géryville, Aflou).

The Tring series, all ♀♀, consists of 9 specimens from Sidi-bel-Abbès, September—October 1917 (M. Rotrou); Forêt de Tenira, October 1918 (P. Rotrou).

53. *Archanara neurica* (Hüb.).

*Noctua neurica* Hübner, *Europ. Schmett. Noct.* f. 381 (1808).

I have not received this from Mauretania.

54. *Archanara dissoluta* (Hüb.).

*Noctua dissoluta* Hübner, *Europ. Schmett. Noct.* ff. 659-661 (1818).

I have 3 Algerian examples: 1 ♂ Hammam R'hira, May 1913 (W. R. and E. H.); 1 ♀ Hammam Meskoutine, May 1914 (W. R. and E. H.); 1 ♂ Sidi-bel-Abbès, July 1916 (M. Rotrou). The Hammam R'hira ♂ is quite black, as is the Sidi-bel-Abbès one.

55. *Archanara affinis* sp. nov.

This species is very close to *neurica*, but is darker, more blackish and can be at once distinguished by the 4 black points at the 4 corners of the reniform and the black points below the orbicular. This is possibly what Mr. Oberthür calls *neurica*.

1 ♂ Sidi-bel-Abbès, June 1917 (M. Rotrou).

56. *Stilbia anomala calberlae* (Faill.).

*Caradrina calberlae* Failla-Tedaldi, *Nat. Sicil.* vol. x, p. 29, pl. 1, f. 4 (1890) (Sicily).

• 3 ♂♂, 1 ♀ El Mahouna, September 1919 (V. Faroult).

57. *Stilbia algerica* Culot.

*Stilbia algerica* Culot, *Noct. et Géom. d'Eur.* pt. i, vol. ii, p. 45, pl. 45, f. 18 (1914) (Géryville).

We only received this very distinct species from Guelt-es-Stel and Aflou; 44 specimens Guelt-es-Stel October 1912, Aflou October 1916 (V. Faroult) are at Tring.

1 ♂, 1 ♀ Guelt-es-Stel (ex Tring Museum) are in the British Museum.

58. *Stilbia turatii* D. Lucas.

*Stilbia turatii* Daniel Lucas, *Bull. Soc. Entom. France*, 1910, p. 272 (Le Tarf).

I have never received this species. Up to March 1919 the only known specimens number 8, all ♂♂, viz. 2 from Le Tarf in coll. Daniel Lucas, and 4 Ain Draham, 1 Maafa and 1 Amasia, all in coll. Oberthür.

59. *Stilbina numida* (Oberth.).

*Hyepethina numida* Oberthür, *Etud. Entom. Fasc. xiii*, p. 27, pl. 6, f. 41 (1890) (Magenta).

We have principally received this species from Guelt-es-Stel.

There are at Tring 110 ♂♂, 18 ♀♀ Guelt-es-Stel October 1912–1913, 2 ♂♂, 2 ♀♀ Perrégaux October 1915 (V. Faroult); 1 ♀ Sidi-bel-Abbès, November 1917 (M. Rotrou); 1 ♀ Batna (A. Nelva).

In the British Museum are 3 ♂♂ ex Tring Museum.

60. *Brithys pancratii* (Cyr.).

*Noctua pancratii* Cyrillo, *Entom. Nap.* pl. 12, f. 4 (1787) (Naples).

The Tring series consists of 32 specimens from Environs d'Alger (Captain Holl and Dr. Nissen); Ain Draham, July 1911 (V. Faroult); Belvédère, Tunis, August–September 1915 (M. Blanc); Environs de Setif, 1911 (V. Faroult).

61. *Brithys encausta* (Hubn.).

*Noctua encausta* Hübner, *Samml. Europ. Schmett. Noct.* f. 392 (1827).

I have received 4 specimens of this species from Mauretania.

2 ♂♂, 2 ♀♀ Tunis.

62. *Spodoptera abyssinia* Guen.

*Spodoptera abyssinia* Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* vol. v. *Noct.* vol. i. p. 154 (1852) (Abyssinia).

Mr. Oberthür has used Lederer's name for this insect because Guenée remarks on the label of a specimen "**not compared with type**," and moreover put it in the genus *Caradrina* = recte *Athetis*, where it does not belong. Now because an author remarks he has not compared his specimens with his own type in another collection, it is no reason to say he doubted the identification, and we thus see into what nomenclatorial muddles those writers can bring us who strictly adhere to the shibboleth that a good figure alone makes a name valid.

The Tring Museum has 29 Mauretanian examples from Biskra, March–April 1908–1909 (W. R. and E. H.); Mazagan, Morocco, October–December 1902 (W. Riegenbach); Rabat, Morocco, August 1913 (A. Théry).

63. *Athetis germaini* (Dup.).

*Bryophila germaini* Duponchel, *Ann. Soc. Entom. France*, vol. iv, p. 194, pl. 4a, f. 2 (1835) (Montpellier).

Although Mr. Oberthür says this is extremely common in Algeria, strange to say I only have received 2 specimens.

1 ♂, 1 ♀ Guelt-es-Stel, October 1912 and September 1913 (V. Faroult).

64. *Athetis aspersa* (Ramb.).

*Caradrina aspersa* Rambur, *Ann. Soc. Entom. France*, vol. iii. p. 385, pl. 8. f. 3 (1834) (Marseilles).

I have not received this insect.

65. *Athetis atriluna* (Guen.).

*Caradrina atriluna* Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* vol. 5. *Noct.* vol. i. p. 252 (1852) (Abyssinia).

This insect is not recorded by Mr. Oberthür.

The Tring series consists of 8 ♂♂, 10 ♀♀ from Mazagan August 1901, Seksawa April 1905, Morocco (W. Rigggenbach); Perrégaux, September 1915 (V. Faroult); Sidi-bel-Abbès, September 1917 (M. Rotrou).

66. *Athetis alsines* (Brahm).

*Noctua alsines* Brahm, *Ins. Kal.* vol. ii. p. 114 (1791) (Mayence).

This species also is not mentioned by Oberthür.

1 ♀ Aïn Draham September 1911, 1 ♀ Guelt-es-Stel October 1913 (V. Faroult).

67. *Athetis blanda* (Schiff. and Den.).

*Noctua blanda* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 77 (1775) (Vienna).

This is also not recorded by Mr. Oberthür. Mr. Culot figures it on pl. 48, f. 4 of his *Noctuelles et Géomètres d'Europe*, under the name of *taraxaci* Hübn., which however dates from 1818 only.

The Tring series consists of 14 ♂♂, 35 ♀♀ Aïn Draham, August—September 1911 (V. Faroult).

68. *Athetis casearia* (Stdgr.).

*Caradrina casearia* Staudinger, *Iris*, vol. xii. p. 375, pl. 5. f. 1 (1899) (Jordan Valley).

I have not received typical *casearia* or the ab. *bilineata* Culot.

69. *Athetis pertinax inumbrata* (Stdgr.).

*Agrotis inumbrata* Staudinger, *Iris*, vol. xii. p. 363 (1899) (Zeitun).

Victor Faroult sent me 2 ♂♂ of this fine insect, hitherto only known from Asia Minor. 2 ♂♂ Perrégaux, October 1915 (V. Faroult).

70. *Lycophotia kermesina* (Mab.). (Pl. XVII. f. 19.)

*Noctua kermesina* Mabille, *Ann. Soc. Entom. France* (4) 9. p. 55, pl. 2. fig. 10 (1869) (Boscognagno, Corsica).

Mr. Oberthür has described *Caradrina suavis* and Mr. Culot *Caradrina flavida*; and Mr. Oberthür suggests that these two insects may possibly be only colour varieties of *kermesina* Mabille. This is certainly the fact, and as *kermesina* is extremely variable, Mr. Oberthür's subspecific name of *delectans* must also sink.

The series at Tring consists of 92 specimens from Environs de Batna, 1913-1914 (Nelva coll.) ; Aflou, September 1916 (V. Faroult) ; Guelt-es-Stel, September—November 1912-1913 (V. Faroult).

#### 71. *Athetis astigmata* Rothschild.

*Athetis astigmata* Rothschild, *Novit. Zool.* vol. xxi. p. 336. No. 193 (1914) (Guelt-es-Stel).

As I had not figured this species, Mr. Oberthür as usual calmly ignored it, and redescribed it as *devitifimbriata* in his Fasc. XVI. p. 58 (1919).

I have 1 ♂, 2 ♀♀ Guelt-es-Stel, October—November 1913 (V. Faroult).

#### 72. *Athetis ambigua* (Schiff. and Den.).

*Noctua ambigua* Schiffermüller and Den. *Ank. Syst. Werk. Schmett. Wienergeg.* p. 77 (1775) (Vienna).

The Mauretanian series at Tring consists of 197 specimens from Guelt-es-Stel, May 1913 (V. Faroult) ; Environs de Batna, 1909-1912 (Nelva coll.) ; Lambessa, October 1915 (Nelva coll.) ; Hammam Meskoutine, April—May 1914 (W. R., K. J., and E. H.) ; Sidi-bel-Abbès, September 1917 (M. Rotrou) ; Sebdou, May 1918 (P. Rotrou) ; Perrégaux, October 1915 (V. Faroult) ; Khenchela, May 1912 (W. R. and K. J.) ; Hammam R'hira, May—June 1911-1915 (W. R., E. H., and Faroult) ; Oued Hamidou, June 1914 (V. Faroult) ; Bou Cedraia, May 1913 (V. Faroult) ; Aïn Draham, September 1911 (V. Faroult) ; Imitant and Mazagan, Morocco, May 1902-1904 (W. Riggensbach) ; Environs d'Alger, May—September 1908 (W. R., K. J., and Dr. Nissen) ; El Mahouna, September 1919 (V. Faroult).

#### 73. *Athetis kadenii rufostigmata* Rothschild.

*Athetis rufostigmata* Rothschild, *Novit. Zool.* vol. xxi. p. 335 (1914) (Guelt-es-Stel).

Mr. Oberthür says that the Algerian form is *proxima* Rambur, but I consider it to be distinct, as it has the reniform stigma much darker, rufous not orange-yellow, and more strongly marked.

I am convinced also that *kadenii* is a distinct species, not a form of *fascicornis* Ramb., as Sir George Hampson has stated it to be.

We have at Tring 48 specimens from Guelt-es-Stel, October 1913 (V. Faroult) ; Sidi-bel-Abbès, September 1917 (M. Rotrou) ; Saida, May 1913 (W. R. and E. H.) ; Perrégaux, October 1915 and Masser Mines, June 1914 (V. Faroult) ; Environs de Batna, 1909-1912 (Nelva and V. Faroult) ; Khenchela, May 1912 (W. R. and K. J.) ; Hammam R'hira, May 1913 (W. R. and E. H.) ; Oued Hamidou June 1912, and Bordj-ben-Anéridj October 1912 (V. Faroult) ; Les Pins, September 1918 (M. Rotrou) ; Sebdou June, Forêt de Tenira September 1918 (P. Rotrou).

#### 74. *Athetis hispanica* (Mab.).

*Caradrina hispanica* Mabille, *Ann. Soc. Entom. France*, vol. lxxv. p. 30. pl. 3. f. 1 (1906) (La Granja).

Mr. Oberthür places this as a local race of *selini* Boisdu., while Sir George Hampson considers it a distinct species. If Mr. Culot's figures of *selini* are correct, it is abundantly distinct.

I have 9 specimens from Batna (Nelva coll.) ; Biskra, March 1914 (W. R. and E. H.) ; Souk Ahras, April 1914 (W. R. and K. J.) ; Sidi-bel-Abbès, September 1917 (M. Rotrou).



75. *Athetis ingrata* (Stdgr.).

*Caradrina ingrata* Staudinger, *Iris*, vol. x, pp. 175, 286, pl. 4, f. 13 (1897) (Syria).

I have only received 1 specimen of this species, which appears to be very rare in Mauretania.

1 ♂ Environs de Batna, 1911–1912 (Nelva coll.).

76. *Athetis flavirena* (Guen.).

*Caradrina flavirena* Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* vol. v. Noct. vol. i. p. 250 (1852).

The Tring series from Mauretania consists of 15 ♂♂, 19 ♀♀ from Blida les Glacières, June 1908 (W. R. and K. J.); Guelt-es-Stel, October 1912 (V. Faroult); Forêt de Tenira, September 1918 (P. Rotrou); Environs d'Alger (Captain Holl); Environs de Batna (Nelva coll.); Berrouaghia, April 1914 (V. Faroult); Guelt-es-Stel, April–May 1912–1913 (W. R. and K. J., and V. Faroult).

77. *Athetis flava* (Oberth.).

*Caradrina flava* Oberthür, *Etud. Entom.* fasc. i. p. 45, pl. 4, t. 3 (1876) (Algeria).

Mr. Oberthür states that this insect varies much in size, but I have not found this to be the case. The small specimens that I have received all belong to my *approximans*, which is conspicuous by the heavy and broad greyish termen.

The Mauretanian series at Tring consists of 204 specimens from Biskra, April 1908–March 1914 (W. R. and E. H.); Bordj Mecht-el-Kaid, April 1909 (W. R. and E. H.); Bou Saada, April 1911–March 1912 (V. Faroult); Tilghemt April 1912 (V. Faroult); Ghardaïa, April 1911 (W. R. and E. H.); El Kantara March–April 1911 (Faroult); Khenchela, June 1911 (V. Faroult); South Oued Mya and North of Aïn Guettera, April 1912 (Hartert and Hilgert); Environs de Setif, 1911 (Faroult); Berrouaghia, April 1914 (V. Faroult); Environs de Batna, 1913–1914 (Nelva coll.); Guelt-es-Stel, April 1913; Djebel Antan May 1918, Bordj Chegga March 1917, Aïn Sefra March 1915, Mecheria May 1918 (V. Faroult); Souk Abras, April 1914 (W. R. and K. J.); Oued Nça, April 1914 (Hartert and Hilgert); Oud Dehin and Oued Ag-cld, Timenaiin, March 1914 (Geyr von Schweppenburg).

The British Museum has 1 ♂ Algeria, Mrs. Nicholl; 2 ♂♂ El Kantara, April 1913, P. A. Buxton.

78. *Athetis oberthuri* Rothsch. (Pl. XVII, f. 26.)

*Athetis oberthuri* Rothschild, *Novit. Zool.* vol. xx, p. 126, No. 57 (1913) (South Oued Mya).

The Tring Museum possesses 1 ♂, 1 ♀ Oued Nça, April 1914, 1 ♂, 3 ♀♀ from South Oued Mya, April 1912 (Hartert and Hilgert).

This species is very similar to *cascaria* Stdgr., but much more heavily marked.

79. *Athetis approximans* Rothsch.

*Athetis approximans* Rothschild, *Novit. Zool.* vol. xxi, p. 334, No. 187 (1914) (Guelt-es-Stel).

The Tring series consists of 131 specimens from Rhari, April 1914 (Geyr von Schweppenburg); Guelt-es-Stel, August–October, 1912–1913 (V. Faroult); Les

Pins, September 1918 (M. Rotrou); Aïn Sefra April 1915, Metliti September 1917 (V. Faroult); El Mahouna, September 1919 (V. Faroult).

Mr. Oberthür has treated this as a dwarf form of *flava*, but besides the differences in marking, Sir George Hampson, who has carefully examined specimens, tells me it belongs to a different section of the genus.

The British Museum has 1 ♂ Guelt-es-Stel ex Tring Museum.

#### 80. *Athetis scotoptera* (Püngl.).

*Caradrina scotoptera* Püngler, *Iris*, vol. xxviii. p. 47. No. 19. pl. iii. f. 18 (1914) (Jerusalem).

This species is not recorded by Mr. Oberthür.

We have at Tring 2 ♂♂, 3 ♀♀ from Environs de Batna (Nelva coll.); Forêt de Tenira, October 1918 (P. Rotrou); Sidi-bel-Abbès, September 1917 (M. Rotrou).

#### 81. *Athetis jacobsi* Rothsch.

*Athetis jacobsi* Rothschild, *Novit. Zool.* vol. xxi. p. 335. No. 190 (1914) (Guelt-es-Stel).

The series at Tring consists of 288 specimens from Guelt-es-Stel, September—October 1912–1913 (V. Faroult); Forêt de Tenira, October 1918 (P. Rotrou); Environs de Batna (Nelva coll.); Metlili, September 1917 (V. Faroult); El Mahouna, September 1919 (V. Faroult).

#### 82. *Athetis clavipalpis* (Scop.).

*Phalaena clavipalpis* Scopoli, *Entom. Car.* p. 213 (1763) (Carniola).

Mr. Oberthür quotes this under Schiffermüller's name, because Guenée did so, but both Fabricius' name of *quadripunctata* and *clavipalpis* of Scopoli are older.

In my account of the Lepidoptera of Guelt-es-Stel in 1914 I was misled by Mr. Warren's account of this insect in *Seitz*, and kept the small specimens apart as a distinct species under the name *grisea*, but they are only dwarf individuals of *clavipalpis*, and if distinguished at all must stand as ab. *minor*. As *grisea* Rott. is only a synonym of *clavipalpis* and dates from 1776, *grisea* Eversm. 1848 must stand as *cinerascens* Tengstr.

The Tring series from Mauretania consists of 677 specimens from Biskra, March 1908—April 1914 (W. R. and E. H.); Hammam R'hira, May 1908—May 1913 (W. R., E. H., and K. J.); Blida les Glacières, June 1908 (W. R. and K. J.); Environs d'Alger, June 1908 (Dr. Nissen); Djebel Cheddar, Mazagan, April 1902, and Seksawa, April—May 1905, Morocco (W. Rigggenbach); Guelt-es-Stel, April—October 1912–1913 (W. R. and K. J., and V. Faroult); Sidi-bel-Abbès, June—October 1917 (M. Rotrou); Perrégaux, October 1915 (V. Faroult); Aïn Sefra, May 1915 (V. Faroult); Lalla Marnia, May—October, 1914 (V. Faroult); Masser Mines, May 1914 (V. Faroult); Hammam Meskoutine, April—May 1914 (W. R., E. H., and K. J.); Environs de Batna (Nelva coll.); Aïn Draham, September 1911 (V. Faroult); Bou Saada and Tilghemt, April 1912 (V. Faroult); Khenchela, May 1912 (W. R. and K. J.); Sebdlou June, Sidi Djilali September, Forêt de Tenira August 1918 (P. Rotrou); El Mahouna, September 1919 (V. Faroult).

In British Museum, 1 ♂ El Kantara, April 1913, P. A. Buxton.

83. *Laphyma exigua* (Hübner).

*Noctua exigua* Hübner, *Europ. Schmett. Noct.* f. 362 (1808).

Of this very cosmopolitan insect the Mauretanian series at Tring consists of 477 specimens from Guelt-es-Stel, April—November 1912–1913 (V. Faroult); El Kantara, June 1909 (Sidi Brahimi); Environs d'Alger, May 1906–1908 (W. R., K. J., and E. H., and Dr. Nissen); Seksawa April 1905, Mazagan June 1900—May 1902, Rahama, S.E. of Mazagan, May 1903 (W. Riggensbach); Hammam R'hira, May 1908—June 1916 (W. R., E. H., and K. J., and Faroult); Colomb Bechar, February 1912 (V. Faroult); Laghouat March, Tilghemt April 1912, Bou Saada April—May 1911–1912 (V. Faroult); Ghardaïa, April 1911 (W. R. and E. H.); North of El Golea, South Oued Mya, Aïn Guettera, and In Salah and Igosten Tidikelt Oases, March—April 1912 (Hartert and Hilgert); Khenchela, May 1912 (W. R. and K. J.); Blida, December 1915 (Faroult); Oued Nça and Sands of El Arich, June 1912 (Hartert and Hilgert); Environs de Setif, 1911 (V. Faroult); Oued Hamidou, June 1912 (V. Faroult); Sidi-bel-Abbès, June—August 1917 (M. Rotrou); Biskra, April 1908–1914 (W. R. and E. H.); Masser Mines, June 1914 (V. Faroult); Perrégaux, October 1915 (Faroult); Aïn Sefra, April 1913—July 1915 (W. R. and E. H., and Faroult); Lalla Marnia and Moroccan Frontier, April—May 1914 (Faroult); Temassinin, Amgid, Oued Gif Aman, Oued Dehin, and El Mesrane, Hoggar Country, November 1913—March 1914 (Geyr von Schweppenburg); Sidi Ferruch, November 1911 (Théry); Environs de Batna, 1911–1914 (Nelva coll.); Hammam Meskoutine, April—May 1914 (W. R., E. H., and K. J.); Aïn Drahem, September 1911 (V. Faroult); Oued Abbou, Timassinin, I-n-Kelemet, 30 kil. N. of Amgid, Amgid, Temenaiin, Oued Ag'elil, Oued Dehin, Oued Gif Amdu, January—March 1914 (Geyr von Schweppenburg); El Mahouna, June 1919 (V. Faroult).

The British Museum has 1 ♀ El Kantara, April 1913, P. A. Buxton.

84. *Prodenia litura* (Fabr.).

*Noctua litura* Fabricius, *Syst. Entom.* p. 601 (1775) (East Indies).

Of this widespread species I have from Algeria 164 specimens, from Perrégaux, September—October 1915; El Kantara, El Outaya, August 1917 (V. Faroult); Biskra, March—June 1908–1912 (Hartert and Hilgert, W. R., and Faroult); Sidi-bel-Abbès, August—September 1917 (M. Rotrou).

Mr. Oberthür employs Herrich-Schäffer's name *retina* for this species because he first figured it.

85. *Ulochlaena hirta* (Hübner).

*Noctua hirta* Hübner, *Europ. Schmett. Noct.* f. 591 (1827).

Of this species I have only received 1 ♀ from Mauretania, all the rest are ♂♂. The Tring series numbers 196 Algerian specimens from Environs de Batna (Nelva, Faroult, and Staudinger); Bordj-ben-Anéridj, October 1912 (V. Faroult); Aflou, October 1916 (V. Faroult); 1 ♀ Hammam R'hira, March 1916 (V. Faroult).

The ♀ is flightless.



86. *Derthisa trimacula* (Schiff. & Den.).

*Bombyx trimacula* Schiffermüller and Den. *Ank. Syst. Werk. Schmelt. Wienergeg.* p. 59 (1775) (Vienna).

This is one of the most variable of known heterocera, and a number of individual forms have received names, among them ab. *hispana* Boisd. grey with sharp dark pattern, ab. *dentimacula* Hübn. same colour but dark marking reduced, ab. *glaucina* Esp. uniform rufous, ab. *tersa* Schiff. yellow dark marks in cell only, ab. *gruneri* Boisd. = *albida* Oberth. same only white, ab. *tersina* Stålgr. same only grey, ab. *unicolor* Dup. entirely yellow or buff.

We have at Tring from Mauretania 1,191 specimens from Guelt-es-Stel, September–November 1912–1913 (V. Faroult); Batna (Nelva coll., Staud. and Faroult); Bordj-ben-Anéridj, October 1912 (V. Faroult); Environs de Sétif, 1911 (V. Faroult); Lambiridi, October 1910 (V. Faroult); Perrégaux, October 1915 (V. Faroult); Aflou, September 1916 (V. Faroult); Forêt de Tenira, October 1918 (P. Rotrou); Sidi-bel-Abbès, October 1917 (M. Rotrou).

In the British Museum are 1 ♂, 1 ♀ Batna, Staudinger and Bang-Haas (ab. *albida*).

87. *Grammoscelis magnifica* (Rothsch.).

*Derthisa magnifica* Rothschild, *Novit. Zool.* vol. xxi. p. 328. No. 145 (1914) (Guelt-es-Stel).

Sir George Hampson pointed out to me that although this fine insect was a true Cucullid, it was not, as I thought, a *Derthisa* but a *Grammoscelis*.

The series at Tring consists of 67 ♂♂, 25 ♀♀ from Guelt-es-Stel, October–November 1913 (V. Faroult); El Mesrane, November 1913 (V. Faroult); Perrégaux, November 1915 (V. Faroult); Bordj-ben-Anéridj October 1912, Medjez October 1911 (V. Faroult).

88. *Aglossestra mariae-ludovicae* (D. Lucas).

*Hadula mariae-ludovicae* Daniel Lucas, *Bull. Soc. Entom. France*, 1914, p. 311 (Tunis).

*Derthisa affinis* Rothschild, *Novit. Zool.* vol. xxi. p. 328. No. 146 (1914) (Guelt-es-Stel).

My description appeared in October, while that of Monsieur Daniel Lucas was published in June, so his name has priority.

This species belongs to the genus *Aglossestra* of the subfamily *Hadeninae*.

1 ♂ Guelt-es-Stel, October 1913 (V. Faroult).

THE GENUS *Heliophobus* Boisd.

Mr. Oberthür, following Guenée, makes use of the genus *Heliophobus* Boisd. and puts into it *hispidula* Hübn.; *scillae* Chrét.; *pierretii* Oberth. (nec Bugnion); *messaouda* Oberth.; and *orana* Oberth. (nec Lucas): a regular olla podrida.

Neither Mr. Oberthür nor the other authors who have used *Heliophobus* should have done so, as Boisduval himself states (*Europ. Lepid. Ind. Meth.* 1829, p. 69) that it is another name for *Hadena* Treitschke.

Of the 5 species put in it by Mr. Oberthür, *hispidula* Hübn. and *scillae* Chrét. belong to the genus *Leucochlaena* of the subfamily *Cuculliinae*; *messaouda* Oberth. and *orana* Oberth. (nec Lucas) belong to the genus *Euxoa* of the subfamily *Agrotinae*; and *pierretii* Oberth. (nec Bugnion) belongs to the genus *Pseudo-pseustis* of the subfamily *Zenobiinae* (= *Acronyctinae*).

89. *Leucochlaena oditis* (Hüb.).

*Noctua oditis* Hübner, *Europ. Schmett. Noct.* ff. 694. 695 (1822).

There appear to be two forms of this species in Algeria, a small paler form, and a large dark form, but they do not seem locally constant and intergradations occur.

The series at Tring consists of 151 specimens from Guelt-es-Stel, September—November 1912–1913 (V. Faroult); Aflou, September 1916 (V. Faroult); Forêt de Tenira, October 1918 (P. Rotrou); Aïn Draham, September 1911 (V. Faroult); Batna (Nelva coll.); El Mesrane, November 1913 (V. Faroult); Sidi-bel-Abbès, October 1917 (M. Rotrou); El Mahouna, September 1919 (V. Faroult).

90. *Leucochlaena scillae* (Chrét.).

*Heliophobus scillae* Chrétien, *Le Naturaliste*, vol. x. p. 92 (1888) (Bône).

26 ♂♂ El Mahouna, September 1919 (V. Faroult).

I have only 1 ♂ specimen of the ab. *datini* Oberth.

1 ♂ Aïn Draham, October 1911 (V. Faroult).

In the British Museum there is 1 ♂ Bône, Abbé de Joannis.

[*Euxoa pierretii* (Bugnion).]

*Episema pierretii* Bugnion, *Ann. Soc. Entom. France*, 1837. p. 441. pl. 16. f. 3 (Egypt).

*Heliophobus marsdeni* Bethune Baker, *Trans. Entom. Soc. Lond.* 1894. p. 40. pl. i. f. 9 (Egypt).

This and the next species form a striking example of the fallacy of Mr. Oberthür's dictum "Pas de bonne figure, pas de nom valable," for Monsieur Bugnion gives an excellent figure of the insect afterwards described by Bethune Baker as *marsdeni* and which is an Agrotid of the genus *Euxoa*, and yet both Mr. Oberthür and Mr. Culot describe and figure as *pierretii* Bugnion a totally different insect afterwards described as *Taeniocampa tellieri* by Daniel Lucas, and which belongs to the subfamily *Zenobiinae*. *Euxoa pierretii*, as far as I can discover, has not yet been taken in Mauretania.]

91. *Pseudopseustris tellieri* (D. Lucas).

*Taeniocampa tellieri* Daniel Lucas, *Bull. Soc. Entom. France*, 1907, p. 196 (Gafsa).

*Heliophobus pierretii* Culot (nec Bugnion), *Noct. et Géom. d'Eur.* pt. i. vol. i. p. 174. pl. 32. f. 6 (1913) (Biskra).

*Harpagophana diacrisioides* Rothschild, *Novit. Zool.* vol. xxi. p. 326. No. 130 (1914) (Guelt-es-Stel).

This is the insect identified by Messieurs Oberthür and Culot as *Euxoa pierretii* (Bugnion), but Mr. Culot has gone further and figured the same insect twice, once under the name of *pierretii*, and once under its true name of *tellieri*. Then unfortunately I also made a stupid error of negligence and redescribed it once again.

The Tring Museum possesses 3 specimens: 1 ♂, 1 ♀ Guelt-es-Stel, October 1912–1913 (V. Faroult); 1 ♂ El Mesrane, November 1913 (V. Faroult).

In the British Museum there is 1 ♂ Batna, Staudinger and Bang-Haas.

92. *Leucochlaena orana* (Lucas). (Pl. XV. ff. 27, 28.)

*Episema orana* Lucas, *Expl. Scient. d'Algérie*, pt. iii. p. 384. pl. 3. f. 7 (1849) (West Algeria).

Here again is shown the fallacy of insisting that figures are everything. Messrs. Oberthür and Culot have figured and described under the name of *Helio-phobus orana* (Lucas) an insect which is not only not *orana* but belongs to a very different subfamily; and yet Lucas gives a recognisable figure.

The series at Tring contains 7 ♂♂, 3 ♀♀. 1 ♂ Oudjda, Morocco November 1914, 1 ♂ Lalla Marnia December 1914, 1 ♂ La Macta September 1915, 4 ♂♂, 3 ♀♀ Perrégaux October 1915 (Victor Faroult).

93. *Euxoa noctambulatrix* (Chrét.). (Pl. XV. f. 29.)

*Cladocerotis noctambulatrix* Chrétien, *Ann. Soc. Entom. France*, p. 502 (1910) (Gafsa).

*Cladocera orana* Oberth. (nec Lucas), *Etud. Lépid. Comp.* fasc. vi. p. 332, pl. cxxviii. f. 1139 (1912) (Géryville).

This insect, which both Oberthür and Culot figure as *orana*, is an **Agrotid** and **not** a **Cucullid**, as the true *orana* is. Among minor differences the ♀ has abortive wings, while the ♀ of true *orana* is full winged, like the ♂. It is curious that at the same time as Mr. Oberthür declares his *orana* to be an aberration of Chrétien's *noctambulatrix* he figures them under the two names, and actually puts them in **two different genera**, *Cladocerotis* and *Cladocera* !!!

I quote this insect temporarily under Chrétien's name *noctambulatrix*, because I have not been able to compare my specimen with Spanish ones, of which none are in England; I feel sure, however, that when they can be compared they will prove that this insect is the same as *Heliophobus boetica* Boisd. Should this prove the case, the species would have to stand as *Euxoa boetica* Boisd.

1 ♂ Sidi Ferruch (Théry coll.); 1 ♂ Sebdu, September 1908 (P. Rotrou).

94. *Euxoa messaouda messaouda* (Oberth.).

*Luperina messaouda* Oberthür, *Etud. d'Entom.* livr. ix. p. 39. pl. iii. f. 3 (1884) (Sebdu).

This species was abundant at Guelt-es-Stel.

The series at Tring consists of 518 specimens from Guelt-es-Stel, October—November 1912–1913 (Victor Faroult); Aflou, September—October 1916 (V. Faroult); Mazagan, Morocco, September 1903 (W. Riegenbach).

Among the Guelt-es-Stel series are several ♂♂ in which the red is quite absent: these agree absolutely with the Spanish form *messaouda matritensis* Vasq. This demonstrates the fact that an insect can occur sporadically among the typical form as an aberration, and yet in another locality assume the status of a distinct subspecies.

95. *Omphaloscelis polybela* (de Joan.).

*Euxoa polybela* de Joannis, *Bull. Soc. Entom. France*, 1903. p. 28 (Philippeville).

The Tring Museum possesses 306 specimens from Environs de Batna, September—October 1910–1915 (Nelva, V. Faroult, Staudinger); Bordj-ben-Anéridj, October 1912 (V. Faroult); Sidi-bel-Abbès, November 1917 (M. Rotrou); Forêt de Tenira, October 1918 (P. Rotrou).

In the British Museum are 1 ♂, 1 ♀ Batna, Staudinger and Bang-Haas.

96. *Cladocerotis optabilis* (Boisd.).

*Heliophobus optabilis* Boisduval, *Icon. Lépid. Eur.* vol. ii. pl. 74. ff. 2, 3 (1832).

The ground-colour and the markings vary considerably, the latter being sometimes lemon-yellow, sometimes grey, and sometimes almost pure white; all the specimens I have seen from Sicily are like the last named, but I have a number from Algeria quite identical.

We have at Tring 308 specimens from Environs de Batna, September—October, 1910–1915 (Nelva, V. Faroult, and Staudinger); Sidi-bel-Abbès, September—October 1917 (M. Rotrou); Forêt de Tenira, October 1918 (P. Rotrou); Perrégaux, October 1915 (V. Faroult); Lalla Marnia, November 1914 (V. Faroult); Guelt-es-Stel October—November 1912–1913, Aflou October 1916 (V. Faroult).

The genus *Cladocera* Rmb. is preoccupied, so Sir George Hampson made the genus *Cladocerotis* for this species.

In the British Museum are 3 ♂♂, 1 ♀ Guelt-es-Stel ex Tring Museum.

97. *Euxoa rugifrons* (Mab.).

*Agrotis rugifrons* Mabille, *Bull. Soc. Entom. France*, 1888, p. 42 (Gabes).

*Agrotis bledi* Chrétien, *Ann. Soc. Entom. France*, 1910, p. 500 (Gafsa).

*Agrotis urbana* Bang-Haas, *Iris*, vol. xxv. p. 142, pl. vi. fig. 7 (1912) (Batna).

This species is very common in Algeria. Our series at Tring consists of 564 specimens from Guelt-es-Stel, October—November 1912–1913 (V. Faroult); Aflou, September—October 1916 (V. Faroult); Environs de Batna, September—October 1909–1914 (Nelva coll.); Bordj-ben-Anéridj, October 1912 (V. Faroult); Medjez October 1911, Aflou October 1916 (V. Faroult).

Neither Mr. Oberthür nor Mr. Culot mention the name *rugifrons* Mab.

98. *Euxoa capsensis* Chrét.

*Euxoa capsensis* Chrétien, *Ann. Soc. Entom. France*, 1910, p. 497 (Gafsa).

*Euxoa muricolor* Rothschild, *Novit. Zool.* vol. xxi. p. 319, No. 83 (1914).

I have only received this species from Guelt-es-Stel.

80 Guelt-es-Stel, October 1912–1913 (V. Faroult).

99. *Euxoa lasserrei* (Oberth.).

*Luperina lasserrei* Oberthür, *Etud. d'Entom.* Fasc. vi. p. 86, pl. xi. ff. 13, 14 (1881) (Magenta, Sebdu).

The Tring series contains 240 specimens from Guelt-es-Stel, October—November 1912–1913 (V. Faroult); Les Pins, September 1918 (M. Rotrou); Forêt de Tenira, October 1918 (P. Rotrou); Batna, November 1910–1911 (V. Faroult and Nelva); El Mesraie November 1912, Aflou September 1916, Aflou October 1916 (V. Faroult); Tunis (Max Bartel).

The British Museum has 1 ♂ Mauretania.

100. *Euxoa obesa lipara* (Rambur).

*Agrotis lipara* Rambur, *Ann. Soc. Entom. France*, 1848, p. 68 (Algeria).

Sir George Hampson places *lipara*, without comment, as a synonym of *obesa*, while Mr. Oberthür treats it as a distinct species. The truth, however, lies in between, for *lipara* is a southern form of *obesa* and must be treated as a subspecies.



Our Tring series totals 497 specimens from Guelt-es-Stel, September—October, 1912–1913 (V. Faroult); Environs de Batna, Lambessa, September, October 1909–1914 (Nelva, Staudinger); Sebdou, September 1918 (P. Rotrou); Tlemcen, 1915 (P. Rotrou); Sidi-bel-Abbès, September 1917 (M. Rotrou); Aflou, October 1916 (V. Faroult).

# 101. *Euxoa crassa* (Hübner).

*Noctua crassa* Hübner, *Samml. Eur. Schmett.* ff. 151, 152, 560 (1881).

Treitschke (*Schmett. Eur.* vol. v. pt. i. p. 166. No. 19) gives a long explanation of how the erroneous identification of the present species with *tritici* Linn. arose and complains that Hübner made matters worse by giving **three** figures of *crassa* and calling f. 151 *tritici* Linn. Sir George Hampson has caused still further difficulty by quoting *crassa* as of Treitschke, while its author was Hübner, which is evident from Treitschke's own quotations. Sir George omits the ff. 151 and 152 altogether.

Sir George Hampson, Mr. Oberthür, Mr. Culot, and most of the authors since Treitschke have united specifically *crassa* Hübn. and *lata* Treit., in some cases because they thought they were representative forms, in others because they considered them simply aberrations. Mr. Culot has committed a further error, influenced by Mr. Oberthür's statements: he figures as var. *golickei* Ersch. a Castille specimen lent by Mr. Oberthür.

*E. golickei* was described from Turkestan, and has the heavily plumed antennae characteristic of *lata*, of which it is undoubtedly a subspecies.

Moreover, *lata* never occurs on the mainland of Europe, so Mr. Oberthür has confounded a pale aberration of *crassa* with *golickei*, which latter is purely Asiatic.

Now, all the authors who have united *crassa* and *lata* have drawn attention to two differences characteristic of *lata*; one, the thicker and more heavily pectinated antennae, holds good, but the second, the brighter and more striking wing pattern, is not a constant character.

There are, however, three characters which specifically separate *crassa* and *lata* quite definitely.

Firstly, the orbicular stigma in both series of *lata* has a distinct whitish ring and stands out distinctly, while in *crassa* this ring is absent and the orbicular appears almost obsolete.

Secondly, in ♀ *crassa* the hindwing is white shading into grey towards the termen, and there is **no trace** of a discocellular stigma; while in ♀ *lata* the hindwing is brown, sometimes paler, or even whitish in the basal one-fourth, but **always** with a **distinct** discocellular stigma, except in a very few extreme melanistic individuals which are otherwise easily recognisable as *lata*.

Thirdly, the ♂♂ of *crassa* have short pectinations to the antennae, and at the distal end fully 4–5 mm. with no pectinations at all; on the other hand, in *lata* the antennae have long pectinations (in the proportion of 16 to 9), and only the last three or four joints are without pectinations.

Our Mauretanian series of *crassa* consists of 49 ♂♂, 20 ♀♀ from Sidi-bel-Abbès, September—October 1917 (M. Rotrou); Sebdou, September 1918 (P. Rotrou).

This species (*crassa*) appears entirely confined to West Algeria (Province Oran), while *lata* occurs all over Algeria and portions of Tunis and Morocco.

101a. **Euxoa lata** (Treit.).

*Agrotis lata* Treitschke, *Schmett. Eur.* vol. x. pt. ii. p. 24 (1835) (Sicily).

This has since the time of Treitschke always been treated as a local race or aberration of *crassa*, which is erroneous.

It is easily distinguished by the orbicular having a pale ring in both sexes, in the antennae of the ♂ being much more strongly pectinated, and in the dark hindwings with a discocellular stigma in the ♀.

The Tring series from Mauretania contains 63 ♂♂, 59 ♀♀ from Environs d'Alger (Dr. Nissen); Mazagan, Morocco, September 1902 (W. Riggensbach); Rabat, Morocco (A. Théry); Messer September, Sidi-bel-Abbès September 1917 (M. Rotrou); Ain Draham, Tunisia October 1911, Perrégaux October 1915 (V. Faroult); Belvédère, Tunis, September 1915 (M. Blane); Forêt de Tenira, September 1918 (P. Rotrou); El Mahouna, September 1919 (V. Faroult).

102. **Euxoa vestigialis** (Rott.).

*Noctua vestigialis* Rottemburg, *Naturf.* vol. viii. p. 107 (1776).

This appears to be unrecorded from Mauretania.

1 ♀ Lambessa, July 1914 (A. Nelva).

I have seen a second ♀ from Thala, Tunisia, taken by Mr. Daniel Lucas.

103. **Euxoa spinifera** (Hübner.).

*Noctua spinifera* Hübner, *Samml. Eur. Schmett. Noct.* f. 389 (1827).

Our Tring series contains 200 specimens from Guelt-es-Stel, May—November 1912–1913 (V. Faroult); Ain Draham, September 1911 (V. Faroult); Sidi-bel-Abbès, July—September 1916–1917 (M. Rotrou); Forêt de Tenira May, Sebdu June 1918 (P. Rotrou); El Kantara, August 1917 (V. Faroult); Environs de Setif, 1911 (V. Faroult); Bou Saada March 1912, Laghouat March 1912 (V. Faroult); El Ou Saya August 1918, Tilghemt April 1912 (V. Faroult); Biskra, March—April 1908–1911 (W. R. and E. H.); Batna (Nelva and Faroult); Oued Hamidou, June 1912 (V. Faroult); South Oued Mya April, Bordj Saada February 1912 (Hartert and Hilgert); Rabat, Morocco (A. Théry); Environs de Batna (A. Nelva); Messer, September 1917 (M. Rotrou); Blida, November 1915 (V. Faroult); Hammam R'hira, May—June 1908–1916 (W. R. and K. J., and Faroult); Mazagan February—May 1902–1903, Seksawa, Morocco April 1905 (W. Riggensbach); Environs d'Alger, May 1908 (W. R. and K. J.).

In the British Museum are 2 ♂♂, 1 ♀ Hammam-es-Salahin, March 1904, Lord Walsingham.

[**Euxoa spinifera hodnae** (Oberth.). (Pl. XVII. ff. 15, 16.)

*Agrotis hodnae* Oberthür, *Etud. Entom.* fasc. iii. p. 45. pl. v. f. 8 (1878) (Bou Saada).

The large series of *spinifera* collected all over Algeria since 1878 have proved that in Mauretania *hodnae* is only a sporadic aberration of *spinifera*, but in Egypt it has developed into the local race and must stand as a subspecies as above.]

104. **Euxoa hoggari** sp. nov. (Pl. XVII. ff. 12-14.)

This is the insect erroneously named *hodnae* in 1915 (see *Ann. Mag. Nat. Hist.* (8) xvi. p. 250. No. (16).).

♂♀. Ground-colour creamy white. Antennae brown with pale grey serrations; head and thorax whitish, more or less closely sprinkled with minute brown streaks; abdomen cream buff; anal tuft buff.

Forewing cream-white, here and there streaked with pale wood brown, basal one-sixth of costal area with dense dark brown markings, a brown wedge in cell, reniform and spot below dark brown, a pale wood brown irregular band across wing enclosing reniform, an oval stigma on vein 2 joined by a deeply zigzag blackish line to inner margin, fringe white, a marginal line of dark dots and 2 black arrow heads above veins 5 and 6. Hindwing white washed with cream, cream-buff on abdominal area; some specimens are strongly suffused with brown all over.

Length of forewing, ♂ 15-19 mm.; expanse, 35-43 mm. Length of forewing, ♀ 16-22 mm.; expanse, 37-50 mm.

*Habitat.* 5 ♂♂, 7 ♀♀ Oued Abou January, Oued Ag'elil March, Oued Tamoudat March, 20 kil. N. of Idelès March 1914, N. of the Hoggar Mts., Sahara (Geyr von Schweppenburg); Bordj Chegga, February 1912 (Hartert and Hilgert).

105. **Euxoa doufanae** (Oberth.).

*Agrotis doufanae* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 90. pl. xdi. ff. 4072-4073 (1919) (Col de Doufana Aurès).

I have received 80 specimens of this rare species.

1 ♂ Aïn Sefra, May 1913 (W. R. and E. H.); 1 ♀ Mecheria May 1918, 1 ♂ El Hamel May 1912 (Victor Faroult); 57 ♂♂, 1 ♀ Bou Saada May, 14 ♂♂, 5 ♀♀ Guelt-es-Stel May-June 1915 (V. Faroult). This was wrongly identified by me in 1914 as *mauretanica*.

106. **Agrotis suffusa** (Schiff. & Den.).

*Phalaena suffusa* Schiffermüller and Denis, *Ank. Syst. Werk. Schmelt. Wienergeg.* p. 89 (1775) (Vienna).

*Noctua ypsilon* Rottensburg, *Naturf.* vol. ix. p. 141 (1776).

This widely spread insect occurs all over Mauretania. We have 311 specimens from Mauretania from Guelt-es-Stel, April, May, October 1913 (V. Faroult); Timassinin January, I-n-kelemet February, 30 kil. N. of Amgid February, Amgid February, Aïn Tahart February, Oued Ag'elil March, 20 kil. N. of Idelès March 1914, north of the Hoggar Mts., Sahara (Geyr von Schweppenburg); Sebdu, September 1918 (P. Rotrou); Oued Nça, April 1914 (Hartert and Hilgert); Environs de Batna, 1911-1914 (Nelva coll.); Biskra, March-April 1908-1911 (W. R. and E. H.); Colomb Bechar February, Tilghemt April 1912 (V. Faroult); Oran, April 1913 (W. R. and E. H.); Bou Saada April, Bordj-ben-Anéridj October 1912 (V. Faroult); Sidi-bel-Abbès, September-October 1917 (M. Rotrou); Aïn Draham August-September 1911, Aflou October 1915, Hamam R'hira, May 1916 (V. Faroult).

107. *Lycophotia margaritosa* (Haw.).

*Noctua margaritosa* Haworth, *Lepid. Brit.* p. 218 (1809).

Mr. Oberthür quotes Engramelle as the author, but Ernst and Engramelle when describing species not yet described only gave **French** names to their insects, and therefore they are quite inadmissible as authors, and the names given to their species by Hübner and others must be quoted under their respective authors. As, however, that part of Hübner containing his *saucia* was published in 1827 and Haworth's *margaritosa* in 1809, this latter name must be used for the present species.

Although fairly widespread in Mauretania, it is much rarer than the last.

We have 86 specimens from Aïn Draham, August—September 1911 (V. Faroult); Oued Hamidou, June 1912 (V. Faroult); Hammam R'hira, May—June 1908–1917 (V. Faroult, and W. R. and K. J.); Guelt-es-Stel, May—October 1913 (V. Faroult); Sidi-bel-Abbès, September 1917 (M. Rotrou); Biskra March 1909, El Kantara May 1909 (W. R. and E. H.); Blida les Glacières, May 1905—June 1908 (W. R., K. J., and Dr. Nissen); Environs d'Alger, May—June 1906–1912 (W. R. and K. J. and Dr. Nissen); Mazagan, Morocco, January—June 1900–1903 (W. Riggenschach); Bou Saada April 1911, Djebel Aissa May 1915 (V. Faroult); Environs de Batna (Nelva coll.); Tlemcen, August 1917 (M. Rotrou).

108. *Euxoa trux trux* (Hüb.).

*Noctua trux* Hübner, *Samml. Eur. Schmett. Noct.* ff. 723, 725, 770 (1826).

This is a very variable insect, the aberrations *terranca* Frey, *amasina* and *olivina* Stmgr. occur in Mauretania quite abundantly. The subspecies *lunigera* Steph. appears to be confined to Great Britain.

Our series from Mauretania consists of 562 specimens from Guelt-es-Stel, September—October 1919 (V. Faroult); Aflou, September 1916; Aïn Sefra July 1915, Pérregaux October 1915 (V. Faroult); Sidi-bel-Abbès September 1917, Les Pins June 1918 (M. Rotrou); Lambessa October 1915, Batna 1909–1915 (A. Nelva coll.); Hammam R'hira July 1916, Mecheria May 1918 (V. Faroult); Sebdou July, Forêt de Tenira September 1918 (P. Rotrou); El Mahouna, September 1919 (V. Faroult).

In the British Museum, 2 ♂♂ Batna, Staudinger and Bang-Haas.

109. *Euxoa segetum* (Schiff. and Den.).

*Phalaena segetum* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* pp. 81, 252. ff. 3 a, b. (1775) (Vienna).

Our Mauretanian series of this common insect numbers 764 specimens from Guelt-es-Stel May—November 1912–1913, Aflou October 1916 (V. Faroult); Colomb-Bechar March, April 1912, Bou Saada April 1912, Tilghemt April 1912 (V. Faroult); Mazagan, Morocco, Imitanaut, May—July 1900–1904 (W. Riggenschach); Khenchela, May 1912 (W. R. and K. J.); Jakouren Kabylie June 1909, El Kantara March 1909 (W. R. and E. H.); Batna, June—July 1912–1915 (Nelva coll.); Aïn Draham, July—September 1911 (V. Faroult); Hammam R'hira, July 1916 (V. Faroult); Sidi-bel-Abbès, September—October 1917 (M.



Rotrou); Lambessa, 1912 (Nelva coll.); Alger, January 1914 (V. Faroult); Djebel Antar, May 1918 (Faroult); Biskra, March—April 1908, 1914 (W. R. and E. H.); Setil, S. of Biskra, March 1917 (V. Faroult); Djebel Zaccar Miliana, June—August 1916 (V. Faroult); Bordj-ben-Anéridj October, Tilghemt April 1912 (V. Faroult); Laghouat, March 1912 (V. Faroult); Idelès Hagggar Mts., March 1914 (Geyr von Schweppenburg); Sebdom, July 1918 (P. Rotrou).

In British Museum, 1 ♂ Mogodor, Leech coll.

109a. **Euxoa cos cycladum** (Stdgr.).

*Agrotis cos* var. *cycladum* Staudinger, *Hor. Soc. Entom. Ross.* vol. vii. p. 121. t. 1. f. 9 (1870) (Naxos).

We have received 1 ♀ of this species from Mauretania; Mr. Oberthür records a series of 30 from Lambessa.

1 ♀ Guelt-es-Stel, May 27, 1913 (V. Faroult).

110. **Euxoa rottroui** sp. nov. (Pl. XVII. f. 11.)

This new species is exactly intermediate in appearance between *Euxoa radius* and *E. trux*.

♂. Antennae serrate, brown; head pale pinkish mauve; tegulae darker with dark brown edge; patagia and rest of thorax pinkish mauve; abdomen wood grey.

Forewing pinkish mauve, basal one-fourth above vein 1 dark brownish mauve, an oblique transverse convex dentate line of same colour separated from this deeper coloured patch; a darker brown mauve patch surrounding reniform stigma from which a shadow line runs straight to inner margin; post-median convex dentate blackish line; post-discal area clouded with brownish mauve.

Hindwing white with nervures, costal and abdominal areas suffused with mouse-grey.

Length of forewing, 16 mm.; expanse, 37 mm.

1 ♂ Sidi-bel-Abbès, May 1918 (M. Rotrou); 1 ♂ Oran, April 1913 (W. R. and E. H.).

111. **Euxoa constanti** (Mill.).

*Agrotis constanti* Millière, *Icon.* vol. i. p. 165. pl. 9. ff. 1, 2 (1860) (Ardèche).

This species is very rare in Algeria. I have only 5 Mauretanian examples.

1 ♂ Guelt-es-Stel, October 1912 (Victor Faroult); 4 ♂♂ Environs de Batna, October 1912–1914 (A. Nelva coll.).

112. **Euxoa eos** (Oberth.).

*Agrotis constanti eos* Oberthür, *Etud. Lépid. Comp.* fasc. vii. p. 672. pl. exci. Nos. 1841, 1847 (1913) (Aflou).

This species was supposed to be the Algerian representative of *constanti*, but Mr. Oberthür in Fasc. xvi. altered his opinion, and accorded the insect specific rank. As I have received typical *constanti* with grey-clouded hindwings and creamy-buff forewings from Algeria, I feel sure he is right.

10 specimens Guelt-es-Stel, October 1912–1913 (V. Faroult).

113. **Euxoa christophi** (Stdgr.).

*Agrotis christophi* Staudinger, *Berl. Entom. Zeit.* 1870, p. 110 (Sarepta).

I have received 11 specimens of this species, 1 of which = *ab. lugens* Stdgr. and 1 an intermediate aberration.

6 ♂♂, 3 ♀♀ Environs de Batna, July 1911–1914 (A. Nelva coll.) ; 1 ♂ Khenchela, May 1912 (W. R. and K. J.) ; 1 ♂ Guelt-es-Stel, May 1913 (V. Faroult).

114. **Euxoa tritici** (Linn.).

*Phalaena tritici* Linnaeus, *Faun. Suec.* p. 320 (1761) (Sweden).

It is very strange to find this essentially northern insect inhabiting Southern Algeria, where however it must be very rare.

1 ♀ Metlili, N. of Laghouat, September 1917 (V. Faroult).

115. **Euxoa obelisca** (Schiff. & Den.).

*Phalaena obelisca* Schiffermüller and Denis, *Ank. Syst. Werk. Schmelt. Wienergeog.* p. 80 (1776) (Vienna).

*Euxoa obelisca* and *E. bugeaudi* are very closely allied, and when among a series of *obelisca* abnormal specimens occur, it is difficult to assign them correctly.

The Tring series contains 79 Mauretanian examples from Guelt-es-Stel, October–November 1912–1913 (V. Faroult) ; Environs de Batna and Lambessa, October 1911–1915 (A. Nelva coll.) ; Sidi-bel-Abbès, September–October 1917 (M. Rotrou) ; Forêt de Tenira, October 1918 (P. Rotrou).

116. **Euxoa bugeaudi bugeaudi** (Oberth.).

*Agrotis bugeaudi* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 94. pl. xliii. Nos. 4080, 4081 (1919) (Aflou).

The series at Tring consists of 84 specimens from Guelt-es-Stel, October 1912–1913 (V. Faroult) ; Sidi-bel-Abbès, September–October 1917 (M. Rotrou) ; Seb Dou May, Forêt de Tenira October 1918 (P. Rotrou).

117. **Euxoa bugeaudi islyana** (Oberth.).

*Agrotis bugeaudi islyana* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 95. pl. xliii. Nos. 4082, 4083 (1919) (Lambessa).

In the form from the Aurès Mts. the red colour is almost always absent, though similar grey specimens occur sporadically with the typical Central and West Algerian form.

The Tring series contains 91 Mauretanian specimens from Environs de Batna and Lambessa, 1911–1915 (A. Nelva coll.) ; El Mahouna, September 1919 (V. Faroult).

118. **Euxoa hastifera abdallah** (Oberth.).

*Agrotis hastifera abdallah* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 94. pl. xliii. Nos. 4078, 4079 (1919) (Lambessa).

I have received very few examples of this species.

5 ♂♂, 5 ♀♀ Environs de Batna and Lambessa, July–September 1910–1915 (A. Nelva and V. Faroult).

119. **Euxoa mauretanica** (Bang-Haas).

*Agrotis mauretanica* Bang-Haas, *Iris*, vol. xxiv. p. 36. pl. iii. f. 4 (1910) (Sud Oranais).

The series from Algeria at Tring contains 324 specimens from Tilghemt, April 1912 (V. Faroult); Ghardaïa, April 1911 (W. R. and E. H.); Bou Saada, April 1912 (V. Faroult); Oued Nça, April 1914 (Hartert and Hilgert).

In the British Museum are 1 ♂, 1 ♀ South Oran, Staudinger and Bang-Haas.

120. **Euxoa robiginosa** (Stdgr.).

*Agrotis robiginosa* Staudinger, *Iris*, vol. vii. p. 271 (1894) (Palestine).

Of this very rare insect I have received 1 specimen from Algeria. (1 ♂ from Palestine is in the British Museum and 1 ♀ at Tring from the same country).

1 ♂ Environs de Batna (A. Nelva coll.). This is unique from Mauretania.

121. **Euxoa powelli** (Oberth.).

*Agrotis powelli* Oberthür, *Etud. Lépid. Comp.* fasc. vi. p. 334. pl. cxxviii. ff. 1146, 1147 (1912) (Géryville).

I have 11 Algerian specimens.

1 ♂, 10 ♀♀ from Guelt-es-Stel, May 1913 (V. Faroult); Aïn Sefra, May 1913 (W. R. and E. H.); Oued Hamidou, June 1912 (V. Faroult).

122. **Euxoa cursoria** (Hüfn.).

*Phalaena cursoria* Hüfnagel, *Berl. Mag.* vol. iii. p. 416 (1766).

Of this species also I have received a single specimen, unique for Mauretania.

1 ♀ Bou Saada, May 1912 (V. Faroult).

[**Euxoa distinguenda** (Led.).

*Agrotis distinguenda* Lederer, *Noct. Eur.* p. 221 (1857) (Wallis and Altai).

I have not received this species from Mauretania. Mr. Oberthür records it from Lambessa.]

123. **Euxoa oranaria** (Bang-Haas).

*Agrotis oranaria* Bang-Haas, *Iris*, vol. xix. p. 133. pl. 5. f. 9 (1906) (Sud Oranais).

This is an extremely abundant and variable species.

The series at Tring numbers 1,084 from Guelt-es-Stel, April—June 1913 (V. Faroult); Bou Saada, March—May 1912 (V. Faroult); Aïn Sefra, May 1913—1915 (W. R. and E. H., and V. Faroult); Ghardaïa and Oued Nça, May—June 1912 (Hartert and Hilgert); El Mesrane June 1913, Tilghemt April 1912, Mecheria June 1918 (V. Faroult); Khenchela, May 1912 (W. R. and K. J.).

123a. **Epipsilia simulatrix** (Gey.).

*Noctua simulatrix* Hübner-Geyer, *Samml. Europ. Schmett. Noct.* f. 712.

I have only received two of this species from Mauretania. Mr. Oberthür records it from Bône under the name of *nictymera* Boisdu.

1 ♂, 1 ♀ El Mahouna, May 1919 (V. Faroult).

124. **Euxoa lucipeta** (Schiff. & Den.).

*Phalaena lucipeta* Schiffermüller and Denis, *Auk. Syst. Werk. Schmett. Wien Geg.* p. 71 (1775) (Vienna).

I possess only 1 ♀ of this species taken by myself.

1 ♀ Blida les Glacières, June 1908 (W. R. and K. J.).

125. **Lycophotia photophila** (Guen.).

*Agrotis photophila* Guenée, *Hist. Nat. Ins. Lépid.* vol. v. *Noct.* vol. i. p. 302 (1852) (Bône).

Guenée described this insect from a ♀, so if *ignipeta* Oberth. is really distinct it must always remain doubtful which of the two is the true *photophila*.

The series at Tring consists of 101 specimens. 42 ♂♂, 48 ♀♀ Ain Sefra, May—June, 1913–1915 (W. R. and E. H., and Faroult); 1 ♂ Msila, May 1915 (V. Faroult); 10 ♂♂ Oued Nça, April 1914 (Hartert and Hilgert).  
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[**Lycophotisa ignipeta** (Oberth.).

*Agrotis ignipeta* Oberthür, *Etud. Entom.* fasc. i. p. 45. pl. 4. f. 4 (1876) (El-May).

Mr. Oberthür and Mr. Culot describe this insect as having a similar wing pattern to *photophila*, but differing in the male in having the basal half of the antennae strongly pectinated; while the ♂ of *photophila* has simple cylindrical antennae. I have no specimen agreeing with this description, and from Mr. Oberthür's statement (*Etud. Lépid. Comp.* fasc. xvi. p. 98) he appears only to possess the ♂ type captured at El-May by M. Warion in 1868.]

126. **Euxoa celsicola gueddelanea** (Oberth.).

*Agrotis celsicola* var. *gueddelanea* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 99. pl. xdi. f. 4084 (1919) (Djebel Gueddelane, Lambessa).

I have only one pair of specimens from Algeria, but these are very much larger than any of the 65 specimens taken by myself and Dr. Jordan in 1908 at La Grave and Le Lautaret in the Hautes Alpes.

Expanse, 45 mm.; largest specimen from Le Lautaret, 37 mm.

1 ♂, 1 ♀ Sebdou, July 1918 (P. Rotrou).

127. **Euxoa kaaba** (Oberth.).

*Agrotis kaaba* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. pp. 99. pl. xdi. Nos. 4085, 4086 (1919) (Géryville).

I have one ♀, which however is not so dark as the ♀ figured by Oberthür and has the hindwings as in his ♂.

1 ♀ Batna (Nelva coll.).

128. **Euxoa radius radius** (Haw.).

*Bombyx radius* Haworth, *Lep. Brit.* p. 119 (1803).

This insect, which is exceedingly abundant in Mauretania, appears in two local subspecies, *radius radius* Haw. in Central and West Algeria and *radius erythroxylea* Treit. in Tunisia and East Algeria.

Our series of *radius radius* contains 700 specimens from Algeria and Morocco, from Biskra, February—April 1908–1916 (W. R. and E. H., and Faroult); Bir

Djefair, south of Biskra, March 1909 (W. R. and E. H.) ; Environs d'Alger (Dr. Nissen) ; Mazagan and neighbourhood, Morocco, February—March 1902–1903 (W. Riegenbach) ; Bir Setil, south of Biskra, March 1917 (V. Faroult) ; Bordj Chegga, March 1917 (V. Faroult) ; Environs de Setif, 1911 (V. Faroult) ; Environs de Batna (Nelva coll.) ; El Mesrane November, Guelt-es-Stel April—November 1912–1913 (W. R. and K. J., and Faroult) ; Lalla Marnia March—April, Oudjda and Zoudj-el-Beghal, Morocco, November 1914 (V. Faroult) ; Sidi-bel-Abbès, September, October 1917 (M. Rotrou) ; Bou Saada March—May, Tilghemt April 1912, Aflou October 1916 (V. Faroult) ; Perrégaux, October 1915 (V. Faroult) ; Sebdou, May 1918 (P. Rotrou).

### 129. *Euxoa radius erythroxylea* (Treit.).

*Noctua erythroxylea* Treitschke, *Schmett. Eur.* vol. v. pt. iii. p. 31 (1825).

This insect which is a fixed local subspecies in Tunisia appears also sporadically as an aberration in Algeria, and in Sidi-bel-Abbès is the prevailing form. I have 26 specimens from Sidi-bel-Abbès, of which 21 are *erythroxylea*, 1 intermediate and 4 typical *radius*.

*Euxoa radius erythroxylea* comes as sole form as far west as Hammam Meskoutine, is the prevailing form at Batna, and occurs sporadically in other parts of Algeria. I have none from Morocco, all mine from there being *r. radius*.

The series at Tring from Aïn Draham to Hammam Meskoutine contains 150 specimens as follows: 113 Aïn Draham, September 1911 (Victor Faroult) ; 19 Souk Ahras April, 5 Hammam Meskoutine April 1914 (W. R. and K. J.) ; 13 El Mahouna, September 1919 (V. Faroult).

In addition to these we have at Tring sporadic specimens of this form as follows: 5 Batna (Nelva coll.) ; 1 Environs d'Alger, April 1913 (W. R. and E. H.) ; 1 Hammam R'hira, April 1912 (W. R. and K. J.) ; 2 Perrégaux, October 1915 (V. Faroult) ; 21 Sidi-bel-Abbès, September—October 1917 (M. Rotrou).

From Oran we have 5 ♀♀ of gigantic size and of the black aberration, which for the present I will name ab. **major** ab. nov. Length of forewing, 20 mm. ; expanse, 46 mm. Length of largest ♀ *erythroxylea*, 17 mm. ; expanse, 39 mm.

5 ♀♀ Oran Town, April 1913 (W. R. and E. H.).

Both in *radius radius* and *radius erythroxylea* the aberration with black-brown forewings occurs commonly.

### 130. *Euxoa imperator* (Bang-Haas).

*Agrotis imperator* Bang-Haas, *Iris*, vol. xxvi. p. 142. pl. vi. f. 6 (1912) (Biskra).

This fine species Mr. Oberthür considers an exaggerated form of *melunura* Koll. This is not the case, as *imperator* is a true *Euxoa* while *melanura* is a true *Agrotis* sensu Hampson and therefore widely separated.

We never found this species very abundant, and most of the material at Tring is Central Saharan.

We have 38 specimens from Aïn Sefra, May 1913 (W. R. and E. H.) ; Bou Saada May, Djebel Kerdada May 1911–1912 (V. Faroult) ; Biskra (Staudinger) ; north of El Golea May, Oued el Far, south of Fort Miribel May, South Oued Mya May, Central Sahara, 1912 (Hartert and Hilgert).

In the British Museum is 1 ♂ Constantine, Staudinger and Bang-Haas.



131. *Agrotis nona* Oberth.

*Agrotis nona* Oberthür, *Etud. Lépid. Comp.* fasc. vii. p. 62. pl. exci. ff. 1840, 1846 (1913) (Afon).

I have only received this from Guelt-es-Stel.

33 Guelt-es-Stel, October—November 1913 (V. Faroult).

[*Epilecta linogrisea lutosa* (Stdgr.).

*Agrotis linogrisea* var. *lutosa* Staudinger and Rebel, *Cat. Lepid. Pal.* edit. iii. p. 135 (1901) (Andalusia).

I have never received this species from Mauretania. Mr. Oberthür received 1 specimen from Khenchela.]

132. *Agrotis orbona* (Hüfn.).

*Phalaena orbona* Hüfnagel, *Berl. Mag.* vol. iii. p. 304 (1767) (Berlin).

There is considerable confusion in our literature in connection with the two closely allied species we now call *Agrotis orbona* (Hüfn.) and *Agrotis comes* (Treitr.). This confusion has arisen because **both species** have received the names *orbona* and *subsequa*. *A. orbona* (Hüfn.) was called *subsequa* by Schiffermüller in the *Wiener Verzeichniss* (1775); *A. comes* (Treit.) was called *orbona* by Fabricius in the *Mantissa Insectorum* (1787) and *subsequa* by Esper in the *Schmetterlinge Europas* (1786). Guenée quotes Rottemburg, *Naturforscher*, vol. ix. (1776), as the author of his *orbona*, and as Rottemburg, in the place quoted, was criticising Hüfnagel's work, *orbona* of Guenée is certainly true *orbona* Hüfn.; while his *subsequa* and *consequa* appear doubtful. Mr. Oberthür, however, appears to have applied the name of *orbona* Rott.-Guen. to *comes*, if we may judge by the localities he gives and from his having many variable specimens; for while I have 31 specimens of *comes* from Mauretania from a number of localities, I have only **two** true *orbona* with the conspicuous black subapical spot.

1 ♂ Guelt-es-Stel, October 1913 (V. Faroult); 1 ♂ El Mahouna, September 1919 (V. Faroult).

133. *Agrotis comes* (Treit.).

*Noctua comes* Treitschke, *Schmett. Eur.* vol. v. pt. i. p. 254 (1825).

*Triphaena orbona* Oberthür (nec Hüfnagel), *Etud. Lépid. Comp.* fasc. xvi. p. 101 (1919) (Ain Draham, Lambessa).

This is much the more common of the two species, in fact after *pronuba* it is the commonest of the 6 "Yellow Underwings" found in Algeria.

The Mauretanian series at Tring consists of 32 specimens from Guelt-es-Stel, October—November 1912–1913 (V. Faroult); Ain Draham and Tunis August—September 1911, Hammam R'hira June, north side of Djebel Zaccar August 1916 (V. Faroult); Batna (Nelva coll.); Sidi-bel-Abbès, June—September 1917 (M. Rotrou); Sebdom, June 1918 (P. Rotrou).

Mr. Warren calls *orbona* Hüfn. *subsequa* Schiff. and *comes* Treit. *orbona* Hüfn. in *Seitz Grossschmetterlinge der Erde*.

134. *Agrotis pronuba* (Linn.).

*Phalaena pronuba* Linnaeus, *Syst. Nat.* edit. x. p. 512 (1758) (Sweden).

This is very common in some parts of Mauretania, and as variable as in Europe.

The Mauretanian series at Tring comprises 211 specimens from Guelt-es-Stel, April—October 1912–1913 (V. Faroult); Environs de Batna, June—October 1911–1914 (Nelva coll.); Environs d'Alger, May 1908 (W. R. and E. H.); Hammam R'hira May—July 1916, Aïn Draham August—October 1911, El Hamel May 1912, Oued Hamidou June 1912, Bordj-ben-Anéridj October 1912, Bou Saada May 1912, Boghari May 1913, Tilghemt April 1912, Sidi Bou Médine June 1917 (Victor Faroult); Khenchela, May 1912 (W. R. and K. J.); Oran Town, April 1913 (W. R. and E. H.); Sidi-bel-Abbès June—September 1916–1918, Titen Yaya June 1915 (M. Rotrou); Lalla Marnia, December 1914 (V. Faroult); Mazagan, Morocco, October 1902 (W. Riggensbach); Sebdo, June 1916 (P. Rotrou); Aflou, October 1916 (V. Faroult); El Aoudj, July 1918 (P. Rotrou); El Mahouna, September 1919 (V. Faroult).

In the British Museum is 1 ♀ El Kantara, April 1913, P. A. Buxton.

135. *Triphaena janthina intermedia* subsp. nov.

Mr. Oberthür records specimens from Marseilles intermediate between typical *janthina* and his *janthina algerica*, and I have such specimens collected by Georg Krüger in Sicily. Mr. Oberthür also records a worn specimen from Lambessa of this intermediate race approaching nearest to *j. janthina*.

I have 11 specimens from Sidi-bel-Abbès which in size and marking of forewings are similar to *j. janthina* ab. *rufa* Tutt, but the hindwings have a much narrower black border, though not quite so narrow as in *j. algerica*. I therefore describe this intermediate race as *janthina intermedia*.

3 ♂♂, 7 ♀♀ Sidi-bel-Abbès, August—September 1916–1917 (M. Rotrou); 1 ♂ Aïn Draham (V. Faroult).

[*Triphaena janthina algerica* Oberth.

*Triphaena janthina* var. *algerica* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 102. pl. xdiii. f. 4087 (1919) (Alger).

I have no specimen of this form.]

136. *Triphaena fimbria* (Linn.).

*Phalaena fimbria* Linnaeus, *Syst. Nat.* edit. xii. p. 842 (1767).

I have only received two ♂♂ specimens of this insect.

1 ♂ Aïn Draham, July 1911 (V. Faroult); 1 ♂ Aïn El-Berd, September 1918 (P. Rotrou).

137. *Agrotis c. nigrum* (Linn.).

*Phalaena c. nigrum* Linnaeus, *Syst. Nat.* edit. x. p. 516 (1758) (Sweden).

I have not found this so rare in Algeria as Mr. Oberthür believes it to be.

Our Mauretanian series at Tring consists of 119 specimens from Blida les Glacières, June 1908 (W. R. and K. J.); Hammam R'hira, May—June 1908–1916

(W. R. and K. J., and Faroult) ; Environs d'Alger, March—May 1906–1911 (W. R. and K. J. and E. H., and Dr. Nissen) ; Djebel Zaccar, Mihana, June 1916 (Victor Faroult) ; Blida February 1916, Oued Hamidou June 1912 (V. Faroult) ; Sidi-bel-Abbès, September 1917 (M. Rotrou) ; Forêt de Tenira, June 1918 (P. Rotrou) ; Aïn Draham, July—October 1911 ; Masser Mines, June 1914 (V. Faroult) ; El Mahouna, June 1919 (V. Faroult).

138. *Agrotis flammatra* (Schiff. & Den.).

*Phalaena flammatra* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 80 (1775) (Vienna).

Our series at Tring from Mauretania is small : 12 specimens from Aïn Sefra, May 1913 (W. R. and E. H.) ; Seb dou, June 1918 (P. Rotrou) ; Mecheria June 1918, Djebel Aïssa May 1915 (Victor Faroult) ; Guelt-es-Stel, October 1913 (Faroult).

139. *Agrotis leucogaster* (Frr.).

*Noctua leucogaster* Freyer, *Neue Beitr. Schmett.* vol. i. p. 38. pl. 21 (1831) (Prag).

Of this species I have received 7 specimens from Tunisia.

4 ♂♂, 3 ♀♀ Aïn Draham, August—September 1911 (V. Faroult).

Mr. Oberthür does not record it.

140. *Agrotis nisseni* Rothschild. (Pl. XVII. f. 18.)

*Agrotis nisseni* Rothschild, *Novit. Zool.* vol. xix. p. 125. No. 2 (1912) (Aïn Draham).

This fine large species appears to be very rare. Besides my 4 specimens, I know of only one other sent for identification to Sir George Hampson by Herr Püngler of Aachen. This species is nearest to *atlantica* Warr., but the ground-colour is entirely grey and wood-brown, **not** red and olive as in *atlantica*.

1 ♂, 2 ♀♀ Aïn Draham September 1911, 1 ♀ Guelt-es-Stel October 1913 (Victor Faroult).

141. *Agrotis auguroides* Rothschild. (Pl. XVII. f. 17.)

*Agrotis auguroides* Rothschild, *Novit. Zool.* vol. xxi. p. 320. No. 92 (1914) (Guelt-es-Stel).

The type has remained unique.

1 ♂ Guelt-es-Stel, April 1912 (W. R. & K. J.).

142. *Agrotis xanthographa* (Schiff. & Den.).

*Phalaena xanthographa* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 83 (1775) (Vienna).

A common insect.

I have 360 Mauretanian examples from Aïn Draham, September 1911 (V. Faroult) ; Batna, September—October 1912–1914 (Nelva coll.) ; Perrégaux, October 1915 (V. Faroult) ; Sidi-bel-Abbès, September 1917 (M. Rotrou) ; Forêt de Tenira, September 1918 (P. Rotrou) ; El Mahouna, September 1919 (V. Faroult).



[*Lycophotia margaritacea* (Vill.).]

*Noctua margaritacea* de Villers, *Linn. Entom. Faun. Suec. Descr.* vol. ii. p. 272. No. 340. pl. 5. f. 16 (1789) (Europe).

I have not received any insect agreeing with *margaritacea*, but Mr. Oberthür states that the insects he places under this name are more slaty coloured and are therefore duskier than European *margaritacea*. I am almost convinced that he has wrongly identified the specimens, and that he really has examples of the insect I named *Euxoa lycophotioides*, and which Sir George Hampson has examined and places in the genus *Epipsilia*. If this is so, and I am tolerably certain it is, then *Lycophotia margaritacea* does **not** occur in Algeria, and the insect so-called by Mr. Oberthür is *Epipsilia lycophotioides* Rothsch.]

143. *Epipsilia lycophotioides* (Rothsch.). (Pl. XVII. ff. 28, 29.)

*Euxoa lycophotioides* Rothschild, *Novit. Zool.* vol. xxi. p. 319. No. 81 (1914) (Guelt-es-Stel).

I have not received this species from any other locality.

15 ♂♂ Guelt-es-Stel, October 1912–1913 (V. Faroult).

144. *Agrotis praecipuina* (Rothsch.). (Pl. XVII. f. 9.)

*Epipsilia praecipuina* Rothschild, *Novit. Zool.* vol. xxi. p. 321. No. 97 (1914) (Guelt-es-Stel).

I have only received 8 specimens in all of this species which at first sight **looks** like a *xanthographa* washed all over with bright rufous.

1 ♂ Guelt-es-Stel, September 1913 (V. Faroult); 3 ♂♂, 1 ♀ Aïn Draham, September 1911 (V. Faroult); 3 ♂♂ Sidi-bel-Abbès, September 1917 (M. Rotrou).

145. *Epipsilia faceta* (Treit.).

*Noctua faceta* Treitschke, *Schmett. Eur.* vol. x. pt. ii. p. 35 (1835).

The Tring series contains 91 Mauretanian specimens from Environs d'Alger, January–December 1906–1912 (W. R., E. H., Dr. Nissen, Captain Holl, and Faroult); Hammam R'hira February 1918, Blida February 1916 (V. Faroult); Rabat (A. Théry).

In the British Museum are 2 ♂♂ Tangier; 1 ♂ Mauretania, Staudinger and Bang-Haas; 1 ♀ Hammam Meskoutine, March 1911, Meade Waldo.

146. *Amathes witzenmanni* (Standf.).

*Orthosia witzenmanni* Standfuss, *Mitth. Schweiz. Entom. Gesell.* vol. viii. p. 233 (1890) (Digne).

I have very few specimens of this fine species, 10 ♂♂, 5 ♀♀, of which 6 ♂♂ are ab. *plumbina* Tnr., 2 ♂♂, 2 ♀♀ ab. *griseola* Rothsch., 2 ♂♂, 2 ♀♀ ab. *castanea* Rothsch., and 1 ♀ dark grey entirely suffused with vinous red which I name ab. *griseovinosa* ab. nov.

7 ♂♂ Environs de Batna, 1911–1914 (Nelva coll.); 3 ♂♂, 5 ♀♀ Guelt-es-Stel, October–November 1912–1913 (V. Faroult). I have not any of the ab. *vinosa* Oberth.

147. *Monima stabilis* (Schiff. & Den.).

*Phalaena stabilis* Schiffermüller and Denis, *Ank. Syst. Werk. Schmelt. Wienergeg.* p. 76 (1775) (Vienna).

I have only 1 Algerian specimen of this species, which appears to be very rare in Mauretania.

1 ♂ Environs d'Alger, March 30th, 1911 (W. R. and E. H.).

[*Monima cruda* (Schiff. & Den.).

*Phalaena cruda* Schiffermüller and Denis, *Ank. Syst. Werk. Schmelt. Wienergeg.* p. 77 (1775) (Vienna).

I have no Mauretanian examples of this species. Mr. Oberthür records it from Lambessa.]

148. *Amathes ruticilla* (Esp.).

*Noctua ruticilla* Esper, *Schmett.* pt. iv. vol. ii. p. 525. No. 220. pl. clvii. (*Noct.* 78) f. 1. (1791) (Florence).

I have received very few of this species.

6 ♂♂, 4 ♀♀ Environs de Batna, 1913-1914 (Nelva coll.).

149. *Amathes lychnidis* (Schiff. & Den.).

*Phalaena lychnidis* Schiffermüller and Denis, *Ank. Syst. Werk. Schmelt. Wienergeg.* p. 76 (1775) (Vienna).

*Phalaena pistacina* Schiffermüller and Denis, *Ank. Syst. Werk. Schmelt. Wienergeg.* p. 77 (1775) (Vienna).

I have 29 Mauretanian specimens from Environs de Batna, 1910-1914 (A. Nelva and V. Faroult); Hammam R'hira, February-June 1918 (V. Faroult); Sidi-bel-Abbès, June 1918 (M. Rotrou); Environs d'Alger, January 1911 (W. R. and E. H.); Blida, December 1915 (Faroult). 1 specimen is ab. *coerulescens* Calb.

150. *Amathes lota* (Linn.)

*Phalaena lota* Linnaeus, *Syst. Nat.* edit. x. p. 513 (1758).

Of this species the Mauretanian examples at Tring number 19 from Batna. 12 ♂♂, 5 ♀♀ Environs de Batna, October 1910-1914 (A. Nelva and V. Faroult); 1 ♂ Blida February 1916, 1 ♀ Aflou October 1916 (V. Faroult).

151. *Amathes macilenta* (Haw.).

*Noctua macilenta* Haworth, *Lepid. Brit.* p. 239 (1809).

I have received 1 specimen of this species.

1 ♀ Aflou, October 21st, 1916 (V. Faroult).

152. *Sidemia fissipuncta oberthuri* subsp. nov.

This is the insect Mr. Oberthür has treated of as *Orthosia ypsilon* Schiff., but *ypsilon* Schiff. being preoccupied by *ypsilon* Rott., Haworth's name *fissipuncta* is the correct appellation. I have it treated as a subspecies at present, but believe it will prove a distinct species. Mr. Oberthür says that the Algerian form appears to be very pale in colour and have the pattern much effaced; but that he has too few specimens to confirm this.

The series from Algeria at Tring consists of 63 specimens, 20 from East Algeria and 43 from West Algeria, and they are very distinct from European and British examples.

♂ ♀ differs from *fissipuncta fissipuncta* in being much paler, in the markings being less pronounced, in the submarginal band being much straighter and less sinuate, and in the postmedial band being well developed in most specimens and much nearer the reniform.

14 ♂♂, 16 ♀♀ Environs de Batna, 1911–1912 (A. Nelva coll.); 17 ♂♂, 18 ♀♀ Sidi-bel-Abbès and Les Trembles, April–July 1914–1918 (M. Rotrou); 2 ♂♂, 5 ♀♀ Sebdou and Forêt de Tenira, May–June 1918 (P. Rotrou); 1 ♂ Lalla Marnia, April 1914 (V. Faroult).

Type ♀ Sidi-bel-Abbès.

### 153. *Omphaloscelis lunosa* (Haw.).

*Noctua lunosa* Haworth, *Lepid. Brit.* p. 230 (1809).

I have received very few Mauretanian examples of this species.

1 ♂, 4 ♀♀ Guelt-es-Stel, October–November 1913 (V. Faroult); 5 ♂♂, 1 ♀ El Mesrane November 1913, 3 ♂♂, 1 ♀ Aflou October 1916 (V. Faroult).

### [*Amathes haematidea* (Dup.).

*Noctua haematidea* Duponchel, *Lepid. France*, vol. vii. p. 365. pl. 122. f. 5 (1827) (France).

I have no Mauretanian examples.]

### [*Amathes litura* (Linn.).

*Phalaena litura* Linnaeus, *Faun. Suec.* edit. ii. p. 320 (1761) (Sweden).

Also of this species I have no specimens from Mauretania.]

### 154. *Amathes helvola* (Linn.).

*Phalaena helvola* Linnaeus, *Syst. Nat.* edit. x. p. 507 (1758) (Finland).

*Phalaena rufina* Schiffermüller and Denis, *Ank. Syst. Werk. Schmelt. Wienergeg.* p. 86 (1775) (Vienna).

Guenée, and consequently Oberthür also, attributes the name *rufina* to Linnaeus and quotes "**S. N. 72.**" What this reference means I have been unable to trace, nor can I find any such name as *rufina* in Linnaeus. *Rufina* Schiffermüller is described in the *Wiener Verzeichniss*, 1775, so is much later than Linnaeus' *helvola* 1758.

I have 2 ♀♀ from Algeria of the red form.

2 ♀♀ Environs de Batna, 1913–1914 (Nelva coll.).

### 155. *Amathes lucida* (Hüfn.).

*Phalaena lucida* Hüfnagel, *Berl. Mag.* vol. iii. p. 302 (1767).

The name *nitida* Schiff., used by Mr. Oberthür, was published in 1775, eight years later than Hüfnagel's *lucida*.

I have 2 Algerian specimens.

1 ♂ Hammam R'hira, February 1918 (V. Faroult); 1 ♀ Environs de Batna, 1913–1914 (A. Nelva coll.).

[*Conistra silene* (Schiff. & Den.).

*Phalaena silene* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 85 (1775) (Vienna).

I have not received this insect from Mauretania.]

[*Conistra veronicae* (Hübner).]

*Noctua veronicae* Hübner, *Samml. Europ. Schmett. Noct. f.* 541 (1827).

This also is not in the Tring Museum from Mauretania.]

[*Conistra erythrocephala* (Schiff. & Den.).]

*Phalaena erythrocephala* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 77 (1775) (Vienna).

Again this species has never come to hand from Mauretania.]

156. *Conistra vaccinii sebdouensis* (Aust.).

*Orrhodia sebdouensis* Austaut, *Lc Natur.* 1880. p. 221 (Sebdou).

The Algerian race, although just as variable as the European and British *vaccinii vaccinii*, is constantly different and is a well separated subspecies.

I have 27 Algerian specimens from Environs de Batna, October 1910–1914 (A. Nelva and V. Faroult).

[*Xantholeuca croceago* (Schiff. & Den.).]

*Phalaena croceago* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 86 (1775) (Vienna).

This species we have not received.]

157. *Cosmia austauti* (Oberth.).

*Xanthia austauti* Oberthür, *Etud. Entom.* fasc. vi. p. 87. pl. 1. f. 3 (1881) (Sidi-bel-Abbès).

Sir George Hampson unites this with *palleago* Hübner, but I consider it a distinct species; it differs at first sight from *palleago* by the much rounder and blunter apex of the forewings, in fact its shape is much more that of *gilvago* Schiff.

This is very variable indeed, and the following aberrations have names; pale nankeen as in type, but pattern heavy and brownish = ab. *monilifera* Culot; orange-cinnamon with heavy sooty pattern = ab. *batnensis* Culot; rosy cinnamon or rufous cinnamon, pattern not heavy = ab. *algerica* B.-H. (1912) = *rosina* Culot (1914).

Our Mauretanian series at Tring numbers 216, from Environs de Batna, October 1909–1914 (A. Nelva, Faroult, and Staudinger); Bou Saada March 1912, Aflou October 1916, Lalla Marnia November 1914 (Victor Faroult); Forêt de Tenira, October 1918 (P. Rotrou); Sidi-bel-Abbès, September 1917 (M. Rotrou); Bordj-ben-Anéridj, October 1912 (V. Faroult); Medjes October 1911, Aflou October 1916 (V. Faroult); Guelt-es-Stel, November 1913 (V. Faroult).

The British Museum has 2 ♂♂, 2 ♀♀ Batna, Staudinger and Bang-Haas.

158. *Cymatophora algerica* (Culot).

*Cirrhoedia algerica* Culot, *Noct. et Géom. d'Eur.* pt. i. vol. ii. p. 76. pl. 53. f. 1. (1914) (Lambessa).

I have of this Mauretanian species 46 specimens—viz. 25 Sidi-bel-Abbès, October 1917 (M. Rotrou); 1 ♂ Batna (Staudinger); 19 Forêt de Tenira October, 1 Sebdu September 1918 (P. Rotrou).

The latter specimen was sent out as *Cirrh. pallida* var.; *pallida* Stdgr. is quite a different insect from Asia Minor and has pure white hindwings.

[*Enargia ulicis* Stdgr. and its allies. Mr. Oberthür makes all the forms of *Enargia*, occurring in Algeria, forms of one species, *ulicis* Stdgr. Sir George Hampson, on the other hand, makes them out to be 3 good species. It is very difficult to decide this question, because it is complicated by the occurrence of 3 distinct colour groups in each form: (1) Yellowish ochre grey = ab. *griseo-olivacea* Culot. (Form 2) Salmon to deep brick-red = ab. *rufa* Culot. (Form 3) Brown to black-brown = ab. *brunnea* Culot. I consider therefore my series too small to decide these points, and shall for the present follow Sir George Hampson and treat them as 3 species.]

159. *Enargia ulicis* (Stdgr.).

*Cosmia ulicis* Staudinger, *Stett. Entom. Zeit.* 1859. p. 214 (Granada).

1 ♀ from Guelt-es-Stel (V. Faroult); 2 ♂♂, 6 ♀♀ El Mahouna, September 1919 (V. Faroult).

160. *Enargia regina* (Stdgr.).

*Cosmia regina* Staudinger, *Iris*, vol. iv. p. 297. pl. 4. f. 2 (1892) (Asia Minor).

I have 1 ♀ very large and typical from Aïn Draham, September 1911 (V. Faroult).

The British Museum has 1 ♀ Le Tarf, D. Lucas.

161. *Enargia algerica* Culot.

*Enargia algerica* Culot, *Noct. et Géom. d'Eur.* p. 73. pl. 52. ff. 9, 10 (f. 8 appears to be an aberrant *regina*) (August 1914) (Lambessa).

*Amathes rufescentior* Rothschild, *Novit. Zool.* vol. xxi. p. 331. No. 163 (October 1914) (Guelt-es-Stel).

The Tring series consists of 20 ♂♂, 18 ♀♀: 3 ♂♂ Batna, September 1913 (Nelva coll.); 1 ♀ Lambessa, 1912 (Nelva coll.); 15 ♂♂, 15 ♀♀ Guelt-es-Stel May 1913, 1 ♂ Aïn Draham September 1911 (V. Faroult); 1 ♂, 2 ♀♀ El Mahouna, September 1919 (V. Faroult).

2 ♂♂, 1 ♀ are the ab. *griseo-olivacea* Culot, and 1 ♂, 2 ♀♀ are the ab. *ruberrima* Rothschild.

The British Museum has 2 ♂♂, 2 ♀♀ Guelt-es-Stel ex Tring Museum.

162. *Enargia jordani* sp. nov. (Pl. XVII. f. 27.)

Nearest allied to *borjomensis* Stdgr., but differs in the orbicular and reniform being both strongly developed. It also differs at a glance in the antennae being so strongly serrate as to be almost pectinated while the ♀♀ of all the other species have simple antennae.



♀. Antennae rufous brown; head and thorax rufous cinnamon; abdomen whitish grey, freckled heavily with black scales.

Forewings rufous cinnamon, freckled with black scales; antemedian line not strongly marked, reniform and orbicular very large, dark brown, postmedian line clearly defined and well marked sinuate and strongly dentate; fringe entirely rufous cinnamon **not** edged with black as in *ulicis* and allies. Hindwing dull white; a minute black stigma and a median sinuate angulate pale cinnamon line.

Length of forewing, 18 mm.; expanse, 41 mm.

1 ♀ Souk Ahras, April 15th, 1914 (W. R. and K. J.).

163. *Miselia luteago* (Schiff. & Den.).

*Phalaena luteago* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 86 (1775) (Vienna).  
(In *Cat. Brit. Mus. as Polia*.)

I have only two Mauretanian specimens. 2 ♀♀ Hammam R'hira, May 1916 (V. Faroult).

164. *Hydroecia xanthenes orientalis* (Oberth.).

*Jortyna xanthenes* var. *orientalis* Oberthür, *Étud. Lépid. Comp.* fasc. xvi. p. 127. pl. xdv. f. 4105 (1919) (Batna).

Most of my specimens are much paler than the figured type.

I have 12 Mauretanian specimens: 3 ♂♂, 5 ♀♀ Lamberidi nr. Batna October 1910, 1 ♂ Bordj-ben-Anéridj October 1912, 1 ♂ Aïn Draham October 1911, 1 ♂ Hammam R'hira February 1918, 1 ♀ Blida November 1915 (Victor Faroult). Most of the specimens are very large, especially the ♀♀, considerably larger than European specimens.

165. *Epipsilia straminea* (Rothsch.). (Pl. XVII. f. 10.)

*Euxoa straminea* Rothschild, *Novit. Zool.* vol. xxi. p. 318. No. 80 (1914) (Guelts-es-Stel).

2 ♂♂ Guelts-es-Stel, October 1912 (V. Faroult).

166. *Parastichtis monoglypha* (Hüfn.).

*Phalaena monoglypha* Hüfnagel, *Berl. Mag.* vol. iii. p. 308 (1767) (Berlin).

The Tring series from Mauretania is very small, 13 ♂♂, 9 ♀♀: 11 ♂♂, 4 ♀♀ Batna 1909 (A. Nelva coll.); 1 ♂, 3 ♀♀ Hammam R'hira April—May 1917, 1 ♀ Bordj-ben-Anéridj October 1912 (V. Faroult); 1 ♂, 1 ♀ El Mahouna, July 1919 (V. Faroult).

167. *Pseudohadena chenopodiphaga* (Ramb.).

*Mamestra chenopodiphaga* Rambur, *Ann. Soc. Entom. France*, vol. i. p. 283. pl. 9. i. 7 (1832) (Corsica).

The Mauretanian series at Tring consists of 67 specimens from Guelts-es-Stel, April—November 1914 (W. R. and K. J., and Faroult); Bordj Ferjan and Bordj Mecht-el-Kaid, east of Touggourt, April 1909 (W. R. and E. H.); Bou Saada and Tilghemt April—May 1912, Aïn Sefra May 1915, El Mesrane May 1913, Biskra May 1910 (Victor Faroult); Khenchela, May 1912 (W. R. and K. J.); north of El Golca, March 1912 (Hartert and Hilgert); Mecheria, May 1918 (Faroult).

The ab. *crubescens* Stdgr. occurs all over Algeria amongst the type, but most frequently in the south.

The British Museum has 1 ♂ Hammam-es-Salahin, April 1904, Lord Walsingham.

168. ***Pseudohadena roseonitens*** (Oberth.).

*Mamestra roseonitens* Oberthür, *Bull. Soc. Entom. France*, 1887. p. 49 (Biskra).

Of this fine insect I have 12 specimens from Khenchela, May 1912 (W. R. and K. J.); Bou Saada, May 1911 (V. Faroult); Biskra (Staudinger); Bordj Chegga, S. of Biskra and Zaatscha, W. of Biskra, April 1909 (W. R. and E. H.).

169. ***Saragossa seeboldi arabum*** Culot.

*Saragossa seeboldi* var. *arabum* Culot, *Noct. et Géom. d'Eur.* pt. i. vol. i. p. 112. pl. 19. f. 12 (1911) (Sebdou).

Of this very rare species I have only 5 Algerian specimens.

1 ♂ Batna (Nelva coll.); 1 ♀ Guelt-es-Stel, September 1913 (W. R. and K. J.); 1 ♂, 1 ♀ Sidi-bel-Abbès, September 1917 (M. Rotrou); 1 ♂ Bou Yousuf, September 1914 (A. Nelva).

170. ***Hadula pulverata*** (B.-H.).

*Mamestra pulverata* Bang-Haas, *Iris*, vol. xx. p. 71. pl. iii. f. 8 (1907) (Gafsa).

*Polia cinnamomeogrisea* Rothschild, *Novit. Zool.* vol. xx. p. 121. No. 36 (1913) (Bordj Chegga).

The series at Tring consists of 58 specimens from Bordj Chegga, Bordj Saada, and Kef-el-Dohr, S. of Biskra, February 1912 and March 1917 (Hartert and Hilgert, and V. Faroult).

I only found out that *cinnamomeogrisea* = *pulverata* after the whole article was written.

171. ***Hadula griseola*** (Rothsch.).

*Odontelia griseola* Rothschild, *Novit. Zool.* vol. xx. p. 121. No. 37 (1913) (halfway between Ouargla and El Golea).

This insect appears to be rare; only 2 further specimens in addition to the original 5 have come to hand.

4 ♂♂ (including type of ab. *rosacca*) Mraier S. of Biskra, 1 ♂ halfway between Ouargla and El Golea February—March 1912, 1 ♂ Hassi Dinar S. of Touggourt (Hartert and Hilgert); 1 ♂ Bir Stil, S. of Biskra, March 1917 (V. Faroult).

172. ***Margelana irritaria*** (B.-Haas).

*Apamea testacea* var. *irritaria* Bang-Haas, *Iris*, vol. xxvi. p. 146 (1912) (Batna).

This insect has been much confused; Bang-Haas has placed it as a subspecies of *Palluperina testacea* Hübn., Culot does not mention it, and Oberthür places it as one of the many varieties he attributes to his *Palluperina dayensis*. Sir George Hampson, however, declares that structurally it is **not** a *Palluperina* at all, but a *Margelana*.

I have 17 ♂♂ all from Batna, including 1 co-type.

17 ♂♂ Batna, 1909–1914 (A. Nelva).

In the British Museum is 1 ♂ Batna, Staudinger and Bang-Haas.



173. *Palluperina powelli* (Culot).

*Apamea nickerlii* var. *powelli* Culot, *Noct. et Géom. d'Eur.* p. 140. pl. 25. f. 10 (♀) (1912) (Géryville).  
*Luperina pseudoderthisa* Rothschild, *Novit. Zool.* vol. xxi. p. 332. No. 170 (1914) (Guelt-es-Stel).

I have 15 specimens of this species.

5 ♂♂ Aflou October 1916, 4 ♂♂, 2 ♀♀ Guelt-es-Stel September—October 1913 (V. Faroult); 1 ♀ Sebdu, September 1918 (P. Rotrou); 1 ♂ Sidi-bel-Abbès, September 1917 (M. Rotrou); 1 ♂, 1 ♀ El Mahouna, September 1919 (V. Faroult).

174. *Palluperina nickerlii graslini* Oberth.

*Luperina nickerlii* var. *graslini* Oberthür, *Bull. Soc. Entom. France*, 1908, p. 323 (Pyrénées-Orientales).

This subspecies is the form found in Algeria; I have 15 specimens.

2 ♂♂, 1 ♀ Batna October 1910–1914 (Nelva and Faroult); 5 ♂♂, 2 ♀♀ Aflou, October 1916 (V. Faroult); Sebdu, September 1918 (P. Rotrou); 1 ♀ Sidi-bel-Abbès, September 1917 (M. Rotrou); 2 ♂♂ El Mahouna, September 1919 (V. Faroult).

Mr Oberthür remarks that his Algerian specimens are paler and greyer than Mr. Culot's figure plate 25 f. 9, but mine are almost as dark, except the Sidi-bel-Abbès ♀ and 1 Batna ♂.

175. *Palluperina dayensis* (Oberth.).

*Luperina rubella* var. *dayensis* Oberthür, *Etud. Entom.* fasc. vi. p. 86. pl. 11, f. 9 (1881) (Daya).

Mr. Oberthür unites under *dayensis* all the forms of the *testacea* section from Algeria. My series of *testacea*, *rubella*, etc. from all localities are too few for me to express an opinion, and so I have followed Mr. Oberthür in this instance.

The series from Algeria at Tring contains 42 specimens from Environs de Batna, September 1909–1914 (A. Nelva); Sidi-bel-Abbès, Messer, September—October 1917 (M. Rotrou); Forêt de Tenira, September 1918 (P. Rotrou); Sebdu, September 1918 (P. Rotrou); Guelt-es-Stel October 1912, Biskra November 1910 (V. Faroult); El Mahouna, September 1919 (V. Faroult).

176. *Palluperina dumerilii* (Dup.).

*Noctua dumerilii* Duponchel, *Lépid. France*, vol. vi. p. 277. pl. 90. f. 4 (1826) (France).

I have 3 ♂♂, 4 ♀♀ of this species, 1 ♀ being of the ab. *armoricana*.

1 ♂, 1 ♀ Ain Draham October 1911, 1 ♂ Aflou October 1916, 1 ♀ Perrégaux November 1915 (V. Faroult); 1 ♂ Environs de Batna, 1913–1914 (A. Nelva); 1 ♀ Forêt de Tenira, September 1918 (P. Rotrou); 1 ♀ El Mahouna, September 1919 (V. Faroult).

177. *Sidemia fulva* (Rothsch.). (Pl. XVII. ff. 20, 21.)

*Meganephira oxyacanthae fulva* Rothschild, *Novit. Zool.* vol. xxi. p. 329. No. 151 (1914) (Guelt-es-Stel).

We now have at Tring 11 ♂♂, 6 ♀♀ of this species: 6 ♂♂, 2 ♀♀ El Mesrane, November 1913 (V. Faroult); 3 ♂♂, 2 ♀♀ Perrégaux, September—October 1915 (V. Faroult); 1 ♀ (type) Guelt-es-Stel, October 1912 (V. Faroult); 1 ♂ Biskra, March 1914 (W. R. and E. H.).

178. *Dasysternum faroulti* sp. nov. (Pl. XVII. f. 22.)

♀. Antennae greyish white; head and thorax greyish sandy-cinnamon; abdomen greenish buff.

Forewing greyish sandy-cinnamon; orbicular reduced to a point, reniform large white bordered inwardly with brown; antemedian line strongly angled three times dark cinnamon brown, postmedian line strongly dentate-lunate running obliquely inwards, antemedian line basad and post-median line distad bordered with white; submarginal line white; fringe chequered and lined with white. Hindwing dirty whitish grey, whiter towards termen, marginal hair-line brown.

Length of forewing, 19 mm.; expanse, 44 mm.

1 ♀ El Mesrane, November 1915 (V. Faroult).

179. *Dasythorax rotroui* sp. nov. (Pl. XVII. f. 23.)

♀. Antennae dark brown, cylindrical; head, thorax, and abdomen cinnamon wood-brown.

Forewing cinnamon brown, freckled with black scales; an incomplete antemedian line obliquely outwards to vein 2, orbicular with black ring and central dot, reniform large whitish, a curved dentate postmedian black line, post-discal area strongly irrorated with black scales. Hindwing milk white.

Length of forewing, 15 mm.; expanse, 34 mm.

1 ♀ Messer, September 1917 (M. Rotrou).

180. *Namaugana chimaera* sp. nov. (Pl. XVII. f. 24.)

This curious species is unlike any other Noctuid known to me.

♂. Entirely wood-grey, with an intense satiny sheen. Forewing irrorated slightly with black scales, basal one-fifth more thickly, an oblique faint black hair-line from vein 1 outwards towards apex to vein 5, a submarginal row of black indistinct spots from vein 4 to inner margin.

Length of forewing, 14 mm.; expanse, 31 mm.

1 ♂ Environs de Taourirt, Morocco, July 1918 (per M. Rotrou).

181. *Sidemia aflouensis* sp. nov. (Pl. XVII. f. 25.)

Nearest to *kostantschikovi* Pünl.

♂. Antennae amber-brown; head and thorax slaty mouse-grey; abdomen yellowish grey. Forewing slaty mouse-grey, orbicular and reniform indistinct, claviform prominent; a dentate curved postmedian thin line, black pale grey on distad side. Hindwing white.

Length of forewing, 15 mm.; expanse, 34 mm.

1 ♂ Aflou, October 1916 (V. Faroult).

182. *Thalpophila vitalba* (Frr.).

*Noctua vitalba* Freyer, *Neue Beitr.* vol. ii. pt. xxi. p. 48. pl. 124. ff. 3, 4 (1834) (Sicily).

I have a series from Mauretania of 23 specimens: Aïn Draham, September 1911 (V. Faroult); Environs d'Alger, September 1908 (Dr. Nissen and Captain Holl); El Mahouna, September 1919 (V. Faroult).

183. *Trachea secalis* (Linn.).

*Phalaena secalis* Linnacus, *Syst. Nat.* edit. x. p. 519 (1758) (Sweden).

This is one of the most variable of species, and has an enormous distribution from Great Britain in the west to Japan in the east, from Scandinavia in the north to Mauretania in the south, and in Asia from the Arctic Ocean in the north to India in the south.

Mr. Oberthür remarks that he has never seen a specimen of the ab. *struvii* Ragusa from Mauretania; it certainly must be extremely rare there, but I have one very fine strongly marked specimen of this aberration from Setif.

The series of Mauretanian examples at Tring consists of 209 specimens from Berrouaghia, April 1914 (V. Faroult); Sidi-bel-Abbès, September–October 1917 (M. Rotrou); Environs de Setif, 1911 (V. Faroult); Lambessa, November 1912 (A. Nelva coll.); Ain Draham, August–September 1911 (V. Faroult); Environs de Batna (A. Nelva coll.).

184. *Procus faroulti* (Rothsch.).

*Bryophila faroulti* Rothschild, *Novit. Zool.* vol. xxi. p. 333. No. 177 (1914) (Guelts-Stel).

Mr. Oberthür has described this insect under the name of *Miana erratricula powelli*, but, as Sir George Hampson pointed out to me, the median and post-median lines run differently to those in *erratricula*, and he considers this a distinct species. Sir George Hampson also considers I was right originally in placing it in the genus *Bryophila* and not in that of *Procus* (*Miana*), but I am more than doubtful of this now, and prefer to treat it as a species of *Procus*.

The Tring series consists of 42 specimens from Guelts-es-Stel, August–September 1913 (V. Faroult).

185. *Procus furuncula* (Schiff. & Den.).

*Phalaena furuncula* Schiffermüller and Denis, *Ank. Syst. Werk. Schmelt. Wienergeg.* p. 89 (1775) (Vienna).

This insect appears to be rare in Mauretania, as I have received only 4 ♂♂, 3 ♀♀.

1 ♂, 2 ♀♀ Sidi-bel-Abbès, September 1917 (M. Rotrou); 1 ♀ Forêt de Tenira, September 1918 (P. Rotrou); 1 ♂ Ain Draham, August 1911 (V. Faroult); 2 ♂♂ Metlili, September 1917 (V. Faroult).

186. *Miselia carpophaga* (Borkh.).

*Phalaena carpophaga* Borkhausen, *Eur. Schmelt.* vol. iv. p. 422 (1792).

Mr. Oberthür places this species under the name of *capsophila* Dup. It is quite true that most of my Mauretanian specimens are ab. *capsophila*, but it cannot be treated as a separate species or subspecies, as it occurs everywhere with the type.

We have at Tring 69 specimens from Sebdu, May 1918 (P. Rotrou); Bou Saada, May 1912 (V. Faroult); Souk Ahras, April 1914 (W. R. and K. J.); Hammam R'hira August 1916, Messer June 1918 (V. Faroult); Batna, May–June 1915 (A. Nelva coll.); Khenchela, May 1912 (W. R. and K. J.); Guelts-es-Stel May 1913, Mecheria May 1918 (V. Faroult); Sidi-bel-Abbès, May 1918 (M. Rotrou); Sebdu, Forêt de Tenira, May 1918 (P. Rotrou).

187. **Pronotestra silenides** (Stdgr.).

*Mamestra silenides* Staudinger, *Iris*, vol. vii. p. 273. pl. ix. f. 14 (1894) (Chiclava).

The Mauretanian series of this insect at Tring consists of 152 specimens from Guelt-es-Stel, April—May 1912–1913 (W. R. and K. J., and V. Faroult); Biskra, March—April 1908–1914 (W. R. and E. H.); Ghardaïa, April 1911 (W. R. and E. H.); Bou Saada, March—April 1911–1912; Mecheria May 1918, El Kantara March—April 1911 (Victor Faroult); Tilghemt, April 1911 (W. R. and E. H.); Tunis, South Oran (Staudinger).

In the British Museum are 1 ♂ Algeria; 1 ♀ Tunis; 1 ♂ El Kantara, April 1913, P. A. Buxton.

188. **Epia silenens** (Hübner).

*Noctua silenens* Hübner, *Eur. Schmett. Noct.* f. 653 (1827).

*Polia trisagittata* Rothschild, *Novit. Zool.* vol. xxi. p. 322. No. 104 (1914) (Guelt-es-Stel).

The darker ab. *sancta* Stdgr. (*Dianthoecia sancta* Staudinger, *Stett. Entom. Zeit.* 1859, p. 213 (Chiclana)) has been placed by Sir George Hampson as an aberration of *Epia nisus* Germ.; but I agree with Messrs. Culot and Oberthür that it belongs to *silenens* Hübner.

My *trisagittata* is a ♂ with very strongly developed markings and with very high colour contrasts.

Our series at Tring consists of 149 Mauretanian specimens from Guelt-es-Stel, March—April 1912–1913 (W. R. and K. J., and Faroult); Hammam Meskoutine, April 1914 (W. R. and K. J.); Bou Saada, March—April 1911–1912 (V. Faroult); Batna (Nelva); Mazagan, March 1902 (W. Riggensbach).

[**Miselia bicruris** (Hufn.).

*Phalaena bicruris* Hufnagel, *Berl. Mag.* vol. iii. pt. iii. p. 302 (1767) (Berlin).

Mr. Oberthür makes use of Schiffermüller's name *capsincola*, but *bicruris* has nine years' priority. I have not received this species from Mauretania.]

189. **Miselia magnolii** (Boisduval).

*Dianthoecia magnolii* Boisduval, *Ind. Meth.* p. 125 (1829).

My single ♂ from Hammam Meskoutine has the ground-colour almost black, with no trace of rufous colouring so conspicuous in Mr. Culot's figure (*Noct. et Géom. d'Eur.* vol. i. pl. 20. f. 8).

1 ♂ Hammam Meskoutine, April 1914 (W. R. and K. J.).

190. **Miselia compta galactina** (Turati).

*Dianthoecia galactina* Turati, *Nat. Sicil.* vol. xx. p. 25. pl. 6. ff. 10, 11 (1907) (Sicily).

The Algerian form appears to be this and must be very rare, as Mr. Oberthür only records it from Guelt-es-Stel, and I have only received 1 single ♂ also from there.

1 ♂ Guelt-es-Stel, June 1913 (V. Faroult).

191. *Miselia conspersa* (Schiff. & Den.).

*Phalaena conspersa* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 71 (1775) (Vienna).

Mr. Oberthür does not record this species, but Mr. Culot does so from Morocco.

The series at Tring consists of 38 specimens from Environs d'Alger May 1908, Hammam Meskoutine, and Souk Ahras April 1914 (W. R. and K. J.); Hammam R'hira August, Djebel Zaccar, near Miliana, June 1916 (V. Faroult); Guelt-es-Stel, April—June 1913 (V. Faroult); Sidi-bel-Abbès, May 1918 (M. Rotrou); El Mahouna, May—June 1919 (V. Faroult).

192. *Miselia dysodea faroulti* (Rothsch.).

*Polia faroulti* Rothschild, *Novit. Zool.* vol. xxi. p. 322. No. 106 (1914) (Guelt-es-Stel).

*Hecatera dysodea africana* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 138 (1919) (Géryville).

Mr. Oberthür has renamed this insect as usual, because it has not been figured by me.

The Tring series of Mauretanian examples numbers 43 specimens from Bou Saada April—May 1911–1912, Guelt-es-Stel September 1913 (V. Faroult); Tamarouth, Morocco, June 1904 (W. Riggenschbach); Environs d'Alger (Captain Holl).

193. *Miselia antitypina* (Rothsch.). (Pl. XVII. f. 8.)

*Polia antitypina* Rothschild, *Novit. Zool.* vol. xxi. p. 322. No. 107 (1914) (Guelt-es-Stel).

This species must be very rare, as I have only received the two ♂♂ from Guelt-es-Stel.

2 ♂♂ Guelt-es-Stel, April 1912–1913 (W. R. and K. J., and Faroult).

194. *Miselia filigrama* (Esp.).

*Nocta filigrama* Esper, *Europ. Schmett.* p. 396. No. 137. pl. 130. f. 4 (1788) (Innsbruck).

I have 2 ♂♂ of this species from Mauretania; it is not recorded by Mr. Oberthür.

1 ♂ Tamarouth, W. Morocco, June 1904 (W. Riggenschbach); 1 ♂? (Sand coll.).

195. *Miselia serena* (Schiff. & Den.).

*Phalaena serena* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 84 (1775) (Vienna).

This insect is very variable and has received a number of names, but the forms *corsica*, *leuconota*, *obscura*, etc., seem to occur together with the type and can only rank as aberrations.

I have at Tring 17 specimens from Guelt-es-Stel, April—May 1912–1913 (W. R. and K. J., and Faroult); Bou Saada, May 1911 (V. Faroult); Hammam Meskoutine, May 1914 (W. R. and K. J.); Hammam R'hira, August 1916 (V. Faroult); Khenchela May 1912, Biskra April 1914, Environs d'Alger May 1912 (W. R., K. J., and E. H.).



196. *Metopoceras canteneri canteneri* (Dup.).

*Polia canteneri* Duponchel, *Rev. Entom. Silb.* vol. i. pt. i. p. 37. pl. 3 (1833) (S. France, Hyères).

I thought in 1913, after comparing Guelt-es-Stel specimens with European ones, that typical *canteneri* did not occur in Algeria; but I have since received from Messrs. Rotrou some specimens from the extreme west of the province of Oran which are indistinguishable from Portuguese specimens. I therefore must divide the Algerian *canteneri* into two local races.

Of *canteneri canteneri* I have at Tring 9 specimens from Les Pins, June 1918 (M. Rotrou); Seb dou June, Forêt de Tenira May 1918 (P. Rotrou).

197. *Metopoceras canteneri pallidior* Rothschild.

*Metopoceras canteneri pallidior* Rothschild, *Novit. Zool.* vol. xx. p. 123 (1913) (Guelt-es-Stel).

Of this paler Central Algerian subspecies we have at Tring 4 ♂♂, 3 ♀♀.

4 ♂♂, 1 ♀ Guelt-es-Stel, April—May 1912–1913 (W. R. and K. J., and Faroult); 2 ♀♀ Bou Saada, May 1911 (V. Faroult).

198. *Metopoceras felicina* (Douz.).

*Polia felicina* Douzel, *Ann. Soc. Entom. France*, ser. ii. vol. ii. p. 199. pl. 6. f. 2 (1844) (Marseilles).

Of this species we have at Tring 100 specimens from Hammam Meskoutine, April—May 1909–1914 (W. R., E. H., and K. J.); Lalla Marnia, April—May, 1914 (V. Faroult); Oran, April 1913 (W. R. and E. H.); Mazagan, Morocco, March—April 1902 (W. Riegenbach); Hammam R'hira, May 1908 (W. R. and K. J.); Bou Saada April 1911, Oued Hamidou June 1912, Guelt-es-Stel April 1913 (V. Faroult); Seb dou, Forêt de Tenira, May 1918 (P. Rotrou); Sidi-bel-Abbès, May 1918 (M. Rotrou).

In the British Museum is 1 ♂ Forest of Marmora, April 1903, Meade-Waldo.

[*Metopoceras codeti* Oberth.; *Ammetopa nisseni* Rothschild.; and *Ammetopa codeti* Hampson.

There has been a most extraordinary amount of confusion in connection with these three insects, and it only shows how three experienced lepidopterists like Sir George Hampson, Monsieur Oberthür, and Monsieur Culot can be deceived even when assisted by type specimens, **good figures**, and series of allied species.

*Metopoceras codeti* Oberth. was first described and figured from Seb dou in 1881 (*Etud. Entom.* livr. vi. p. 88. pl. xi. f. 10). In the description Mr. Oberthür says, "Taille de *Felicina*; mais les ailes un peu moins élargies," i.e. less broad. In continuation Mr. Oberthür says that the forewings and thorax above are strongly washed with rose. Now, I have specimens from Aïn Sefra and Seb dou taken by myself and P. Rotrou which agree precisely with the original description and figure of *codeti* Oberth.

In 1913 Mr. Culot published a description and figure professing also to be *codeti* Oberth. (*Noct. et Géom. d'Eur.* pt. i. vol. i. p. 166. pl. 30. f. 18). In his description Mr. Culot lays great stress on the narrow forewings, very sinuate and dentate postmedian line, and the greyish median space. Now, Mr. Culot states that his figure was taken from the "specimen typicum" of Mr. Oberthür from Seb dou. This I cannot believe, as the drawing is **totally** different from the drawing in *Etud. Entom.* livr. vi., undoubtedly made from the type. More-

over, Mr Culot's figure is identical with Guelt-es-Stel specimens, while I have specimens **identical** with the figure in the *Etudes* from Seb dou and Aïn Sefra. I feel sure that Mr. Culot received from Mr. Oberthür a Guelt-es-Stel or El Outaya specimen in mistake for the original Seb dou specimen caught by Dr. Codet.

In the *Catalogue of Heterocera*, vol. vi. Sir George Hampson created the genus *Ammetopa* (p. 120) for two ♂ insects caught by Mrs. Nicholl and Mr. Eaton at Biskra, and which he had identified as *codeti* Oberth. This insect is totally different to either *codeti* Oberth., *codeti* Culot, or *nisseni* Rothschild, and belongs to a different genus. Finally, *Ammetopa nisseni* Rothschild, was described by me in 1913, because I compared my Guelt-es-Stel specimens with the Biskra ones in the British Museum, which I then thought were true *codeti* Oberth. I propose to figure *codeti* Oberth., *codeti* Hampson, and *nisseni* Rothschild, on one plate to show the differences.

The true facts are these : There are two races of *codeti* Oberth., one the typical one from West Algeria (Province Oran), and the other from Central and Eastern Algeria (Provinces Alger and Constantine). This insect does not belong to the genus *Metopoceras*, but to *Bryomima*, and the two races must stand as *Bryomima codeti codeti* (Oberth.) and *Bryomima codeti nisseni* (Rothschild.). The insect identified by Sir George Hampson as *codeti* Oberth. will stand as *Ammetopa codeti* Hampson.].

199. **Bryomima codeti codeti** (Oberth.). (Pl. XV. ff. 22, 23.)

*Metopoceras codeti* Oberthür, *Etud. Entom.* livr. vi. p. 88, pl. xi. f. 10 (1881) (Seb dou).

Of this form we have at Tring 4 ♂♂, 7 ♀♀ from Aïn Sefra, May 1913 (W. R. and E. H.) ; Seb dou, May 1918 (P. Rotrou) ; Mécheria, May 1918 (V. Faroult).

Of these the two taken by ourselves at Aïn Sefra are identical with Mr. Oberthür's type figure.

200. **Bryomima codeti nisseni** (Rothschild.). (Pl. XV. ff. 24, 25.)

*Ammetopa nisseni* Rothschild, *Novit. Zool.* vol. xx. p. 123 (1913) (Guelt-es-Stel).

The principal distinction between this and *codeti codeti* is the much sharper and more distinct ante- and postmedian transverse bands on the forewings.

Of this form I have 19 specimens, all from Guelt-es-Stel, March—April 1912–1913 (W. R. and K. J., and Faroult and Dr. Nissen).

201. **Ammetopa codeti** Hampson. (Pl. XV. f. 21.)

*Ammetopa codeti* Hampson, *Cat. Lepid. Phal. Brit. Mus.* vol. vi. p. 120. No. 2222. fig. 32 (1906) (Biskra).

This insect must be very rare, as my solitary specimen is only the third known.

1 ♂ Oued Amra, north of Idelès, April 1914 (Geyr von Schweppenburg).

2 ♂♂ Algeria and Biskra, March 1897 (A. E. Eaton and Mrs. Nicholl), in British Museum.

202. **Metopoceras omar** (Oberth.).

*Cleophana omar* Oberthür, *Bull. Soc. Entom. France*, 1887, p. 57 (Oued Leber, Tunis).

Of this purely Mauretanian species, the series at Tring contains 329 specimens from Aïn Sefra, May 1913 (W. R. and E. H.) ; Guelt-es-Stel, April 1912–1913 (W. R. and K. J., and Faroult) ; Bou Saada March, Laghouat March 1912,



Djebel Kerdada May 1912 (V. Faroult) ; Tilghemt, April 1911–1912 (W. R. and E. H., and Faroult) ; Ghardaïa, April 1911 (W. R. and E. H.) ; Bordj Saada, Bordj Chegga, Kef-el-Dohr, February 1912 and March 1917 (Hartert and Hilgert, and Faroult) ; Biskra, March–April 1908–1914 (W. R. and E. H., and Faroult, and Staudinger) ; El Kantara March 1911, El Hamel May 1912 (V. Faroult) ; Constantine, Tunis (F.T.) (Staudinger) ; Khenchela, May 1912 (W. R. and K. J.) ; Oued Nça, April 1914 (Hartert and Hilgert) ; Aïn Sefra May 1915, Mecheria, May 1918 (V. Faroult) ; Hammam R'hira May 1917, Bou Saada May 1911 (V. Faroult) ; Sidi-bel-Abbès, May 1918 (M. Rotrou) ; Forêt de Tenira, May 1918 (P. Rotrou).

In the British Museum are 1 ♂, 1 ♀ Algiers ; 1 ♂ Biskra, March 1897, P. A. Buxton ; 2 ♂♂ Hammam-es-Salahin, April 1904, Lord Walsingham.

### 203. *Metopoceras morosa* Rothschild. (Pl. XV. f. 20.)

*Metopoceras morosa* Rothschild, *Novit. Zool.* vol. xxi. p. 326. No. 133 (1914) (Guelt-es-Stel).

2 ♂♂ Guelt-es-Stel, April 1913 (V. Faroult). I have received no more of this species, which differs from purplish varieties of *omur* in the antemedian band.

### 204. *Metopoceras khalildja* Oberth.

*Metopoceras khalildja* Oberthür, *Etud. Entom.* livr. ix. p. 38. pl. 3. f. 1 (1884) (Sebdou).

Our series at Tring consists of 120 specimens from Guelt-es-Stel, March–April 1913 (Victor Faroult) ; Khenchela, May 1912 (W. R. and K. J.) ; Tunis (Dannehl) ; Berrouaghia and Lalla Marnia, April 1914 (V. Faroult) ; Environs de Batna, 1911–1912 (A. Nelva coll.) ; Environs de Tunis, March–April 1915 (M. Blanc) ; Sebdou, May 1918 (P. Rotrou).

In the British Museum are 1 ♂ Hammam Meskoutine, March 1911, Meade-Waldo.

### 205. *Scotogramma implexa* (Hübner).

*Noctua implexa* Hübner, *Samml. Eur. Schmett. Noct.* f. 414 (1827).

Our series at Tring consists of 225 specimens from Khenchela, May 1912 (W. R. and K. J.) ; Batna, 1909–1914 (A. Nelva coll.) ; Souk Ahras, April 1914 (W. R. and K. J.) ; Guelt-es-Stel, April–May 1912–1913 (W. R. and K. J., and Faroult) ; Sebdou, Forêt de Tenira, May 1918 (P. Rotrou) ; Sidi-bel-Abbès, May 1918 (M. Rotrou).

The British Museum has 4 Khenchela ex Tring Museum.

### 206. *Centropodia inquinata* (Mab.).

*Haletia inquinata* Mabille, *Bull. Soc. Entom. France*, 1883, p. 43 (Gabes).

I have only received this insect from Guelt-es-Stel.

69 Guelt-es-Stel, October 1912–1913 (V. Faroult).

The British Museum has 1 ♂ Egypt.

### 207. *Antitype flavicincta* (Schiff. and Den.).

*Phalaena flavicincta* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeog.* p. 72 (1775) (Vienna).

I have 55 Algerian specimens of this insect from Blida les Glacières, October–November 1910 (Dr. Nissen) ; Environs de Batna, 1910–1914 (A. Nelva and

Faroult) ; Sidi-bel-Abbès, November 1916–1918 (M. Rotrou) ; Hammam R'hira, December and January 1916–1918 (V. Faroult) ; Lalla Marnia December 1914, Lambiridi October 1910, Blida November 1915, Guillaumet December 1913 (V. Faroult).

[**Antitype nigrocincta** (Treit.).

*Polia nigrocincta* Treitschke, *Schmett. Eur.* vol. v. pt. 2. p. 31 (1825) (Mödling, nr. Vienna).

I have never received this species from, or found it in, Mauretania.]

208. **Antitype dubia** (Dup.).

*Polia dubia* Duponchel, *Lépid. France*, Supp. vol. iii. p. 286. pl. 26. f. 4 (1836) (Aix).

I received a ♂ of this species from Monsieur A. Nelva and 1 from Monsieur M. Rotrou.

1 ♂ Environs de Batna, 1911–1912 (A. Nelva coll.) ; 1 ♂ Sidi-bel-Abbès, December 1916 (M. Rotrou).

209. **Antitype subvenusta** Püng.

*Antitype subvenusta* Püngler, *Iris*, vol. xix. p. 94 (1906) (Jerusalem).

Although this species was described from Palestine, so many Steppe and Desert insects have a very wide distribution, that it is not very strange for it to turn up in Algeria.

The specimens I have are all paler than the drawing made from Herr Püngler's type, but as they are not quite fresh and vary also much inter se, I do not venture to separate them subspecifically.

I have 12 ♂♂, 1 ♀ of this species.

12 ♂♂, 1 ♀ Environs de Batna, September 1910–1914 (A. Nelva and Faroult).

210. **Antitype argillaceago deliciosa** (Oberth.).

*Polia venusta deliciosa* Oberthür, *Bull. Soc. Entom. France*, 1907, p. 345 (Sebdou) ; *Etud. Lépid. Comp.* fasc. iii. pl. xxvii. ff. 147, 154 (1909).

Mr. William Warren in *Seitz (Grossschm. Erde*, vol. iii. p. 136) treats this insect as an aberration of *argillaceago* ; this is certainly wrong, as typical examples of *argillaceago* do not occur in Algeria. Mr. Oberthür originally described this as a subspecies of *argillaceago* Hübn. (*venusta* Boisd. was described in 1840, and so must sink, as *argillaceago* dates from 1827) ; but in 1919 (*Etud. Entom. Comp.* fasc. xvi. p. 143) he treats it as a distinct species. I think the original status attributed to this very beautiful insect by its describer is the correct one, and therefore it is here enumerated as a subspecies of *argillaceago*, notwithstanding my contrary statement in 1914 (*Novit. Zool.* vol. xxi. p. 330, sub No. 158 (1914)).

I have 65 ♂♂ and 7 ♀♀, all from Guelt-es-Stel, of which 11 ♂♂, 1 ♀ are ab. *squamosa* Rothsch. (= f. 147 Oberthür).

54 ♂♂, 6 ♀♀ Guelt-es-Stel, September–November 1912–1913 (V. Faroult).

ab. *squamosa* Rothschild, *Novit. Zool.* vol. xxi. p. 330, sub No. 158 (1914) (Guelt-es-Stel).

11 ♂♂, 1 ♀ Guelt-es-Stel, September–November 1912–1913 (Faroult).

211. *Antitype germana* Rothsch.

*Antitype germana* Rothschild, *Novit. Zool.* vol. xxi. p. 330. No. 159 (1914) (Guelt-es-Stel).

*Polia rosinata* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 142. pl. xdvi. f. 4119 (1919) (Guelt-es-Stel).

Mr. Oberthür as usual has renamed my insect, because I had not figured it.

7 ♂♂, 3 ♀♀ Guelt-es-Stel, September—October 1913 (V. Faroult).

1 ♂ in the British Museum from same source ex Tring Museum.

212. *Antitype hagar* Rothsch. (Pl. XVII. f. 1.)

*Antitype hagar* Rothschild, *Novit. Zool.* vol. xix. p. 125. No. 4 (1912) (Bou Saada).

2 ♂♂ Bou Saada, March—April 1911–1912 (V. Faroult).

213. *Antitype sahariensis* Rothsch.

*Antitype sahariensis* Rothschild, *Ann. Mag. Nat. Hist.* (8) xvi. p. 251. No. 23 (1915) (Rharis).

*Polia salmona* Oberthür, *Etud. Entom. Comp.* fasc. xvi. p. 142. pl. xdvi. f. 418 (1919) (Biskra).

Once more Mr. Oberthür creates a useless synonym.

I have received 3 specimens of this rare insect; I had completely overlooked the Colomb-Bechar specimen.

1 ♂ Colomb-Bechar, February 1912 (V. Faroult); 1 ♂ Rharis, Central Sahara. April 1914 (Geyr von Schweppenburg); 1 ♂ Djebel Antar, May 1918 (V. Faroult),

214. *Antitype discalis* Rothsch.

*Antitype discalis* Rothschild, *Novit. Zool.* vol. xix. p. 125. No. 3 (1912).

1 ♂, 1 ♀ Batna, October 1910 and 1912 (A. Nelva and Faroult).

215. *Antitype rosea* Rothsch.

*Antitype rebecca* ab. *rosea* Rothschild, *Novit. Zool.* vol. xxi. p. 330. sub No. 157 (1914) (Guelt-es-Stel).

*Epunda concolor* Oberthür, *Etud. Lépid. Comp.* p. 143. pl. xdvii. ff. 4120, 4121 (1919) (Géryville).

In 1914 I wrongly identified this insect with *rebecca* Stdgr.

It therefore is rather unfortunate that my aberrational name *rosea* has to stand for the species.

The ground-colour varies from whitish cream or buffish grey to rosy or salmony cinnamon.

The ab. *suffusa* is densely powdered with mouse-grey scales.

I have 37 ♂♂, 5 ♀♀, all from Guelt-es-Stel.

37 ♂♂, 5 ♀♀ Guelt-es-Stel, September—October 1912–1913 (V. Faroult).

In the British Museum 2 ♂♂ Guelt-es-Stel ex Tring Museum.

216. *Eumichtis lichenea* (Hübner).

*Noctua lichenea* Hübner, *Samml. Eur. Schmett. Noct.* ff. 562, 563 (1827).

I have 71 Mauretanian specimens from Guelt-es-Stel, October 1912–1913 (V. Faroult); Environs de Batna (A. Nelva coll.); Aflou October 1916, Hammam R'hira February 1918, Lalla Marnia October 1914 (V. Faroult); Sidi-bel-Abbès, October—November 1917 (M. Rotrou); Forêt de Tenira, November 1918 (P. Rotrou).

217. *Aporophyla chioleuca* (Herr.-Sch.).

*Polia chioleuca* Herrich-Schäffer, *Syst. Bearb. Schmelt. Eur.* vol. ii. p. 255. No. 221. Noct. pl. 16. ff. 76-78 (1845) (S. Europe).

Sir George Hampson employs the name *miroleuca* Treit. (*Schmelt. Eur.* vol. x. Suppl. pt. ii. p. 43 (1835) (Sicily)) for this insect. There is grave doubt as to this being correct; Treitschke quotes his insect as being Hübner's *miroleuca*, giving *Samml. Schmelt. Eur. Noct.* ff. 545, 746 as the citation; now Hübner's *miroleuca* has been quite correctly identified by Sir George Hampson as *Agriopis aeruginosa* Hübn., and must stand as *aeruginosa miroleuca* Hübn., or only as *aeruginosa* ab. *miroleuca* should it be shown that it occurs together with the type. Moreover, Treitschke lays stress in his description (p. 44) on the basal area of the forewing being marked **grey and yellow**, which is the case in *aeruginosa*, but certainly **not** in the *Aporophyla*. I am therefore convinced that *miroleuca* and *chioleuca* Treit. (p. 46) are **both** referable to *aeruginosa* Hübn., and that the first name available for this insect is *chioleuca* H.-S. Mr. Oberthür considers *miroleuca* Ramb. a distinct local race of *chioleuca*, but I feel sure it is only a more sombre-coloured aberration.

The Tring series consists of 11 ♂♂ from Hammam R'hira, December 1917 (V. Faroult); Blida March 1915, Bordj-ben-Anéridj October 1912 (V. Faroult); Aflou, October 1916 (V. Faroult); Sidi-bel-Abbès, September 1918 (M. Rotrou); Forêt de Tenira, November 1918 (P. Rotrou).

218. *Aporophyla nigra* (Haw.).

*Noctua nigra* Haworth, *Lepid. Brit.* p. 192 (1809).

Our series of Mauretanian examples at Tring consists of 50 specimens from Guelt-es-Stel October—November 1913, Aflou October 1916, Lalla Marnia November 1914 (V. Faroult); Sidi-bel-Abbès, November 1916 (M. Rotrou).

219. *Eombycia chrétieni* (Rothsch.).

*Calophasia chrétieni* Rothschild, *Novit. Zool.* vol. xxi. p. 327. No. 137 (1914) (Guelt-es-Stel).

*Bombycia viminalis emir* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 146. pl. xdvi. ff. 4122, 4123 (1919) (Sebdou, Lambessa).

Mr. Oberthür has placed this insect as a subspecies of *viminalis* Fabr. and of course renames it *emir* because I did not figure it.

It is certainly a distinct species and not a race of *viminalis*; but it may turn out to be *angularis* Chrét. If, however, the drawing in the British Museum made from Mr. Chrétien's type is correct, it is not *angularis*, for the hindwing in ♀ *angularis* is white and the pattern is different.

I have at Tring 9 ♂♂, 27 ♀♀, viz. 2 ♂♂, 2 ♀♀ Sebdou, June 1918 (P. Rotrou); 1 ♀ Hammam Meskoutine, May 1914 (W. R. and K. J.); 2 ♀♀ Guelt-es-Stel, May 1913 (V. Faroult); 1 ♀ Sakamodi, August 1912 (V. Faroult).

The ♀ from Sakamodi is different from the 5 other ♀♀; the hindwings are nearly white, the orbicular stigma is smaller, rounder, and more distinct, and the central one-third of the forewings is much blacker; this is probably *angularis* Chrét.

[*Valeria oleagina* (Schiff. & Den.).

*Bombyx oleagina* Schiffermüller and Denis, *Ank. Syst. Werk. Schmelt. Wienergeg.* p. 59 (1775) (Vienna).

I have not received this species from Mauretania.]

220. *Meganephria oxyacanthae* (Linn.).

*Phalaena oxyacanthae* Linnaeus, *Syst. Nat.* edit. x. p. 516. No. 113 (1758).

I have only received 3 specimens of this insect from Algeria.

2 ♂♂ Hammam R'hira, December 1917 and January 1918 (V. Faroult);  
1 ♂ Environs de Batna, 1914 (A. Nelva coll.).

Mr. Oberthür unites the Algerian examples with *oxyacanthae benedictina* Stdgr., but my 3 specimens from Algeria are very different from all my 226 specimens of *o. benedictina* from Amasia. The Algerian form will probably require a new subspecific name, but I have too few to venture on this course.

[*Agriopis aprilina bouveti* D. Lucas.

*Agriopis bouveti* Daniel Lucas, *Ann. Soc. Entom. France*, 1905. p. 51. pl. 5. ff. 2, 3 (Le Tarf).

I have never received this.]

221. *Trigonophora meticulosa* (Linn.).

*Phalaena meticulosa* Linnaeus, *Syst. Nat.* edit. x. p. 513. No. 95 (1758) (Sweden).

The Mauretanian series at Tring consists of 75 specimens from Guelt-es-Stél, May 1913 (V. Faroult); Sidi-bel-Abbès, September–October 1917–1918 (M. Rotrou); Environs de Batna (A. Nelva coll.); Aïn Draham September 1911, Boghari May 1913, Hammam R'hira March 1916 (V. Faroult).

222. *Rhizotype flammea* (Esp.).

*Bombyx flammea* Esper, *Schmett.* vol. iii. p. 269. No. 79. pl. 53. f. 3 (1785) (South Italy).

Mr. Oberthür uses Hübner's name of *empyra* for this species, because he says the name *flammea* has been applied to so many noctuids. As, however, they all belong to different genera and subfamilies, the danger of mistakes is not so formidable as Mr. Oberthür thinks; certainly in this case it cannot justify the discarding of a name which has 32 years' priority over that of Hübner.

My Algerian material is very poor, 18 ♂♂, 5 ♀♀ from Lambessa and Environs de Batna, October 1912–1914 (A. Nelva coll.); Sidi-bel-Abbès, November 1917 (M. Rotrou); Forêt de Tenira, October 1918 (P. Rotrou).

223. *Rhizotype crassicornis obscura* (Oberth.).

*Phlogophora crassicornis obscura* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 152. pl. cdlxxxii. ff. 3974, 3975 (1919) (Lambessa).

Mr. Oberthür on pages 148–152 gives an elaborate history of *jodea* H.-S. and very clearly points out the differences between the present species and that one. While both *jodea* and *crassicornis* occur together in Europe, in Mauretania only *crassicornis* occurs. Mr. Oberthür points out also that Algerian *crassicornis* differs considerably from those of Digne; he, however, only names a ♀ aberration of it. As the whole of the Algerian *crassicornis* are different from typical Digne specimens, Mr. Oberthür's aberrational name becomes the subspecific name, and the Mauretanian form must be called *Rhizotype crassicornis obscura* (Oberthür).

The Tring series is very poor, 16 ♂♂, 4 ♀♀ from Lambessa and Batna, October 1912–1914 (A. Nelva coll.).



224. *Euplexia lucipara leonhardi* Rebel.

*Euplexia leonhardi* Rebel, *Verh. Zool. Bot. Gesell. Wien*, vol. 59. p. 331. No. 1. text fig. 2 (1909) (Alma).

Of this species the Tring series of Mauretanian examples consists of 129 specimens from Aïn Draham, August—September 1911 (V. Faroult); Environs d'Alger, March—April, 1906–1911 (W. R. and E. H. and Dr. Nissen); Guelt-es-Stel September 1913, Environs de Setif 1911 (V. Faroult). This is a darker, duskier local subspecies, but the pattern differences given by the author are not confirmed in my series of 129 specimens.

225. *Polyphaenis xanthochloris graslini* Culot.

*Polyphaenis xanthochloris* var. *graslini* Culot, *Noct. et Géom. d'Eur.* pt. i. vol. i. p. 200. pl. 37. f. 5 (1913) (Castille).

My two Mauretanian specimens agree well with Culot's figure of the Castille specimen, allowing for the difference of sex.

1 ♂ Aïn Draham, September 1910 (V. Faroult); 1 ♂ El Mahouna, September 1919 (V. Faroult).

226. *Luperina leucophaea* (Schiff. & Den.).

*Phalaena leucophaea* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 82 (1775) (Vienna).

This insect is stated by Mr. Oberthür to be very abundant near Lambessa, but I have only received 2 specimens.

2 ♂♂ Environs de Batna, 1914 (A. Nelva coll.).

227. *Scotogramma sodae rosacea* subsp. nov.

Mr. Oberthür states that Algerian examples of *sodae* Ramb. are much more rose-coloured than French examples. This is a constant character, and so I have named this form *rosacea*.

Our series consists of 27 examples from El Mesrane June 1913, Bou Saada May 1911 (V. Faroult); Biskra, March—April 1908–1914 (W. R. and E. H.).

The British Museum has 1 ♂ Gafsa, Tunisia, 1913, G. C. Champion; 1 ♂ Hammam-es-Salahin, April 1904, Lord Walsingham.

228. *Scotogramma trifolii cinnamomina* Rothschild.

*Scotogramma cinnamomina* Rothschild, *Novit. Zool.* vol. xx. p. 121. No. 36 (1913) (Nza-ben-Rzig).

The Mauretanian examples are all more rosy-cinnamon, less grey, in tint than European ones, and so my name, given to an extra strikingly coloured specimen, must stand for the subspecies.

Sir George Hampson and others have united with the typical form of this species *treitschkei* Boisd.; this is, however, erroneous, as the genitalia are very different; *treitschkei* is identical with Hübner's *pugnax*, so this species will have to stand as *Scotogramma pugnax* (Hübner.).

The Mauretanian series at Tring consists of 285 specimens from Bou Saada April—May 1911–1912, Laghouat and Tilghemt April 1912, El Kantara March—April 1911, Environs de Setif 1911 (V. Faroult); Ghardaïa May 1912, Oued



Nça April 1914, Sands of El Arich May 1912, Mraier February 1912 (Hartert and Hilgert); Bordj Chegga, March 1917 (V. Faroult); Biskra March—April 1908–1909, Bordj Saada April 1909 (W. R. and E. H.); Environs de Batna, 1913–1914 (A. Nelva coll.); Khenchela, May 1912 (W. R. and K. J.); Hammam Meskoutine, May 1914 (W. R. and E. H.); Aïn Draham, September 1911 (V. Faroult); Hammam R'hira, May 1908–1913 (W. R., E. H., and K. J.); Perrégaux October 1915, Aflou October 1916, Guelt-es-Stel May—November 1912–1913 (V. Faroult); Sidi-bel-Abbès, June—August 1916–1917 (M. Rotrou); Mecheria June 1918, Aïn Sefra May 1914, Colomb-Bechar March—April 1912 (V. Faroult); Forêt de Tenira October 1918, Tlemcen August 1918 (P. Rotrou); Environs de Taourirt, Morocco, July 1918 (M. Rotrou).

The British Museum has 1 ♀ Algeria, Mrs. Nicholl.

229. *Scotogramma chimaera* sp. nov. (Pl. XVII. f. 6.)

♂. Differs from *t. cinnamomina* in its large size, bright sandy cinnamon ground-colour, proportionately narrower wings, very large and rounded reniform stigma, and the black submarginal band on the forewings. On the hindwings all the veins are picked out in blackish grey.

Length of forewing, 19 mm.; expanse, 43 mm.

1 ♂ Aïn Sefra, March 1915 (V. Faroult).

230. *Cardepiä deserticola* Hmps. (Pl. XVII. ff. 2, 3.)

*Cardepiä irrisor* ab. *deserticola* Hampson, *Cat. Lepid. Phal. Brit. Mus.* vol. v. p. 235, sub No. 1457, 1905 (Syria).

*Cardepiä affinis* Rothschild, *Novit. Zool.* vol. xx. p. 122. No. 40 (1913) (Kef-el-Dohr).

Sir George Hampson when diagnosing his new genus *Cardepiä* gave as the principal difference the reniform truncate and strongly protruding frontal prominence, which was excised below. I may add from examination at Tring that this prominence has a distinct rolled edge or rim.

Now Sir George Hampson places in this genus *Cardepiä* two species, *irrisor* Ersch. and *nova* Smith.

Under *irrisor* he describes from Syria an aberration under the name ab. *deserticola*. I have a number of specimens agreeing with his ab. *deserticola* from the desert regions of Algeria, all showing the strongly developed reniform frontal process, with a distinct rolled rim.

When, however, Dr. Jordan examined our Ural and Turkestan *irrisor*, he found that the frontal prominence was quite different, being round, flatter, and devoid of the rolled rim.

We found 12 specimens, mostly from the Central Hauts Plateaux of Algeria, agreeing in the shape and morphology of the frontal prominence with *irrisor*. It therefore becomes quite clear that at least two species have been confounded under the name *irrisor*, and they must for the present stand as *Cardepiä irrisor* (Ersch.) (Pl. XVII. f. 4) and *Cardepiä deserticola* Hmps.

Of *deserticola* we have at Tring 30 Mauretanian specimens from El Outaya March 1911, Bou Saada May 1910, 1911, Guelt-es-Stel March, El Mesrane June 1913, Colomb-Bechar March—April 1912 (V. Faroult); Bordj Chegga, February—March 1912 and 1917 (Hartert and Hilgert, and Faroult); Kef-el-

Dohr, February 1912 (Hartert and Hilgert); Bir Djefair, March 1909 (W. R. and E. H.).

The British Museum has 2 ♂♂, 1 ♀ Hammam-es-Salahin, February—April 1904, Lord Walsingham.

231. *Cardepija irrisor mauretanica* subsp. <sup>6</sup>nov. (Pl. XVII. f. 5.)

♂♀. Differ from *irrisor irrisor* in having rounder shorter wings, in the ground-colour of the forewings being browner less whitish, and in the hindwings being much less white. The pattern on the forewings is also much less distinct.

9 ♂♂, 1 ♀ El Mesrane, June 1913 (V. Faroult); 1 ♂ Bou Saada, May 1912 (V. Faroult); 1 ♂ Khenchela, May 1912 (W. R. and K. J.); 1 ♂ Perrégaux, September 1915 (V. Faroult).

This species has the frontal process rounded, and the rolled rim found in *deserticola* is absent.

232. *Miselia oleracea variegata* (Aust.).

*Mamestra variegata* Austaut, *Le Nat.* ser. i. vol. vii. p. 142 (1885) (Oudjda).

Monsieur Oberthür is quite right when he says that the ground-colour of the Mauretanian race is vinous maroon rather than reddish ochraceous. He is also right in saying that the late Mr. Warren had not any accurate knowledge of the Mauretanian form of *oleracea*. I find under ab. *variegata* Aust. in the collection at Tring (the part arranged by Mr. Warren), 7 specimens from the Issykul and Thian Shan regions agreeing exactly with the figure in *Seitz of variegata*, i.e. of a greyish ochraceous colour, while Mr. Warren had placed 7 Mauretanian examples among the series of typical *oleracea*.

The Tring series of *oleracea variegata* (vera) consists of 164 specimens from Hammam R'hira, May 1908–1917 (W. R. and K. J., and Faroult); Environs d'Alger, March–May 1907–1911 (W. R. and E. H., and Dr. Nissen); Environs de Setif, 1911 (V. Faroult); Mazagan, Morocco, February 1903 (W. Riggensbach); Ain Draham, August–September 1911 (V. Faroult); Sidi-bel-Abbès, Messer, September 1917 (M. Rotrou); Environs de Taourirt, Morocco, July 1918 (M. Rotrou); Souk Ahras, April 1914 (W. R. and K. J.); El Mahouna, June 1919 (V. Faroult).

233. *Eumichtis solieri* (Boisd.).

*Hadena solieri* Boisduval, *Insl. Meth.* p. 120 (1840) (Provence, Sicily).

Our series from Mauretania consists of 198 specimens from Mazagan and Mhoiwa, Morocco, October 1902, Seksawa, Morocco, April 1905 (W. Riggensbach); Oudjda, Morocco, November 1914 (V. Faroult); Lalla Marnia, November 1914 (V. Faroult); Forêt de Tenira, October 1918 (P. Rotrou); Sidi-bel-Abbès September–October 1917 (M. Rotrou); Bou Saada, March 1912 (V. Faroult), February–March 1908 and 1916 (W. R. and E. H., and Faroult); El Kantara, Biskra, March–April 1911 (W. R. and E. H., and Faroult); Lambiridi, October 1910 (V. Faroult); Lambessa and Environs de Batna, 1911–1914 (A. Nelva coll.); Hammam Meskoutine, April 1914 (W. R. and E. H.); Ain Draham, September–October 1911 (V. Faroult); Bordj-ben-Anéridj, November 1911 (V. Faroult); Hammam R'hira, January–May 1911–1918 (W. R., E. H., and K. J., and Faroult); Environs d'Alger, March–May 1907–1912 (W. R., E. H., and K. J., and Dr. Nissen); El Mahouna, September 1919 (V. Faroult).

234. *Parastichtis arabs arabs* (Oberth.).

*Hadena solieri* var. (ou aberr.) *arabs* Oberthür, *Etud. d'Entom.* livr. vi. p. 88. pl. xi. f. 8 (1881) (Sebdou).

Mr. Oberthür quite rightly says that *standfussi* Turati and *ribbei* Püngl. are only keal subspecies of *arabs*; of which there are now 5 subspecies described: (1) *arabs arabs* Oberth., (2) *arabs biskrae* Oberth., both confined to Algeria, the first in the Hauts Plateaux region, the second in the Desert Zone; (3) *arabs standfussi* Turati; (4) *arabs ribbei* Püngl.; (5) *arabs polyglypha* Stdgr. Of the three latter we know No. 3 from Sicily and the coast region near Alger, while No. 4 is so far known only from Spain and No. 5 is known only from Palestine.

Of *arabs arabs* we have at Tring 28 specimens from Sebdou, May 1918 (P. Rotrou); Khenehela, May 1912 (W. R. and K. J.); Batna, May 1915 (A. Nelva coll.).

235. *Parastichtis arabs standfussi* (Turati).

*Hadena standfussi* Turati, *Nat. Sic.* vol. xx. p. 27. pl. vi. ff. 17, 18 (1908) (Busambra).

This form is at once recognisable by its much greyer ground-colour, though not so clear grey as in *arabs ribbei*.

Described from Sicily, the specimens recorded below are, I believe, the first record for Algeria.

1 ♂ Blida les Glacières, June 1908 (W. R. and K. J.); 1 ♂ Sebdou, June 1918 (P. Rotrou).

[*Parastichtis arabs biskrae* (Oberth.).

*Hadena arabs biskrae* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 157 (1919) (Biskra).

I have no specimens of this pale sandy desert form.]

236. *Eremobia alpigena* (Boisd.).

*Hadena alpigena* Boisduval, *Icon. Hist. Lépid.* Tome ii. pl. 84. f. 5 (1834).

The series of this insect at Tring consists of 1 specimen from Digne (Victor Cotte) and 26 from Algeria taken by ourselves.

26 Khenehela, May 1912 (W. R. and K. J.).

237. *Eumichtis monochroma* (Esp.).

*Phalaena monochroma* Esper, *Schmett.* vol. iv. pt. ii. p. 521. No. 216. pl. clv. ff. 3-6 (1791) (Florence).

Of this species the Mauretanian series at Tring consists of 47 specimens from Environs de Batna May 1915, Lambessa October 1915 (A. Nelva coll.); Aflou, October 1916 (V. Faroult); Ain Draham, September 1911 (V. Faroult); Sidi-bel-Abbès, September 1917 (M. Rotrou); Guelt-es-Stel, October 1912-1913 (V. Faroult); El Mahouna, September 1919 (V. Faroult). Of these 20 are the grey form and 26 the dark form, and 1 is ab. *suberis*.

238. *Eumichtis roboris cerris* (Boisd.).

*Hadena roboris* var. *cerris* Boisduval, *Ind. Meth.* p. 121, sub No. 961 et footnote (1) (1840) (Spain, S. France).

Mr. Oberthür says that this insect is common at Lambessa in October and November, and that Mr. Harold Powell took over 80 specimens; I have only 3 Algerian specimens, and a specimen without locality out of the Sand collection.

1 ♂ Hammam Meskoutine, April 1914 (W. R. and K. J.); 1 ♂, 1 ♀ Aflou, October 1916 (V. Faroult).

239. *Dryobota furva* (Esp.).

*Phalaena furva* Esper, *Schmett.* vol. iv. pt. ii. p. 530. pl. 158. ff. 1, 2 (1789) (Florence).

Here again Mr. Oberthür states that this insect is very common, while I have only received from Algeria 4 specimens. Mr. Oberthür employs the name *occlusa* for this species and gives as the author Esper. The name *occlusa*, however, was given by Hübner in 1827, 38 years subsequent to the date of Esper's *furva*, and so the latter must be used.

3 ♂♂, 1 ♀ Batna (A. Nelva coll.); 1 ♂ Guelt-es-Stel, October 1913 (V. Faroult).

239a. *Eumichtis accipitrina* (Esp.).

*Phalaena accipitrina* Esper, *Schmett.* vol. iv. pt. ii. p. 393. pl. 129. f. 4 (1788) (Erlangen).

The series of this species at Tring consists of 56 Mauretanian specimens from Aflou, October 1916 (V. Faroult); Lambessa and Batna, October 1911–1915 (A. Nelva); Aflou October 1916, Guelt-es-Stel October–November 1913 (V. Faroult).

240. *Eumichtis protea* (Schiff. & Den.).

*Phalaena protea* Schiffmüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 84 (1775) (Vienna).

Of this very variable insect I have 154 Algerian specimens from Environs de Batna and Lambessa, October 1911–1915 (A. Nelva coll.); Aflou, October 1916 (V. Faroult); Guelt-es-Stel, October 1913 (V. Faroult).

241. *Lophoterges millierei* (Stdgr.).

*Lithocampa millierei* Staudinger, *Berl. Entom. Zeitschr.* vol. xiv. p. 119 (1870) (Catalonia).

I have only received 1 ♂, 4 ♀♀ of this very beautiful species.

1 ♂, 1 ♀ Sebdou July 1918, 1 ♀ Forêt de Tenira August 1918 (P. Rotrou); 1 ♀ Hammam R'hira, May 1916 (V. Faroult); 1 ♀ El Mahouna, July 1919 (V. Faroult).

242. *Dichonea areola mustapha* (Oberth.).

*Xylocampa lithorhiza mustapha* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 164. pl. xdvi. f. 4124 (1919) (Lambessa).

Mr. Oberthür uses for this species Borkhausen's name of *lithorhiza* because Guenée used it, but he acknowledges that it is the *areola* of Esper. As Esper's name antedates Borkhausen's by 3 years, the species must stand as *areola* Esp.

We have at Tring 7 Mauretanian specimens from Alger, March 1914 (V. Faroult); Blida February 1916, Hassi Baba November 1917, Hammam R'hira February 1918, Lalla Marnia November 1914, Guelt-es-Stel October 1912 (V. Faroult).



243. *Axylia exsoleta* (Linn.).

*Phalaena exsoleta* Linnaeus, *Syst. Nat.* edit. x. p. 515. No. 104 (1758).

Almost all authors subsequent to Linnaeus spell the specific name of this species *exoleta*, but Linnaeus spells it *exsoleta*, both as regards the name he bestows on the present insect and in the diagnosis; he also spells it so in a footnote. Now although the method of spelling the adjective *exoletus* is more often used than the spelling *exsoletus*, both are correct Latin according to standard dictionaries, and therefore as Linnaeus deliberately uses the spelling with the *s* this must be adopted.

This insect appears to be rather uncommon in Mauretania. We have 6 specimens from Chauzy 1914 (M. Rotrou); Blida February 1916, Guelt-es-Stel March—September 1913 (V. Faroult); 1 larva Aïn Sefra, May 1913 (W. R. and E. H.); 1 larva Hammam R'hira (V. Faroult); 1 ♀ Aflou, October 1916 (V. Faroult).

244. *Lithophane semibrunnea* (Haw.).

*Noctua semibrunnea* Haworth, *Lepid. Brit.* p. 171 (1809).

The Algerian specimens I have are greyer than European ones. Mr. Oberthür also mentions this, but states that Tunisian (Aïn Draham) specimens are very red. As I have too few to judge, I refrain from naming it.

1 ♂ Batna October 1910, 1 ♂ Perrégaux November 1915, 2 ♂♂, 1 ♀ Hammam R'hira February 1918 (V. Faroult).

245. *Grapholitha lapidea ochreimacula* (Rothsch.).

*Cloantha ochreimacula* Rothschild, *Novit. Zool.* vol. xxi. p. 329. No. 148 (1914) (Guelt-es-Stel).

It was unfortunate that I described this insect from the form with the yellow reniform.

The Algerian subspecies differs from the European by being a duller purer grey with the pattern more obliterated.

1 ♂ Guelt-es-Stel, November 1913 (V. Faroult); 1 ♂ Batna, October 1910 (V. Faroult).

246. *Cucullia verbasci* (Linn.).

*Phalaena verbasci* Linnaeus, *Syst. Nat.* edit. x. p. 515. No. 105 (1758).

I never received this insect in any numbers, only 7 specimens coming to hand in eleven years.

1 ♂, 1 ♀ Hussein Dey, Alger, April 1910 (Captain Holl); 2 ♂♂ Batna, May 1915 (A. Nelva); 1 ♂ Hammam Meskoutine, April 1914 (W. R. and K. J.); 1 ♂ Souk Ahras, 1 ♂ Tebessa, April 1914 (W. R. and K. J.)

247. *Cucullia thapsiphaga* Treit.

*Cucullia thapsiphaga* Treitschke, *Schmett. Eur.* vol. v. pt. 3. p. 120. No. 16 (1826) (Styrian Frontier).

Of this species I only received 1 ♂, 2 ♀♀.

1 ♂, 1 ♀ Batna, May 1912 (A. Nelva coll.); 1 ♀ Hammam R'hira, May 1916 (V. Faroult).



248. *Cucullia scrophulariphaga* Ramb.

*Cucullia scrophulariphaga* Rambur, *Ann. Soc. Entom. France*, 1833, p. 20. pl. 1. f. 4 (Corsica).

Of this species I have also not received many.

5 ♂♂, 1 ♀ Environs de Batna, May 1912 (A. Nelva).

249. *Cucullia oberthuri* Rothsch. (Pl. XVI. f. 6.)

*Cucullia oberthuri* Rothschild, *Ann. Mag. Nat. Hist.* (8) viii. p. 232. No. 3 (1911) (Bou Saada).

This is the insect Mr. Oberthür identified as *anceps* Stdgr. I have compared it with *anceps* from various localities at Tring and in the British Museum, and Sir G. Hampson agrees that it is a distinct species and **not** *anceps* (Pl. XVI. f. 5).

The series now at Tring has been augmented by 3 specimens to 7 in all. 4 ♂♂ Bou Saada April–May 1911, 1 ♂ El Kantara March–April 1911, 1 ♂ Hammam R'hira April 1917 (V. Faroult); 1 ♂ Khenchela, May 1912 (W. R. and K. J.).

250. *Cucullia blattariae* (Esp.).

*Phalaena blattariae* Esper, *Schmett.* vol. iv. pt. ii. p. 518. No. 214. pl. 154. f. 4 (1786) (Florence).

1 ♂ Plaines au Sud de Sebdou, May 1918 (P. Rotrou).

251. *Cucullia scrophulariphila* Stdgr.

*Cucullia scrophulariphila* Staudinger, *Stett. Entom. Zeit.* vol. xx. p. 215. No. 10 (1859) (Chielana).

The ground-colour is more whitish in my Algerian specimens than in Spanish ones, but this seems to be the case in all the Mauretanian *Cucullias* of the *verbasci* group. The Khenchela specimen is also much darker than the Ain Sefra ones.

1 ♂ Khenchela, June 1911 (V. Faroult); 2 ♂♂, 1 ♀ Ain Sefra, March 1915 (V. Faroult).

251a. *Cucullia biskrana* Oberth.

*Cucullia biskrana* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 167. pl. xdvi. ff. 4125, 4126 (1919) (Biskra).

I have only received 1 ♂ of this species.

1 ♂ 20 kil. S. of Bledet Amar, December 1913 (Geyr von Schweppenburg).

252. *Cucullia beata* sp. nov. (Pl. XVI. f. 7.)

♂. This I consider the handsomest species of the *umbratica* group.

Antennae brown, basal 10th white; head ash-grey; thorax pale bluish ash-grey; abdomen paler, more whitish ash-grey, slightly tinged with cream colour laterally, median dorsal line and anal tuft darker.

Forewing pale bluish ash-grey, slightly freckled with brown-grey scales, nervures in outer half darker, a median black line from base to halfway along and below median nervure followed by a much heavier oblique black band at the base of which is a cross bar. Above vein 4 is a narrow black line.

Hindwings semi-vitreous white, nervures and marginal band ash-grey.

Length of forewing, 17 mm.; expanse, 39 mm.

1 ♂ Sebdou, September 1918 (P. Rotrou).

This species is nearly allied to *taniceti* Schiff., but is much smaller, and the black markings are very different.

253. *Cucullia chamomillae calendulae* Treit.

*Cucullia chamomillae* var. *calendulae* Treitschke, *Schmett. Eur.* vol. x. pt. 2. p. 127 (1835) (Sicily).

I have 61 Algerian specimens from Guelt-es-Stel, March—November 1912–1913 (W. R. and K. J., and Faroult); Bou Saada, March—May 1911–1912 (V. Faroult); Souk Ahras and Tebessa, April 1914 (W. R. and K. J.); Khenchela, May 1912 (W. R. and K. J.); El Kantara, March—April 1911 (W. R. and E. H., and Faroult); Bordj Chegga, February 1912 (Hartert and Hilgert); Lalla Marnia May 1914, Hammam R'hira February 1918 (V. Faroult); Berrouaghia, April 1914 (V. Faroult); Mazagan, Morocco, March—April 1902 (W. Riggenbach). Among these are several fine examples of ab. *amoenissima* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 169, pl. xdvi. f. 4129 (1919) (Biskra).

In the British Museum is 1 ♂ Morocco, January—February 1902, Meade Waldo.

254. *Cucullia santolinae* Ramb.

*Cucullia santolinae* Rambur, *Ann. Soc. Entom. France*, vol. iii. p. 387, pl. 8. f. 4 (1834) (Corsica).

Of this species the series at Tring from Mauretania numbers 37 from Guelt-es-Stel, March—April 1912–1913 (W. R. and K. J., and Faroult); Bou Saada, May 1912 (V. Faroult); El Kantara March—April 1911, Boudj-ben-Anéridj November 1911, Hammam R'hira February 1918 (V. Faroult); Batna (Nelva coll.); Khenchela May 1912, Hammam Meskoutine April 1914 (W. R. and K. J.); Environs d'Alger and Hussein Dey, January—December 1908–1911 (W. R. and E. H., and Captain Holl); Mazagan, Morocco, February 1902 (W. Riggenbach). One of the 2 specimens from Hammam Meskoutine was bred from a larva found April 1914 and emerged at Tring March 1915.

255. *Copicucullia syrtana* (Mab.).

*Cucullia syrtana* Mabille, *Bull. Soc. Entom. France*, 1888, p. 51 (Gabès).

Of this species the Tring series consists of 85 specimens from Colomb-Bechar February—March 1912, Bir Stil March 1917, El Kantara March—April 1911, Bordj Chegga March 1917, Aïn Draham September 1911 (V. Faroult); Bordj Chegga, Bordj Saada, Nça-ben Rzig, February 1912 (Hartert and Hilgert); Ghardaïa, April 1911 (W. R. and E. H.); Arefidji, March 1912 (Hartert and Hilgert); Biskra, March 1909 (W. R. and E. H.); Oued Abou, January 1914 (Geyr von Schweppenbourg).

In British Museum 3 ♂♂, 5 ♀♀ Hammam-es-Salahin, January—March 1904, Lord Walsingham.

256. *Empusada argentina* (Fabr.).

*Noctua argentina* Fabricius, *Mant. Ins.* vol. ii. p. 162. No. 185 (1787) (South Russia).

The Tring series from Mauretania consists of 50 specimens from Aïn Sefra, May 1913 (W. R. and E. H.); Mecheria, May 1918 (V. Faroult); Batna (A. Nelva and Faroult); Bou Saada, May 1912 (V. Faroult); Tilghemt, April 1911–1912 (W. R. and E. H., and V. Faroult); Khenchela, May 1912 (W. R. and K. J.); Les Pins August 1918, Environs de Taourirt September 1918 (M. Rotrou).

257. *Brachygalea albolineata* (Blach.).

*Colophasia albolineata* Blachier, *Bull. Soc. Entom. France*, 1905, p. 53 (Gafsa).

Mr. Warren was perfectly correct in *Seitz*, when he said that *Brachygalea leucorhabda* and *Criophasia albolineata* Hampson are one and the same. As the *Zoological Record* only comes out more than a year later than the one recorded, it is not astonishing that Sir George Hampson missed Mr. Blachier's article; but it is certainly an unfortunate slip, that he did not notice that his *leucorhabda* was the same as the insect he received from Bang-Haas under the name *albolineata*. As *leucorhabda* is designed as the type of *Brachygalea* and *albolineata* as that of *Criophasia* and *Brachygalea* has 114 pages priority over *Criophasia*, it is quite evident that *Brachygalea* must stand as the genus-name.

Our series at Tring from Mauretania numbers 167 specimens from Biskra, February—March 1908–1914 (W. R. and E. H.); Bir Djefair, March 1909 (W. R. and E. H.); Aïn Sefra, March—May 1913–1915 (W. R. and E. H., and Faroult); Guelt-es-Stel April—May 1913, Bou Saada March 1912, El Kantara March—April 1912 (V. Faroult); Bordj Chegga, February—March 1912–1917 (Hartert and Hilgert, and Faroult); Kef-el-Dohr, Mraier February, Arefidji, north of Ouargla March 1912, Oued Nça April 1914 (Hartert and Hilgert).

In the British Museum are 1 ♂ Tunis; 3 ♂♂, 1 ♀ Hammam-es-Salahin, April 1904, Lord Walsingham.

258. *Hypomecia quadrivirgula* (Mab.).

*Epimecia quadrivirgula* Mabille, *Bull. Soc. Entom. France*, 1888, p. 51 (Gabès).

Our series at Tring of this species consists of 138 specimens from Guelt-es-Stel, October—November 1912–1913 (V. Faroult); Alger January 1914, Bou Saada March 1912, El Mesrane November 1913, Hassi Baba November 1917 (V. Faroult).

259. *Rabinopteryx subtilis* (Mab.).

*Epimecia subtilis* Mabille, *Bull. Soc. Entom. France*, 1888, p. 51 (Gabès).

Mabille was almost right in placing this insect in *Epimecia*, as it is next to that genus, differing in the upturned instead of porrect palpi.

Our Tring series numbers 258 from Guelt-es-Stel March—May 1913, Bou Saada April 1911, Berrouaghia April 1914, Mecheria May 1918 (V. Faroult); Bordj Chegga, February—March 1912–1917 (Hartert and Hilgert, and Faroult); Biskra, March—April 1908–1914 (W. R. and E. H.); Aïn Sefra, March—May 1913–1915 (W. R. and E. H., and Faroult).

The British Museum has 1 ♂, 4 ♀♀ Hammam-es-Salahin, March—April 1904, Lord Walsingham.

260. *Rabinopteryx nelvai* sp. nov. (Pl. XVI. f. 4.)

♀. Antennae brown; head and thorax brown-grey variegated and irrorated with dark brown; abdomen yellowish pale grey.

Forewing brown-grey, densely striolated with dark brown; 3 oblique bars on middle of costal area and the orbicular and reniform brown, a somewhat obscured white band below median vein from base almost to termen, beneath

which and coalescing with it is a similar black-brown band. Hindwings creamy grey, somewhat suffused with brownish grey.

Length of forewing, 13 mm. ; expanse, 28 mm.

1 ♀ Batna, 1914 (A. Nelva coll.).

# 261. *Catamecia mauretanica* Stdgr.

*Catamecia jordana* var. *mauretanica* Staudinger, *Cat. Lepid. Palaear. Faun.* pt. i. p. 213. No. 2192b (1901) (Biskra).

Mr. Oberthür, agreeing with Mr. Culot and Staudinger, places this insect as a subspecies of *jordana* Stdgr., but after examining it with Sir George Hampson I have come to the conclusion that it is a distinct species, both from *jordana* Stdgr. and *minima* Swinh. (= *bacheri* Stdgr.). It differs from both in the white claviform patch edged with black.

I have 15 specimens.

2 Biskra, March 1909–1911 (W. R. and E. H.) ; 12 Bordj Chegga, 1 Bir Stil, March 1917 (V. Faroult).

The British Museum has 1 ♀ Tkout, April 1906, 3 ♂♂, 3 ♀♀ Hammam-es-Salahin, April 1904, Lord Walsingham.

# [*Catamecia jordana balestrei* D. Lucas.

*Catamecia jordana* var. *balestrei* Daniel Lucas, *Bull. Soc. Entom. France*, 1907, p. 181 (Nefta).

I have never received this species.]

# 262. *Omia cyclopea* (Grasl.).

*Cleophana cyclopea* Graslín, *Ann. Soc. Entom. France*, vol. v. 570. pl. 17 B. f. 7 (1836) (Alfakar, Grenada).

All the *Omiæ*s are extremely rare.

1 ♂, 1 ♀ Lambessa (Staudinger) ; 1 ♀ Algeria (Deyrolle) ; 1 ♀ El Kantara, May 1909 (W. R. and E. H.).

# 263. *Omia oberthuri* Allard.

*Omia oberthuri* Gaston Allard, *Ann. Soc. Entom. France*, vol. xxxvi (ser. iv. vol. 3), p. 320. pl. 6. ff. 3a, 3b (1867) (Lambessa).

1 ♂, 1 ♀ Lambessa (Staudinger).

# 264. *Amephana warionis* (Oberth.).

*Cleophana warionis* Oberthür, *Etud. Entom.* livr. i. p. 48. pl. 2. f. 3 (1876) (Bou Saada).

Our series at Tring contains 185 specimens from Aïn Sefra, May 1913 (W. R. and E. H.) ; Guelt-es-Stel, April–May 1912–1913 (W. R. and K. J., and Faroult) ; Bou Saada March–April 1912, El Outaya March, El Mantara March–April 1911 (Victor Faroult) ; Biskra, Gafsa, Tunis (Staudinger) ; Tilghemt, April 1911–1912 (W. R. and E. H., and Faroult) ; Mecheria, Djebel Antar, May 1918 (V. Faroult) ; Sebdo, May 1918 (P. Rotrou).

In the British Museum are 2 ♂♂ Tunis, Staudinger and Bang-Haas.



265. *Cleophana boetica diluta* Rothsch. (Pl. XV. ff. 16, 17 [18].)

*Cleophana boetica diluta* Rothschild, *Ann. Mag. Nat. Hist.* (8) viii. p. 232 (1911) (Bou Saada).

Mr. Oberthür as usual ignores my name, because unaccompanied by a figure ; but acknowledges himself that the Algerian form is paler than the two European races.

Our series at Tring contains 409 specimens from Lalla Marnia May 1914, Bou Saada March—April 1912, Berrouaghia April 1914, Masser Mines May 1914, Mecheria May 1918 (V. Faroult) ; Khenchela, May 1912, Souk Ahras April, Tebessa April 1914 (W. R. and K. J.) ; Batna, May 1915 (A. Nelva) ; Guelt-es-Stel, April—May 1912–1913 (W. R. and K. J., and Faroult) ; Sebdo, May 1918 (P. Rotrou) ; Sidi-bel-Abbès, May 1918 (M. Rotrou).

In British Museum 1 ♂ Bou Saada ex Tring Museum.

265a. *Ameophana warionis* × *Cl. boetica diluta*. (Pl. XV. f. 19.)

This specimen, taken at Guelt-es-Stel by Victor Faroult, April 8th, 1913, appears to me undoubtedly a hybrid between the above two species. It is somewhat intermediate in pattern, and while the general facies and colour are that of *boetica diluta* it is strongly suffused with green.

266. *Omphalophana serrata* (Treit.).

*Cleophana serrata* Treitschke, *Schmett. Eur. (Suppl.)* vol. x. pt. 2. p. 121 (1835) (Sicily).

This species is rather rare in Mauretania.

We have from Mauretania 100 specimens at Tring from Mazagan, Morocco, April 1902 (W. Rigggenbach) ; Morocco (Staudinger) ; Moroccan Frontier S.W. of Lalla Marnia May 1914, Lalla Marnia May 1914 (V. Faroult) ; Environs d'Alger May 1908, Hammam Meskoutine April, Souk Ahras April 1914, Khenchela May 1912 (W. R. and K. J.) ; Aïn Draham and Djerba, Tunisia (Staudinger, Bartels, and Dannehl) ; Sidi Ferruch, April 1911 (André Théry) ; Hammam R'hira, May 1908–1917 (W. R., E. H., and K. J., and Faroult) ; Batna, May 1915 (A. Nelva) ; El Mahouna, May—June 1919 (V. Faroult).

267. *Cleophana jubata* Oberth.

*Cleophana jubata* Oberthür, *Etud. Entom.* livr. xiii. p. 31. pl. 6. f. 40 (1890) (Gabès).

This is a rare species.

The Tring series contains 71 specimens from Aïn Sefra, May 1913 (W. R. and E. H.) ; Mecheria May 1918, Bou Saada April—May 1912 (V. Faroult) ; Tilghemt, April 1911 (W. R. and E. H.) ; Guelt-es-Stel, April—May 1912–1913 (W. R. and K. J., and Faroult) ; Sebdo, May 1918 (P. Rotrou).

In the British Museum are 1 ♂, 1 ♀ Tunis, Staudinger and Bang-Haas.

268. *Omphalophana pauli* (Stdgr.).

*Cleophana pauli* Staudinger, *Iris*, vol. iv. p. 36. pl. 4. f. 4 (1891) (Jerusalem).

Of this species there are 74 Mauretanian specimens at Tring from Lalla Marnia April 1914, Mecheria May 1918, Berrouaghia April 1914, Guelt-es-Stel



April—May 1913, Bou Saada March—April 1912 (V. Faroult); Tunis (Staudinger); Ain Sefra, May 1913 (W. R. and E. H.).

In the British Museum 1 ♂ Tunis, Staudinger and Bang-Haas.

#### 269. *Cleophana pectinicornis* Stdgr.

*Cleophana pectinicornis* Staudinger, *Stett. Entom. Zeit.*, vol. xx, p. 215, No. 9 (1859) (Chiclana).

This fine species is abundant in some localities in Algeria.

The Mauretanian series at Tring numbers 454 specimens from Lalla Marnia May 1914, Bou Saada March—April 1912, El Kantara March—April 1911 (V. Faroult); Fontaine Chaude, April 1909 (W. R. and E. H.); Gafsa, Tunisia (Staudinger); Guelt-es-Stel, April—May 1912–1913 (W. R. and K. J., and Faroult); Sebrou, April 1918 (P. Rotrou).

Mr. Oberthür states that the typical Spanish form of this insect differs from Mauretanian examples in the brown being duller and darker. I have never seen Spanish specimens, but Rambur's figure (*Cat. Syst. Ins. de l'Andal.* pl. xii. f. 4) only shows the fringe of the forewings less yellow, otherwise it agrees exactly.

In the British Museum 1 ♂ Tunis.

#### 270. *Copiphana gafsana* (Blach.).

*Cleophana gafsana* Blachier, *Bull. Soc. Entom. France*, 1905, p. 53 (Gafsa).

Mr. Oberthür quite rightly points out that *Cleophana albina* B.-H. is nothing but an albinistic *gafsana* Blach. and rightly says it is intermediate between Mr. Culot's figures 14 and 15, pl. 59. I propose for Mr. Culot's figure 14 the name of ab. *intermedia* ab. nov., so that there would be 3 named aberrations of *gafsana*, viz. (1) ab. *intermedia* Rothschild, pattern of wings fully developed, though much paler than typical form, on a pale ground-colour; (2) ab. *albina* B.-H., ground-colour pure white, pattern partially obliterated; (3) ab. *blachieri* Oberth., entirely white nervures showing darker.

This insect appears to be much more confined to the desert regions.

We have at Tring 62 specimens from Colomb-Béchar March—April 1912, Bou Saada April 1911 (V. Faroult); Tilghemt, April 1911–1912 (W. R. and E. H., and Faroult); Ghardaïa, April 1911 (W. R. and E. H.); Tunis (Staudinger); Bir Djefair, March 1909 (W. R. and E. H.); Oued Nça April 1914, N. of El Golea March, Mraïer March 1912 (Hartert and Hilgert).

In the British Museum 1 ♂, 1 ♀ Tunis.

#### 271. *Cleophana vaulogeri* Stdgr.

*Cleophana vaulogeri* Staudinger, *Iris*, vol. xii, p. 378, pl. 5, f. 9 (1899) (Biskra).

Mr. Oberthür says this is very common; I have only had few specimens compared to the numbers of some other species of this group.

The Mauretanian series at Tring consists of 80 specimens from El Outaya March 1911, El Kantara March 1911, Ain Drahem September 1911, Colomb Béchar March—April 1912, Bou Saada, Laghouat March—April 1912, Tilghemt April 1912 (V. Faroult); Ain Sefra May 1913, Biskra March—April 1908–1914 (W. R. and E. H.); Oued Nça, April 1914 (Hartert and Hilgert).

In the British Museum are 3 ♂♂, 3 ♀♀ Hammam-es-Salahin, April 1904, Lord Walsingham.

272. *Cleophana fatima* B.-H. (Pl. XV. ff. 13-15.)

*Cleophana fatima* Bang-Haas, *Iris*, vol. xx. p. 73. p. 3. f. 14 (1907) (Tunis, Gafsa, etc.).

Both Herr Bang-Haas and Mr. Oberthür have mixed up two species under the name *fatima*—Herr Bang-Haas when sending out specimens to clients and Mr. Oberthür when figuring the species (*Etud. Lépid. Comp.* fasc. v. pt. i.); in fact Mr. Oberthür has mixed more than two species, as his figure 599 agrees well with *versicolor* Stdgr.

The *diffuens-vaulogeri* group are very difficult to unravel, but I am convinced that Staudinger and Hampson have treated too many good species as varieties of *diffuens* and its European relations. I shall figure these to show the differences more clearly to Mr. Oberthür and his friends, who will not acknowledge any other method of identification.

I have only 4 specimens of this species, which appears to be essentially Tunisian and very rare in Algeria. 1 specimen each from Gafsa, Tunisia (Staudinger) (co-type); Tilghemt, April 1912 (V. Faroult); Ghardaïa, April 1911 (W. R. and E. H.); Oued Nça, April 1914 (Hartert and Hilgert).

In the British Museum 1 ♂ Tunis, Staudinger and Bang-Haas.

273. *Cleophana affinis* sp. nov. (Pl. XV. f. 6.)

Differs from *fatima* at first sight by its larger size and bright rufous **not** yellowish grey ground-colour.

This is the insect figured by Mr. Oberthür (*Etud. Lépid. Comp.* fasc. v. pt. i. ff. 596, 597, 598) as *fatima* Bang-Haas; but which is not that species. This mistake probably arose through Mr. Oberthür having received from Dresden some of the later specimens sent out by Bang-Haas as *fatima*, but if not, then it is much more easily accounted for, because the photographic figure of *fatima* in the *Iris* would be easily confounded with the present species.

♂ ♀. Head and thorax deep rufous, **not** cream-white as in *fatima*, variegated grey and dark brown edgings; abdomen wood-brown **not** yellowish grey.

Forewing rufous, **not** bluish grey washed with buff as in *fatima*; the fringe is rufous and brown, **not** dark wood-grey and buff; the postmedian line is much more deeply angled, especially at vein 5; the lunate mark in the centre of the reniform is rufous, **not** black as in *fatima*. Hindwing basal half yellowish wood-grey, **not** cream-white as in *fatima*. (Type ♀ Mecheria.)

Length of forewing, *fatima* ♀, 10 mm.; expanse, 24 mm.

Length of forewing, *affinis* ♀, 14 mm.; expanse, 33 mm.

16 specimens from Bou Saada May 1911, Guelt-es-Stel April, Bou Sedraïa N. of Djelfa May 1913, Mecheria May 1918 (V. Faroult); Aïu Sefra, May 1913 (W. R. and E. H.); Sebdou, May 1918 (P. Rotrou).

274. *Cleophana chabordis* Oberth.

*Cleophana chabordis* Oberthür, *Etud. Entom.* livr. i. p. 47. pl. ii. f. 2 (1876) (Bou Saada).

This in the more southern and desert regions appears to be very common.

The series at Tring numbers 543 specimens. Mr. Oberthür, because the white variety named *albicans* Stdgr. was not figured, calls this albino aberration *niveata*. Although aberrations are not supposed to be subject to the law of priority, still Staudinger's name, having been given fourteen years earlier, ought, I think, to

be used. The numerous specimens intermediate between the ab. *albicans* and normal *chabordis* I propose to call ab. *semialbicans* ab. nov.

Our 547 examples are from El Kantara March—April 1911, Tilghemt April 1912, El Hamel May 1912, Bou Saada March—April, Djebel Kerdada May 1912, Guelt-es-Stel April 1913, Colomb-Bechar March—April 1912, Bordj Chegga March, Bir Stil March 1917 (V. Faroult); Biskra March—April 1908–1914, Mraier April 1909 (W. R. and E. H.); Laghouat, March—April 1911–1912 (W. R. and E. H., and Faroult); Ain Sefra, May—July 1913–1915 (W. R. and E. H., and Faroult); Dehibat, Ain Draham, and Gafsa, Tunisia (Staudinger); South Oued Mya halfway between Ouargla and Touggourt, El Alia between Touggourt and Guerrara, Guerrara, Hassi Sidi Mahmud March—April 1912, Oued Nça April 1914 (Hartert and Hilgert); Oued Amrah, April 1914 (Geyr von Schweppenburg).

Of the 547 specimens 102 are ab. *semialbicans* and 42 ab. *albicans*.

In the British Museum are 3 ♂♂, 3 ♀♀ Hammam-es-Salahin, March—April 1904, Lord Walsingham; 1 ♂ ab. *albicans*, Tunis.

### 275. *Amephana aurita* (Fabr.).

*Noctua aurita* Fabricius, *Mant. Ins.* vol. ii. p. 179. No. 282 (1787) (Spain).

The series at Tring from Mauretania consists of 512 examples from Moroccan Frontier S.W. of Lalla Marnia May 1914, Lalla Marnia May 1914, Berrouaghia April 1914, Bou Saada May 1914 (V. Faroult); Batna, May 1911–1915 (A. Nelva); Hammam Meskoutine April—May 1914, Tebessa and Souk Ahras, April 1914 (W. R. and K. J.); Khenchela, May—June 1911–1912 (W. R. and K. J., and Faroult); Environs d'Alger, April—May 1908 (W. R., E. H., and K. J., and Dr. Nissen); Sidi Ferruch, April 1914 (A. Théry); Les Pins, June 1918 (M. Rotrou); Hammam R'hira, May 1908–1917 (W. R. and K. J., and Faroult); Gabès, Tunisia (Staudinger); Guelt-es-Stel, April—May 1912–1913 (W. R. and K. J., and Faroult); Sebdou, Forêt de Tenira, May 1918 (P. Rotrou); El Mahouna, June 1919 (V. Faroult).

Mr. Oberthür employs for this species the name of *dejeanii* Dup., as *aurita* Fabr. is not accompanied by a figure; but *aurita* has forty years' priority over *dejeanii*.

### 276. *Cleophana diffluens mauretaniae* subsp. nov. (Pl. XV. f. 11.)

♂ ♀. Differs from *diffluens diffluens* Stdgr. in having no shade of red-brown whatever; *d. mauretaniae* differs from *diffluens lusitanica* Culot in having the distal half of the forewings sharply divided from the basal half, the basal half being almost deep black while the distal half has the ground-colour brown-grey. In this it is much nearer *d. diffluens*, as *d. lusitanica* has the distal half of the forewings sooty, so that in many specimens there is hardly any difference of ground-colour of the whole forewing.

This is the insect Mr. Oberthür enumerates as *diffluens diffluens* from Tunisia. This is the first record for Algeria.

I have at Tring of this new form 25 specimens from Hammam Meskoutine, May 1914 (W. R. and K. J.); El Mahouna, May 1919 (V. Faroult).

I have compared this with Chiclana specimens of *d. diffluens* (Pl. XV. f. 10), and a series of 113 *d. lusitanica* collected by Dr. Jordan at Monchique in Portugal.

[*Cleophana diffluens lusitanica* Culot. (Pl. XV. f. 12.)

*Cleophana diffluens* form. *lusitanica* Culot, *Noct. et Géom. d'Eur.* pt. i. vol. ii. p. 107. pl. 59. f. 10 (1915) (South Portugal).

Differs from *diffluens diffluens* and *d. mauretaniae* in having the whole forewing black, the basal half only in some specimens being of a deeper black.

This form was distributed by Staudinger and Bang-Haas under the name of *lusitanica*, but I find the name was not published, so Mr. Culot's figure and description of ground-colour prove to be the first publication and he stands as the author.]

277. *Cleophana versicolor* Stdgr. (Pl. XV. ff. 7, 8.)

*Cleophana diffluens* ab. *versicolor* Staudinger, *Cat. Lépid. Pal. Faun.* pt. i. p. 214. No. 2216a (1901) (Mauretania).

Mr. Culot and Sir George Hampson have also treated this as an aberration of *diffluens*, while Mr. Oberthür calmly ignores it altogether. It is, however, a perfectly distinct species and occurs together with *diffluens mauretaniae*.

We have at Tring 30 specimens from Constantine (Staudinger); Ain Draham September 1911, Hammam R'hira May 1917, Bou Saada March—April 1912, Guelt-es-Stel April 1913, Mecheria May 1918 (V. Faroult); Ain Sefra, May 1913 (W. R. and E. H.); Sebdu, May 1918 (P. Rotrou).

278. *Cleophana marocana* Stdgr. (Pl. XV. f. 9.)

*Cleophana diffluens* var. *marocana* Staudinger, *Cat. Lépid. Pal. Faun.* pt. i. p. 214. No. 2216b (1901) (Morocco).

Mr. Oberthür is somewhat doubtful as to the status of this insect, but I am convinced it is a good and distinct species.

There are 12 specimens at Tring: 4 Tangier (Staudinger); 1 Rabat (A. Théry); 7 Sebdu, Morocco (A. Théry).

The British Museum has 3 ♂♂ Forest of Marmora, March 1903, Meade-Waldo.

[*Omphalophana adamantina* (Blach.).

*Calophasia adamantina* Blachier, *Bull. Soc. Entom. France*, 1905, p. 214 (Rabat).

I cannot understand how all the authors, except the late William Warren, who mention this species have placed it in the genus *Calophasia*. Except for its black hindwings it is almost identical with *pauli* Stdgr., in fact Mr. Meade-Waldo (*Trans. Entom. Soc. Lond.* 1905) described and figured the specimen now in the British Museum as *Cleophana pauli* Stdgr.

I have not received this species.

The British Museum has 1 ♀ Forest of Marmora, April 1903, Meade-Waldo.]

279. *Calophasia kraussi* Rebel.

*Calophasia kraussi* Rebel, *Verh. Zool. Bot. Ges. Wien*, 1895 p. 348 (Oued Nouemra, Sahara).

Mr. Culot (*Noct. et Géom. d'Eur.* pt. i. vol. ii. p. 101. pl. 58. f. 6) describes and figures the white aberration of *kraussi* as form. *maozim*; but already in 1913 (*Novit. Zool.* vol. xx. pp. 124–125) I have described two aberrations of this species, the second ab. *albo-ochracea* being very close to Mr. Culot's *maozim*.



There are therefore three described aberrations: ab. *maozim* Culot, almost pure white; ab. *albo-ochracea* Rothsch., white with buff lines; ab. *brunnea* Rothsch., like the typical form, but whole wings suffused and saturated with brown. I further propose to name the specimens intermediate between *kraussi* and ab. *albo-ochracea* ab. *intermedia* ab. nov.

The series at Tring consists of 118 examples from Colomb-Bechar March—April 1912, Bou Saada March 1912, Laghouat March 1912, Aïn Draham September 1911, Guelt-es-Stel April 1913 (V. Faroult); Tilghemit April, Ghardaïa April 1911 (W. R. and E. H.); halfway between Touggourt and Ouargla, Arefidji north of Ouargla, Hassi-el-Hadjar, halfway between Ouargla and El Golea, north of El Golea, South Oued Mya, March—May 1912 (Hartert and Hilgert).

Of these 118 specimens there are 2 ab. *maozim*, 3 ab. *brunnea*, 12 ab. *albo-ochracea*, and 27 ab. *intermedia*, leaving 74 typical *kraussi*.

The British Museum has 1 ♀ Hammam-es-Salahin, April 1904, Lord Walsingham.

## 280. *Calophasia platyptera* (Esp.)

*Noctua platyptera* Esper, *Schmett.* vol. iv. pt. 2. p. 396. No. 138. pl. 130. f. 5. (1788) (Frankfort).

The proportion of albinistic specimens in this species is very large.

Our series at Tring numbers 26 specimens, of which 20 are albinistic = ab. *subalbida* Stdgr.

26 examples from Aïn Draham, August 1911 (Faroult and Staudinger); Souk Ahras, April 1914 (W. R. and K. J.); Hammam R'hira, April—May 1912–1917 (W. R. and K. J., and Faroult); Tizi Ouzou August 1914, north side of Djebel Zaccar August 1916 (Faroult); Environs d'Alger (Captain Holl).

## 281. *Calophasia almoravida* Grasl.

*Calophasia almoravida* Grasl., *Ann. Soc. Entom. France*, 1863. p. 319. pl. 8. f. 6 (Grenada).

Of this species I have 10 Algerian examples from Guelt-es-Stel April 1913, Bou Saada April 1912 (V. Faroult); Hammam Meskoutine April 1914, Khenchela May 1912 (W. R. and K. J.).

## 282. *Calophasia stigmatica* Rothsch. (Pl. XV. f. 26.)

*Calophasia stigmatica* Rothschild, *Novit. Zool.* vol. xx. p. 125. No. 49 (1913) (halfway between Ouargla and El Golea).

So far I have only received three specimens of this rare species; Herr Püngler of Aachen has two others from Biskra.

1 ♂ South Oued Mya April, 1 ♀ halfway between Ouargla and El Golea March 1912 (Hartert and Hilgert); 1 ♀ Guelt-es-Stel, April 1913 (V. Faroult).

## 283. *Metapistis picturata* (Rothsch.). (Pl. XVI. ff. 2, 3.)

*Cleophana picturata* Rothschild, *Entom. Zeitschr.* vol. xxii. p. 142 (1909) (Mraier).

When Sir George Hampson first examined the single type specimen, he considered it belonged to the genus *Harpagophana*, but on my procuring three further specimens a thorough re-examination proved that this pretty little species was not a Cucullid at all, but must be placed in the *Noctuinae* under the genus *Metapistis*. Herr Bang-Haas of Dresden has received from Tunisia a fifth specimen.



4 ♀♀ from Oued Nça April 1914, Arefidji north of Ouargla March 1912 (Hartert and Hilgert); Aïn Sefra, May 1915 (V. Faroult); Mraier, April 1909 (W. R. and E. H.).

284. *Rhodocleptria incarnata* (Freyer).

*Noctua incarnata* Freyer, *Neu. Beitr. Schmett.* vol. iii, p. 91, pl. 256, f. 4 (1839) (Constantinople).

64 Mauretanian specimens of this species are at Tring from Environs d'Alger, May 1908 (W. R. and K. J.); Bou Saada, May 1910–1911 (V. Faroult); Souk Ahras, April 1914 (W. R. and K. J.); Guelt-es-Stel, April–May 1912–1913 (W. R. and K. J., and Faroult).

285. *Xylina delphinii darollesi* (Oberth.).

*Chariclea darollesi* Oberthür, *Etud. Entom.* livr. i, p. 49, pl. 4, f. 5 (1876) (El Hacaïba).

This insect appears to be rare in Algeria, as I have only received 5 specimens.

2 Bou Saada May 1911 (V. Faroult); 2 Forêt de Tenira, 1 Sebdou June 1918 (P. Rotrou).

286. *Chloridea nubigera* (H.-Sch.).

*Heliothis nubigera* Herrich-Schäffer, *Syst. Bearb. Schmett. Eur.* p. 366 (1845) (Asia Minor).

The Mauretanian series at Tring consists of 155 specimens from Biskra March 1908, Col de Sfa (bred) (W. R. and E. H.); Khenchela June 1911, Bou Saada May 1911, Lalla Marnia May 1914, El Kantara August 1917, Mecheria May 1918, Djebel Antar May 1918 (V. Faroult); Oued Nça April 1914, Ghardaïa May 1914, north of Aïn Guettera April 1912 (Hartert and Hilgert); Sidi-bel-Abbès, May 1916–1917 (M. Rotrou); Sebdou, July 1918 (P. Rotrou); Aïn Sefra, May 1913–1915 (W. R. and E. H., and Faroult); Saida, May 1913 (W. R. and E. H.); Environs d'Alger (Captain Holl); Guelt-es-Stel, May 1913 (V. Faroult); Oueds Amra, Dehin, Ag-elil, March 1914 (Geyr von Schweppenburg); Les Pins, Titen Yaya May–August 1915 (M. Rotrou).

The British Museum has 1 ♀ Algeria, Mrs. Nicholl.

287. *Chloridea peltigera* (Schiff. and Den.).

*Phalaena peltigera* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 89 (1775) (Vienna).

Of this world-wide species, the series at Tring from Mauretania comprises 285 specimens from Hammam Meskoutine, May 1909–1914 (W. R., E. H., and K. J.); El Kantara, June–August 1909–1917 (Sidi Brahim and V. Faroult); Khenchela June 1911, Bou Saada May 1911, Perrégaux September 1915, Masser Mines June 1914, Lalla Marnia May 1914, Moroccan Frontier May 1914, Mecheria and Djebel Antar June 1918, Aïn Sefra May 1915, Djelfa June 1913, Aïn Draham August 1911 (V. Faroult); Titen Yaya May 1915, Sidi-bel-Abbès June–September 1917 (M. Rotrou); Biskra, March 1908 (W. R. and E. H.), Hammam R'hira, May–June 1908–1916 (W. R., E. H., and K. J., and Faroult); Mazagan, Morocco June 1901, Rio de Oro, south of Morocco August 1902 (W. Riggensbach); Guelt-es-Stel, March–October 1912–1913 (W. R. and K. J., and Faroult); Environs de Taourirt, Morocco, July 1918 (M. Rotrou); El Mahouna, June 1919 (V. Faroult).

In the British Museum are 1 ♂, 1 ♀ Algeria, Mrs. Nicholl.

288. *Chloridea obsoleta* (Fabr.).

*Noctua obsoleta* Fabricius, *Entom. Syst.* vol. iii. pt. i. p. 456. No. 155 (1793) (South American Islands).

I have very few Algerian specimens of this widespread species.

15 specimens from Mazagan, Morocco, July 1903 (W. Rigggenbach); Sidi-bel-Abbès, June—July 1917–1918 (M. Rotrou).

289. *Melicleptria scutosa* (Schiff. and Den.).

*Phalaena scutosa* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 89 (1775) (Vienna).

Of this very widespread insect the Mauretanian material at Tring consists of 158 examples from Bou Saada April—May 1911–1912, Djebel Kerdada May 1912, Puits Baba May 1913, Guelt-es-Stel April—October 1913 (V. Faroult); Guelt-es-Stel, April 1912 (W. R. and K. J.).

290. *Chloridea dipsacea* (Linn.).

*Phalaena dipsacea* Linnaeus, *Syst. Nat.* edit. xii. p. 856. No. 185 (1767) (Sweden).

This insect appears to be rare in Mauretania. I have only 9 specimens from Djebel Mekter, Ain Sefra May 1913 (W. R. and E. H.); Batna (Nelva coll.); Khenchela, May 1912 (W. R. and K. J.); El Misab, June 1918 (P. Rotrou).

The British Museum has 1 ♂ Forest of Marmora, Morocco, Meade-Waldo.

[*Erithrophaia canroberti* Oberth.

*Erythrophaia canroberti* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 182. pl. xdvii. f. 4130 (1919) (El Outaya).

This species must be extraordinarily rare, as only the single ♂♀ in Mr. Oberthür's collection are known.]

291. *Heliothis chanzyi* (Oberth.).

*Anthoecia chanzyi* Oberthür, *Etud. Entom.* livr. i. p. 51. pl. 2. ff. 4a, b. (1876) (Oued Djeddi).

I have only a single ♀ of this species taken by ourselves.

1 ♀ Guelt-es-Stel, April 1912 (W. R. and K. J.).

292. *Xanthodes malvae* (Esp.).

*Noctua malvae* Esper, *Schmett.* vol. iv. pt. 2. sect. 2. p. 63. No. 241 (1796) (Hungary).

I have only received 12 Algerian specimens of this species. 2 ♂♂ Environs d'Alger (Captain Holl); 1 ♂ Biskra, April 1909 (W. R. and E. H.); 2 ♂♂, 1 ♀ El Kantara August 1917, 1 ♀ Perrégaux October 1915 (V. Faroult); 3 ♀♀ Sidi-bel-Abbès, August—September 1917 (M. Rotrou); 2 ♀♀ Forêt de Tenira, July 1918 (P. Rotrou).

293. *Aegle vespertalis* (Hübner).

*Pyralis vespertalis* Hübner, *Samml. Eur. Schmett. Pyr.* f. 159 (1818).

Of this species there are at Tring 179 Mauretanian specimens from Guelt-es-Stel May—June 1913, Lalla Marnia May 1914, Sakamodi August 1912, Nedroma May 1914, Moroccan Frontier May 1914, Zoudj-el-Beghal July 1914, Masser

Mines May 1914, Aïn Draham August 1911, Khenchela June 1911, north side of Djebel Zaccar August 1916, El Mesrane June 1913 (V. Faroult); Sidi-bel-Abbès, June—August 1916-1918 (M. Rotrou); Hammam R'hira, May 1913 (W. R. and E. H.); Hammam Meskoutine, May 1909-1914 (W. R., E. H., and K. J.); Sebdu, Forêt de Tenira, June 1918 (P. Rotrou).

Some of these specimens have lost all the brown transverse bands of the fore- and hindwings, and look exactly like *Metaegle pallida* Stdgr., which caused me to record this latter from Guellet-es-Stel.

[*Erastria trabealis trabealis* (Scop.).

*Phalaena trabealis* Scopoli, *Entom. Carn.* p. 240 (1763) (Carniola).

This form is confined to the countries north of the Mediterranean Sea. Some specimens from West Algeria and Morocco approach this almost indistinguishably, but alongside of them occur the strange medley of colour varieties treated under the next subspecies.]

294. *Erastria trabealis deleta* (Staud.).

*Agrophila deleta* Staudinger, *Stett. Entom. Zeit.* vol. xxxviii. p. 190 (1877) (Algeria).

*Agrophila flavonitens* Austaut, *Le Nat.* vol. ii. pt. xix. p. 156 (1880) (Sebdu).

*Emmelia sulphuralis* var. *algira* Oberthür, *Etud. Entom.* livr. vi. p. 90. pl. 2. f. 2 (1881) (Bône).

I have given the full synonymy of the Mauretanian race of *trabealis* because there has been considerable confusion as to the status of the forms to which the three names apply. Mr. Oberthür's *algira* is the aberration with the black markings reduced; *deleta* is the form where the black is reduced to one mark only; and *flavonitens* is the aberration with no black on the forewings. The specimens from Morocco and West Algeria in which the black markings are practically the same as in Europe I propose to call ab. *parallela* ab. nov. and the aberration with all the black markings replaced by stramineous olive I call ab. *olivina* ab. nov.

At Tring we have 170 Mauretanian specimens, of which 12 are ab. *parallela* and 4 halfway between that and *algira*, and 18 are *algira*; the remaining 136 are mixed *flavonitens*, *deleta*, and *olivina*. The 160 are from Mazagan, Morocco, April—June 1902 (W. Riggenschach); Biskra, April 1908 (W. R. and E. H.); Sidi-bel-Abbès, May—August 1916-1917 (M. Rotrou); Masser Mines, June 1914 (V. Faroult); Sebdu, Forêt de Tenira, July 1918 (P. Rotrou); Rabat, May 1913 (A. Théry).

The British Museum has 1 ♂ Biskra, March 1897, A. E. Eaton.

295. *Tarache lucida* (Hufn.).

*Noctua lucida* Hufnagel, *Berl. Mag.* vol. iii. p. 302 (1766) (Berlin).

This is a very variable species, occurring almost black = ab. *lugens* Alph. and almost white = ab. *insolatrix* Hübn.; in between are the aberrations *albicollis* Fabr. and *solaris* Oberth., but much whiter specimens exist than ab. *insolatrix*, and I propose the name ab. *extrema* ab. nov. for the specimens with only a dark border and a few black dots in the white disc.

We have at Tring 427 Mauretanian examples from Mazagan and Cape Blanco May—October 1902, Imitanut May 1904, Truchan May 1904, Rohama April—May 1903, Seksawa April 1905, Morocco (W. Riggenschach); Oum-re-Biah, Morocco,

April 1901 (Hartert); Biskra, March—April 1908–1914 (W. R. and E. H.); El Kantara February—May 1909, Hammam Meskoutine May 1909 (W. R. and E. H.); Environs d'Alger (Dr. Nissen); Casba, Alger (Captain Holl); Khenchela May 1912, Hammam Meskoutine May 1914, Souk Ahras April 1914 (W. R. and K. J.); Environs de Batna, 1913–1914 (A. Nelva); El Kantara March—August 1911–1917, Masser Mines May 1914, Aïn Draham July 1911, Perrégaux October 1915, Hammam R'hira April—June 1916–1917, Berrouaghia April 1914, Bou Saada and Djebel Kerdada May 1912, El Hamel May 1912, El Mesrane June 1913, Oued Hamidou June 1912, Terres Blanches May 1913, Guelt-es-Stel April—September 1912–1913, La Macta, Perrégaux September 1915, Lalla Marnia and Moroccan Frontier May 1914, Puits Baba May 1913, Laghouat March 1912, Mecheria May 1918, Nedroma May 1914, Msila May 1915 (V. Faroult); Sidi-bel-Abbès July—September 1916 (M. Rotrou); Belvedere, Tunis, August—September 1915 (E. Blanc); Sebdou, August 1918 (P. Rotrou); Oued Nça, April 1914 (Hartert and Hilgert); Environs d'Alger, May 1911 (W. R. and E. H.); Oran, April 1913 (W. R. and E. H.); Les Pins, September, 1918 (M. Rotrou); Grottes de Tafna, Aïn-El-Berd July—September 1918 (P. Rotrou); Rabat, Morocco, June 1913 (A. Théry).

The British Museum has 1 ♂, 1 ♀ Algeria, Mrs. Nicholl; 1 ♀ Philippeville, 1 ♀ Hammam-es-Salahin March—May 1904, Lord Walsingham; 1 ♀ Tangier, 1 ♂, 1 ♀ Mogodon, Leech; 1 Biskra, April 1903, A. E. Eaton.

## 296. *Tarache biskrensis* (Oberth.).

*Acontia biskrensis* Oberthür, *Bull. Soc. Entom. France*, 1887, p. 58 (Biskra).

We found this species far from common.

The series at Tring numbers 63 from Colomb Bechar March—April 1912, Bou Saada May 1912, Djebel Kerdada May 1912, El Outaya August 1910, El Hamel May 1912, Aïn Draham September 1911 (V. Faroult); Ghardaïa, April 1911 (W. R. and E. H.); Oued Nça April 1914, Sidi Hassi Mahmud April 1914, Oued Abiod May 1912, El Alia May 1914, north of El Golea, halfway between Ouargla and El Golea, Hassi el Hadjar, South Oued Mya March—May 1912 (Hartert and Hilgert).

This species is apparently as variable as *lucida*.

## 297. *Acontia luctuosa* (Schiff. and Den.).

*Phalaena luctuosa* Schiffermüller and Denis, *Ank. Syst. Werk. Schmelt. Wienergeg.* p. 90 (1775) (Vienna).

Of this species we have at Tring 259 Mauretanian specimens from Mazagan, Morocco June—August 1900–1903 (W. Riegenbach); Environs d'Alger, May 1908–1912 (W. R., E. H., and K. J., and Dr. Nissen); Sidi Ferruch, August 1911 (A. Théry); Batna (A. Nelva); Hammam Meskoutine, May 1914 (W. R. and K. J.); Sidi-bel-Abbès, July—August 1916–1917 (M. Rotrou); Hammam R'hira, May—June 1911–1917 (W. R. and E. H., and Faroult); Perrégaux September 1915, Zoudj el Beghal July 1914, Masser Mines May 1914, Environs de Setif 1911, Tizi Ouzou July 1914, Debrousseville September 1914, north side of Djebel Zaccar August 1916, Aïn Draham September 1911 (V. Faroult); Rabat, Morocco, June 1913 (A. Théry).



298. *Lipatephia eremophila* (Rebel).

*Armada eremophila* Rebel, *Verh. Zool.-Bot. Gesell. Wien*, vol. xlv. p. 350. No. 10 (1895) (Ouargla-Ghardaïa).

*Armada lacroizi* D. Lucas, *Bull. Soc. Entom. France*, p. 312 (1914) (Tunis).

This pretty species has been entirely misunderstood. Mr. William Warren in *Seitz* figures and describes a totally different insect, entirely ignoring Rebel's statement that the forewing of his *eremophila* had a general resemblance in colour and pattern to *Aedia funesta* (Esp.). Dr. Rebel's name has priority over Monsieur Daniel Lucas's by twenty years, but Mr. Oberthür and his friends will not agree as Dr. Rebel gives no figure.

We have at Tring 15 specimens from Ghardaïa, April 1911 (W. R. and E. H.); Ain Seфра March 1915, Colomb Bechar March—April 1912 (V. Faroult).

There is 1 specimen of ours from Ghardaïa in the British Museum.

299. *Nereisana oranaria* (Luc.).

*Chesias oranaria* Lucas, *Explor. Scient. d'Algérie*, vol. iii. p. 392. No. 132. pl. 4. f. 4 (1848) (Oran).

This insect was considered by its author to be a Geometer, and Mr. Oberthür and others have followed him, but it is really a Noctuid and belongs to the *Erastrinae*.

I have a single pair of this rare species.

1 ♀ Souk Akras, April 1914 (W. R. and K. J.); 1 ♂ Environs d'Alger, February 1908 (W. R. and E. H.).

The British Museum has 2 ♀♀ Algeria, Mrs. Nicholl; 4 ♂♂ Hammam Meskoutine, March 1911, Meade-Waldo.

300. *Hadjina viscosa* (Frr.).

*Mythimna viscosa* Freyer, *Neu. Beitr.* vol. i. p. 39. pl. 21. f. 3 (1831) (Sicily).

Victor Faroult caught two specimens of this species during his unfortunate trip to Perrégaux, whence he had to flee for his life.

1 ♂, 1 ♀ Perrégaux, September 1915 (V. Faroult).

301. *Iambiodes incerta* (Rothsch.). (Pl. XVI. f. 1.)

*Bryophila incerta* Rothschild, *Novit. Zool.* vol. xx. p. 125. No. 51 (1913) (Oued Nça).

This is almost certainly the insect Mr. Oberthür enumerates under the name of *Erastria fuscula gueneei* Fall.

If this is so, it has been wrongly identified by Mr. Oberthür, for the insect here enumerated is certainly not *Lithacodia fasciana gueneei* (Fall.).

There are 7 specimens of this rare species at Tring from Oued Nça, April—June 1912–1914 (Hartert and Hilgert).

302. *Eublemma scitula* (Ramb.). (Pl. XVI. ff. 21, 22.)

*Erastria scitula* Rambur, *Ann. Soc. Entom. France*, 1833. p. 26. pl. ii. f. 16 (Corsica).

Mr. Oberthür remarks that he has no personal knowledge of this species having occurred in Algeria, but he was convinced it had been taken, and therefore included it.



I have received 35 specimens of it from Monsieur Maxime Rotrou and others. It is very strange that I never received it either from Tlemcen or Sebdou, seeing that these places produce great numbers of olive trees. The strange habits of the larva in being carnivorous and living on the Coccid (*Lecanium oleae*) are not unique, many of the tropical species of *Eublemma* feeding on *Coccidae*.

21 Sidi-bel-Abbès, August—September 1915–1918 (M. Rotrou); 1 Ras Chergui, Aïn Sefra July 1915 (V. Faroult); 9 Forêt de Tenira, September 1918 (P. Rotrou); 2 Messer, September 1917 (M. Rotrou); Sidi Ferruch, July 1911 (A. Théry).

303. *Catablemma geyri* (Rothsch.). (Pl. XVI. f. 23.)

*Eublemma geyri* Rothschild, *Ann. Mag. Nat. Hist.* (8). xvi. p. 252. No. 28 (1915) (Tahihout).

Of this species I only have 4 specimens.

3 ♀♀ Tahihout, April 1914 (Geyr von Schweppenburg); 1 ♀ Aïn Sefra, July 1915 (V. Faroult).

304. *Eulocastra diaphora* (Stdgr.).

*Erastria diaphora* Staudinger, *Hor. Entom. Soc. Ross.* vol. xiv. p. 415 (1878) (Kerasdere, Asia Minor).

Of this I have received 7 specimens.

2 South Oued Mya, May 1912 (Hartert and Hilgert); 1 Colomb-Bechar, March 1912 (V. Faroult); 4 Oued-Gif-Aman, Oued Tamoudat, Oued Ahmra, Ti-n-Tabarik March—April 1914 (Geyr von Schweppenburg).

The British Museum has 1 ♂, 3 ♀♀ Hammam-es-Salahin, April—May 1903–1904, Lord Walsingham.

[*Phyllophila numerica* (Boisd.).

*Agrophila numerica* Boisduval, *Gen. et Ind. Meth.* edit. ii. p. 175. No. 1403 (1840) (Corsica).

There have been 3 subspecies described: *disjecta* Warr. from Spain, **not** Sardinia as Mr. Oberthür states; *ornatula* Christ. from Turkestan; and *deserti* Oberth. from El Outaya, Algeria. Both Mr. Warren and Sir George Hampson make *ornatula* occur in Algeria, while Mr. Oberthür denies it, while erroneously applying *disjecta* Warr. to the large strongly marked Sardinian form. In addition to my 12 Algerian examples there are at Tring 9 European specimens, 7 from Sardinia and 2 without locality. The two latter appear to be typical *numerica*. As Mr. Oberthür has erroneously applied Mr. Warren's name *disjecta* to the Sardinian form, in spite of the fact that in *Seitz* Mr. Warren expressly states that his name *disjecta* was given to the **Ab. 1** of Hampson and its habitat was **Spain**, in order to prevent the perpetuation of the error I propose the name ***numerica sardoa*** subsp. nov. for the Sardinian form, which differs from *n. numerica* in its larger size and more conspicuous pattern.

The 11 Algerian specimens consist of 1 from Sebdou, 2 from Guelt-es-Stel, 2 from Bou Saada, and 7 from Aïn Sefra. The 1 from Sebdou, 1 from Guelt-es-Stel, and 4 from Aïn Sefra agree well with Guenée's figure of the Andalusian ♀, while the 6 others agree with "var. *deserti* Oberth." This proves *deserti* not to be a local race, but simply an aberration, and that the Algerian form is *disjecta* Warr.]

305. *Phyllophila numerica disjecta* Warr.

*Phyllophila numerica* ab. *disjecta* Warren in Seitz, *Grossschmett. Erde*, vol. iii. p. 274 (Spain).

3 ♀♀ Sebdou, June 1918 (P. Rotrou); 1 ♂, 1 ♀ Guelt-es-Stel, May—September 1913 (V. Faroult); 2 ♂♂, 1 ♀ Bou Saada, May 1911 (V. Faroult); 3 ♂♂, 4 ♀♀ Aïn Sefra, May—July 1913–1915 (W. R. and K. J., and Faroult).

Of these the ♂ from Guelt-es-Stel, the 2 ♂♂, 1 ♀ from Bou Saada, 1 ♀ from Sebdou, and 1 ♂, 2 ♀♀ from Aïn Sefra, are ab. *deserti* Oberth.

[*Eublemma velox* (Hübner).]

*Noctua velox* Hübner, *Samml. Eur. Schmett. Noct.* ff. 507, 515 (1818).

Mr. Oberthür does not mention this form, only *velox velocior* Stdgr.

Mr. Warren has described a ♀ from Algeria! as *griseimargo* which differs in being larger and more suffused with red; I have a second still larger specimen of this form from Bou Saada. Although Mr. Warren's name was given to an aberration it will have to stand for the Algerian subspecies which differs from the type in being larger and less grey. The form *velocior* Stdgr. from Sicily is very distinct.]

306. *Eublemma velox griseimargo* (Warr.).

*Leptosis griseimargo* Warren, *Novit. Zool.* vol. xix. p. 36. No. 79 (1912) (Algeria).

My series consists of 31 specimens from Algeria: Bou Saada April—May 1911, Lalla Marnia May 1914, Perrégaux September 1915 (V. Faroult); Hammam Meskoutine, May 1914 (W. R. and K. J.); Aïn Draham, September 1911 (V. Faroult); Guelt-es-Stel, October 1913 (V. Faroult); Forêt de Tenira, Sebdou June—September 1918 (P. Rotrou); Les Pins August, Environs de Taourirt July 1918 (M. Rotrou); Rabat (A. Théry); Mazagan, September 1903 (W. Riggenschach).

[*Eublemma polygramma* (Dup.).]

*Anthophila polygramma* Duponchel, *Lépid. France*, Suppl. III. p. 519. pl. 44. f. 3 (1836) (Digne).

I have never received this species.]

307. *Eublemma permixta* (Stdgr.) (Pl. XVI. ff. 1–5.)

*Thalpochares permixta* Staudinger, *Iris*, vol. x. p. 266. pl. 4. f. 7 (1897) (Chellala).

*Eublemma mozabítica* Rothschild, *Novit. Zool.* vol. xix. p. 126. No. 5 (1912) (Ghardaïa).

I am confident that my fellow-lepidopterists will not blame me very much for having redescribed *permixta* Stdgr.; for I believe nine out of ten would have done so, if they had compared my type with the sandy yellow specimens of this variable insect in the British Museum or with Staudinger's original description, where the ground-colour is given as grey-green marked with brown.

As it turns out on examination of more specimens, there are intermediate specimens between my *mozabítica* and the extreme sandy yellow form, but so far we have no example at Tring agreeing with Staudinger's original description.

I propose to call the sandy yellow form ab. *arenosa* ab. nov. and the intermediate form ab. *intermedia* ab. nov., while the specimens with violet-mauve ground-colour will stand as ab. *mozabítica* Rothschild.

We have at Tring 23 specimens from Ghardaïa April 1911, Aïn Sefra May 1913 (W. R. and E. H.); halfway between Ouargla and El Golea March 1912, South Oued Mya April 1912, Oued Nça April 1914 (Hartert and Hilgert); Bou Saada, March—May 1911–1912 (V. Faroult).

Of these 23 examples, 10 are ab. *mozabitica*, 5 ab. *arenosa*, 7 ab. *intermedia*, and 1 ab. *nivescens*.

The extreme white form is ab. *nivescens* ab. nov.

The British Museum has 1 ♂ Hammam-es-Salahin, May 1906, Lord Walsingham (type of ab. *nivescens*).

### 308. *Eublemma parva* (Hübner).

*Noctua parva* Hübner, *Samml. Eur. Schmett. Noct.* f. 356 (1808).

This species is almost as variable as *ostrina*, going from cream-colour without markings to specimens with basal half of forewing chestnut-brown and outer half almost black.

The series of Mauretanian examples at Tring comprises 177 from Mazagan, July 1900 (W. Riggenbach); Hammam R'hira, May—June 1913–1916 (W. R. and E. H., and Faroult); Sidi Ferruch, July 1911 (A. Théry); Guelt-es-Stel November 1913, Perrégaux September 1915, Lalla Marnia May 1914 (V. Faroult); Aïn Sefra, May—June 1913–1915 (W. R. and E. H., and Faroult); Sebdou, June—September 1918 (P. Rotrou); Sidi-bel-Abbès, June—October 1916–1918 (M. Rotrou); Sebdou, El Misale, June—September 1918 (P. Rotrou); Aïn Douz, Les Pins, Environs de Taourirt, July—August 1917–1918 (M. Rotrou); La Mocta, September 1915 (V. Faroult).

Of the 177 specimens 74 are from Sidi-bel-Abbès and 51 from Sebdou.

In the British Museum are 1 ♀ Hammam-es-Salahin, April 1904, Lord Walsingham; 1 ♀ Batna, August 1910, E. A. Eaton; 1 Tozeur, Tunisia, 1913, G. C. Champion; 1 ♂ Tangier, Leech coll.

### 309. *Eublemma deserti* (Rothsch.). (Pl. XVI. f. 26.)

*Thalpochara deserti* Rothschild, *Entom. Zeit. Stuttgart*, vol. xxiii. p. 142 (1909) (Mraier).

This very rare species at first sight looks like a minute washed-out *parva*, but in reality it belongs to a different section of the genus.

2 ♂♂ Mraier, April 1909 (W. R. and E. H.); 1 ♀ Aïn Taïba, May 1914 (Geyr von Schweppenburg).

### 310. *Eublemma cochylioides* (Guen.).

*Micra cochylioides* Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* vol. vi. Noct. vol. ii. p. 245 (1852) (Island of Bourbon).

This beautiful little species has a very wide distribution, ranging from the Canary Islands to Australia and the Fiji Islands.

1 ♂ Sidi-bel-Abbès, July 1916 (M. Rotrou).

This specimen is very bright, especially the yellow of the thorax and basal one-third of forewings.

311. **Eublemma ostrina** (Hübner.).

*Noctua ostrina* Hübner, *Samml. Eur. Schmett. Noct.* ff. 399, 648 (1808).

We find in Algeria all the forms of this extremely protean species from ab. *carthami* H.-S. uniform yellowish to the darkest ab. *porphyrina* Frr., with abs. *numida* Lucas, *purpurata* Led., *aestivalis* Guen., and a host of others more or less intermediate.

We have at Tring a Mauretanian series of 287 examples from Guelt-es-Stel March—May 1912–1913, Hammam R'hira May 1913–1916 (W. R., E. H., and K. J., and Faroult); north side of Djebel Zaccar August 1916, Tilghemt April 1912, Masser Mines June, Lalla Marnia May 1914, Aïn Draham May 1911, El Kantara August 1917, Mecheria and Djebel Antar May 1918, Aïn Sefra June 1915, Bou Cedraïa May 1913, Bordj-ben-Anéridj November 1911, Oued Hamidou June 1912, Bou Saada March 1912 (V. Faroult); Environs de Batna, 1913–1914 (A. Nelva); Sidi Ferruch, July 1911 (A. Théry); Sidi-bel-Abbès, Aïn Dour, June—August 1916–1917 (M. Rotrou); Sebdou, Forêt de Tenira, August 1918 (P. Rotrou); Environs d'Alger May 1912, Khenchela May 1912, Hammam Meskoutine April—May 1914, Souk Ahras April 1914 (W. R. and K. J.); Ghardaïa April 1911, Biskra 1911, Oran April 1913, Tlemcen April 1913 (W. R. and E. H.); Rabat, July 1913 (A. Théry); Environs de Taourirt, July 1918 (M. Rotrou); El Mahouna, July 1919 (V. Faroult).

The British Museum has 3 ♀♀ Algeria, Mrs. Nicholl; 1 ♀ Philippeville, 2 ♂♂, 4 ♀♀, 1 larva, Hammam-es-Salahin, April—May 1904, Lord Walsingham; 1 ♂ El Kantara, April 1913, P. A. Buxton; 1 ♂ Morocco, Stainton coll.; 6 ♂♂ Tangier, Leech coll.

312. **Eublemma pseudostrina** Rothschild. (Pl. XVI. f. 25.)

*Eublemma pseudostrina* Rothschild, *Novit. Zool.* vol. xxi. p. 339. No. 210 (1914) (Guelt-es-Stel).

At first sight this might be mistaken for one of the innumerable varieties of *ostrina*, but the sooty-grey fringe and apex at once distinguish it.

1 ♀ Guelt-es-Stel, August 1913 (V. Faroult).

313. **Eublemma subvenata** (Stdgr.).

*Thalpochares subvenata* Staudinger, *Iris*, vol. v. p. 288. No. 64. pl. iii. f. 13 (1892) (Tunis).

4 Aïn Sefra, July 1915 (V. Faroult).

In the British Museum is 1 ♀ El Kantara, May 1903, Lord Walsingham.

[**Eumegethes tenuis** (Stdgr.).

*Thalpochares (Eumegethes) tenuis* Standinger, *Iris*, vol. x. p. 268. pl. iv. f. 6 (1897) (Sfax).

Mr. Oberthür states that he is doubtful what family this belongs to; this shows that because he will not acknowledge unfigured species, he also ignores all the rest of articles in which such unfigured species may be described.

In my article on the "Lepidopterous Fauna of Guelt-es-Stel" in vol. xxi. *Novit. Zool.* p. 341, No. 228, I expressly point out that both Mr. Prout and Mr. William Warren had examined the insect and found it to be a Geometer and **not** a **Noctuid**.



Its right position is in the subfamily *Oenochrominae*, and Mr. Prout places it immediately after *Myinodes interpunctaria* Herr.-Sch. and in front of *Theoxena tenuis* Meyr.

The series at Tring consists of 45 examples from Guelt-es-Stel, November 1913 (V. Faroult).]

### 314. *Eublemma albida* (Dup.).

*Anthophila albida* Duponchel, *Lépid. France*, Suppl. iv. p. 382. pl. 81. f. 1 (1842) (Marseilles).

Mr. Oberthür figures specimens of ab. *gratissima* Stdgr. from the Djebel Aurès, and the ab. *brunnescens* Culot is from Lambessa.

Among the 65 examples at Tring only typical *albida* and ab. *albidior* Culot are represented from Algeria and *gratissima* from Tunis.

46 Environs de Batna, June 1900–1914 (Dr. A. Seitz and A. Nelva); 6 Tunis Dannehl, 10 Sebdo El Misab, June–July 1918 (P. Rotrou); 1 Hammam R'hira, June 1916 (V. Faroult); 1 Aïn Fezza, June 1917 (M. Rotrou); El Mahouna, July 1919 (V. Faroult).

### 315. *Eublemma grata* (Guen.).

*Anthophila grata* Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* vol. vi. Noct. ii. p. 251. No. 1048 (1852) (South Spain).

Of this species a number of forms have received names, viz. *albicans* Ramb.; *candicans* Ramb.; *extranea* Ramb.; *extraria* Ramb.; *faroulti* Rothsch.; and *ramburi* Culot. Of these all but *faroulti* Rothsch. = *ramburi* Culot are undoubtedly only aberrations. The status of *faroulti* is rather more complex; while it undoubtedly occurs as an aberration among the other forms of *grata*, the fact remains that in the Guelt-es-Stel region it forms the bulk of the specimens, but I fear this is not sufficient to give it the rank of subspecies. Therefore the aberrations are as follows:

- ab. *albicans* Ramb., white, pattern obsolete.
- ab. *candicans* Ramb., white, pattern distinct, lines narrow.
- ab. *faroulti* Rothsch., white, pattern heavy, lines very broad.
- ab. *extranea* Ramb., greyish white, pattern medium.
- ab. *grata* Boisd., greyer, pattern feeble.
- ab. *extraria* Ramb., grey-brown, pattern strong.

In the *British Museum Catalogue* Sir George Hampson has *grata* and *candicans* as two species, but this is natural in view of the very few specimens he had for comparison.

The series at Tring consists of 173 examples from Guelt-es-Stel May–June 1913, Bou Saada May 1911–1912, El Hamel May 1912, Zmila nr. Oran June 1913, Terres Blanches and Puits Baba May 1913 (V. Faroult); Batna, July 1910 (Dr. A. Seitz and A. Nelva); Sebdo, June 1918 (P. Rotrou); Les Pins, July 1917 (M. Rotrou).

In the British Museum are 1 ♂ Bou Saada; 2 ♂♂ Guelt-es-Stel ex Tring Museum.

### [*Eublemma albicans* (Guen.).

*Anthophila albicans* Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* vol. vi. Noct. ii. p. 251 (1852) (Andalusia).

The confusion surrounding this species is astounding, and the examination of the literature has been worse than perfunctory. We have to thank Messrs.



Oberthür and Culot for the final solution; though even Mr. Oberthür has not got it quite right. The error arose in the first place by Boisduval, in his *Genera and Index Methodicus*, edit. ii. 1840, p. 164, No. 1314, giving "*Albicans* Ramb. *Faun. Andul.*" Now Rambur's *Faune de l'Andalousie*, although evidently more complete in manuscript, was never fully published. Of the *Lepidoptera*, pages 213–336 of text and pl. 8–18 of figures are all that has appeared, the text running from *Papilio podalirius* to *Sesia rhingiaeformis* and the plates from *Zegris* to the *Hesperidae* among the *Diurni* and from *Zygaena* to *Caradrina* among the *Nocturni*. Thus Boisduval's *Haemerosia*, including *albicans*, was never published in that work. In 1858–1866 Rambur, however, published his *Catalogue Systematique des Lépidoptères de l'Andalousie*, pp. 1–412 and Plates 1–22; the text, however, was never completed and probably some plates also are wanting, as livraison iii., which was to complete the work, was never published. Page 412 ends up with *Pterostoma palpina* unfinished, so that there is no text to the plates 6–22, but as the figures are named, the new species stand good.

On plates 10. ff. 4, 5; 13 f. 2 and 15 f. 1 Rambur figures four aberrations, to one of which he gave the name *albicans*, of a very different *Eublemma* to the one he proposed to call *albicans* in that part of the *Faune* never published.

Meanwhile, however, Guenée in 1852 described as *albicans* (see above) the specimen in Boisduval's collection which **was to have been published** by Rambur as *albicans* in the *Faune*; and as he gives a very good description and his type exists (see Culot, *Noct. et Géom. d'Eur.* pt. i. vol. ii. pl. 66, f. 15), *albicans* must stand for that species.

Sir George Hampson in the *Catalogue* has divided *albicans* Ramb. (nec Guen.) = *grata* Guen. into two species, *candicans* Ramb. and *grata* Boisd. (see vol. x. pp. 125 and 155), and placed both *albicans* Guen. and *albicans* Ramb. under *grata*, quite failing to grasp the truth owing to the great confusion due to the non-publication of the part of Rambur's *Faune* containing the original figure and description of Boisduval's *albicans*. The correct solution of this complicated question is that there are two species *grata* Guen. and *albicans* Guen. But *albicans* Ramb., *candicans* Ramb., *extranea* Ramb., and *extraria* Ramb. are all colour variations of *grata* Guen. (see antea sub. No. 314), while *albicans* Guen. is a distinct species.

Mr. Oberthür records 2 specimens of this species from El Outaya, but I have never received it.]

### 316. *Eublemma virginalis* (Oberth.).

*Anthophila virginalis* Oberthür, *Etud. Entom.* livr. vi. p. 90. pl. xi. f. 1 (1881) (Sebdou).

*Anthophila caïd* Oberthür (= ab. *caïd*), *Etud. Entom.* livr. vi. p. 91. pl. xi. f. 2 (1881) (Sebdou).

*Eublemma subterminalis* Rothschild, *Novit. Zool.* vol. xxi. p. 338. No. 209 (1914) (Guelts-es-Stel).

I have 82 examples, other than from Guelts-es-Stel, of this species, and that I consider too few to say anything about it, beyond that I agree with Mr. Oberthür in his recent conclusion that his *caïd* is only an aberration of *virginalis*. My *subterminalis* is a pure synonym of *virginalis*, and due to carelessness on my part.

Of ab. *caïd* there are 54 specimens and 28 *virginalis* among the 82 not from Guelts-es-Stel. All the 112 from Guelts-es-Stel are *virginalis*.

The Tring series totals 194: 112 Guelts-es-Stel, June–July 1913, 1 Djelfa June 1913 (V. Faroult); 5 Aïn Sefra June–July 1915, 1 Bou Saada

May 1911 (V. Faroult); 15 Sebdou July—August 1918, 2 El Mizab, Forêt de Tenira (P. Rotrou); 1 Sidi-bel-Abbès July 1917 (M. Rotrou); 49 Les Pins, August 1918 (M. Rotrou); 8 Environs de Taourirt July 1918 (M. Rotrou).

317. **Eublemma emir** (Culot).

*Thalpochares emir* Culot, *Noct. et Géom. d'Eur.* pt. i. vol. ii. p. 153. pl. 68. f. 4 (1916) (Géryville).

Of this insect I have a very poor series, 9 Guelte-es-Stel June—July 1913 (V. Faroult).

318. **Eublemma deserta** (Stdgr.).

*Thalpochares deserta* Staudinger, *Iris*, vol. xii. p. 383 (1899) (Biskra).

Of this purely desert species we have at Tring 47 specimens, 2 from north of and 45 from south of In Salah.

1 ♀ north of Aïn Guettera, 1 ♀ S. Oued Mya, April 1912 (Hartert and Hilgert); 45 Timassinin, Oued Ag'elil, Oued Dehin, Idelès, 20 kil. N. of Idelès, Oued Tamoudat, Oued Ahmra, Aceksem, Ti-n-Tabarik, Aïn Tahart, Amgid, and Tahihout, Hoggar Mts. and Desert N. of Hoggar Mts. January—April 1914 (Geyr von Schweppenburg).

In the British Museum are 1 ♂ Biskra, Staudinger and Bang-Haas; 1 ♀ Hammam-es-Salahin, May 1903, Lord Walsingham.

319. **Eublemma arida** Rothschild. (Pl. XVI. f. 18.)

*Eublemma arida* Rothschild, *Novit. Zool.* vol. xx. p. 127. No. 65 (1913) (S. of El Golea).

1 ♂, 1 ♀ S. of El Golea, May 1912 (Hartert and Hilgert).

320. **Catablemma cremorna** Hampson, nom. nov.

*Catablemma conistroti* Hampson, part., *Cat. Lepid. Phal. Brit. Mus.* vol. x. p. 192. No. 5296. pl. cliv. f. 29 (1910) (Beloochistan).

♂♀. Head and thorax white; abdomen cream colour, washed with pale yellowish grey.

Forewings costal area white, rest of wings and fringe yellow-grey powdered with black scales, more densely between the nervures. Hindwings yellowish grey.

Length of forewing: largest 12 mm., smallest 9 mm.

Expanse: largest 27 mm., smallest 20 mm.

In British Museum 1 ♀ Tozeur, South Tunisia, 1913 (G. C. Champion) (type).

The series at Tring numbers 61 from Aïn Sefra, May 1913–1915 (W. R. and E. H., and Faroult); Hassi Sidi Mahmoud, Hassi Dinar, El Alia, E. of Guerrara Oued Nça April 1914, El Meksa April, S. of El Golea, South Oued Mya May 1912 (Hartert and Hilgert); Oued Abiod, April 1912 (Hartert and Hilgert); Fontaine Chaude, April 1909 (W. R. and E. H.); Colomb-Bechar, March—April 1912 (V. Faroult).

321. **Eublemma ernesti** Rothschild.

*Eublemma ernesti* Rothschild, *Novit. Zool.* vol. xxii. p. 232. No. 38 (1915) (Oued Nça).

The ♀♀ and the 1 ♂ I placed with this species, on closer examination prove not to belong here.

1 ♂ (type) Oued Nça, April 1914 (Hartert and Hilgert); 1 ♂ Aïn Sefra, May 1913 (W. R. and E. H.).

322. *Eublemma albivestalis* Hmpsn.

*Eublemma albivestalis* Hampson, *Cat. Lepid. Phal. Brit. Mus.* vol. x. p. 191. No. 5292. pl. cliv. f. 25 (1910) (Dead Sea).

3 ♀♀ Oued Nça, April 1914 (Hartert and Hilgert); 2 ♂♂, 7 ♀♀ Les Pins, May—August 1918 (M. Rotrou); 1 ♂ Sebdu, September 1918 (P. Rotrou).

323. *Eublemma wollastoni* N. C. Rothsch.

*Eublemma wollastoni* N. C. Rothschild, *Novit. Zool.* vol. viii. p. 430. No. 27 (1901) (Shendi).

3 ♀♀ Oued Nça, April 1914 (Hartert and Hilgert).

324. *Eublemma lacteola* Rothsch.

*Eublemma lacteola* Rothschild, *Novit. Zool.* vol. xxi. p. 339. No. 210 (1914) (Guelt-es-Stel).

15 from Guelt-es-Stel, May 1913 (V. Faroult); Aïn Sefra, May—July 1913–1915 (W. R. and E. H., and Faroult); South Oued Mya May 1912, Oued Nça April 1914 (Hartert and Hilgert); Ras Chergui, July 1915 (V. Faroult).

325. *Eublemma albidior* Rothsch.

*Eublemma albidior* Rothschild, *Ann. Mag. Nat. Hist.* (8) xvi. p. 253. No. 30 (1915) (Oued Ahmra).

4 Idelès, Oued Ahmra, Amgid, north of and in Hoggar Mts., March—April 1914 (Geyr von Schweppenburg); 2 Aïn Guettera May 1912, Oued Nça April 1914 (Hartert and Hilgert).

326. *Eublemma pernivea* sp. nov. (Pl. XVI. f. 20.)

♂ ♀. Dazzling snow-white all over.

Length of forewing, 10 mm.; expanse, 22 mm.

4 ♂♂, 1 ♀ Aïn Sefra, May—August 1913–1915 (W. R. and E. H., and V. Faroult); 1 ♀ Sebdu, August 1918 (P. Rotrou); 1 ♀ Les Pins, September 1918 (M. Rotrou). (♀ Aïn Sefra, type.)

327. *Eublemma crocea* sp. nov. (Pl. XVI. f. 19.)

♀. Head dark yellow; thorax and abdomen yellow-buff. Forewings saffron-yellow; hindwings cream-colour.

Length of forewing, 9 mm.; expanse, 20 mm.

1 ♀ Aïn Tahart, north of Hoggar Mts., April 1914 (Geyr von Schweppenburg).

I had thought this was a very bright aberration of *deserta* Stdgr.

328. *Eublemma confusa* sp. nov.

♂ ♀. These 17 specimens had been mixed up with and mistaken for *cremorna*. They can at once be distinguished by the strongly produced acutely pointed apex of the forewing and the dark line running in from apex. Also by the strange accentuation of the median fold.

♂ ♀. Head white, rest of insect whitish grey. Forewings irregularly dusted with black scales, subapical area washed broadly with rusty yellow, a dark line running in obliquely from apex; central fold very deep and abnormally developed,

as is a shorter fold below, both strongly powdered with black scales. Hindwings darker grey, with pale fringe.

Length of forewing: ♂ 8 mm., ♀ 11 mm.; expanse, ♂ 18 mm., ♀ 24 mm.

4 ♂♂, 1 ♀ Oned Nça, April 1914 (Hartert and Hilgert); 1 ♂ Ain Sefra, June 1915 (V. Faroult); 1 ♀ Ghardaïa, April 1911 (W. R. and E. H.).

[**Eublemma lacernaria** (Hübner).]

*Geometra lacernaria* Hübner, *Samml. Eur. Schmett. Geom.* f. 422 (1818).

*Anthophila glarea* Treitschke, *Eur. Schmett.* vol. v. pt. 3. p. 282. No. 6 (1826) (Dalmatia).

I have never received this species.]

[**Eublemma suava** (Hübner).]

*Noctua suava* Hübner, *Samml. Eur. Schmett. Noct.* f. 578 (1818).

M<sup>r</sup>. Oberthür places Rambur's *blandula* ♂ *pergrata* ♀ as a form of *suava*, and says this is the Algerian race. Mr. Culot places Rambur's insect as a race of *arcuina*, although acknowledging it to be nearer *suava*.

I have 1 ♀ from Sidi Ferruch which is red like the ♂♂, but my other 6 ♀♀ are all sooty slate-grey. There is, however, an apparently constant difference from European *suava* in that the black basal portion of the postmedian band is much broader, therefore I shall place the Algerian race for the present under Rambur's name, until it is possible to compare a good series from Spain with Algerian material.]

329. **Eublemma suava blandula** (Ramb.).

*Noctua blandula* Rambur, *Cat. Syst. Lépid. de l'And.* pl. x. f. 2 (1858) (Andalusia).

Sir George Hampson has put *blandula* as a synonym of *arcuina*; this is at once disproved by the **non angulate** postmedian band.

We have 9 ♂♂, 11 ♀♀ from Mauretania: Mazagan, Morocco, September 1902 (W. Riggenbach); Sidi Ferruch, July 1911, Rabat (A. Théry); Masser Mines June 1914, Ain Draham July 1911, Perrégaux September 1915, Blida November 1915 (V. Faroult); Hammam Meskoutine, May 1914 (W. R. and E. H.); Sebdu, Forêt de Tenira, June—September 1918 (P. Rotrou); El Mahouna, September 1919 (V. Faroult).

330. **Eublemma syrtensis** Hampsn.

*Eublemma syrtensis* Hampson, *Cat. Lepid. Phal. Brit. Mus.* vol. x. p. 112. No. 5137. pl. cli. f. 28 (1910) (Hammam-es-Salahin).

The type in the British Museum has hitherto been unique; 1 ♀ Hammam-es-Salahin (Lord Walsingham).

The small series at Tring shows no variation. 7 ♂♂ Environs de Batna, 1913–1914 (A. Nelva).

331. **Eublemma jucunda** (Hübner).

*Noctua jucunda* Hübner, *Samml. Eur. Schmett. Noct.* ff. 486, 492 (1818).

Our series from Mauretania of this contains 43 specimens from Sidi-bel-Abbès, July—October 1916–1917 (M. Rotrou); Masser Mines June 1914, Ain Sefra June 1915, Guelt-es-Stel August 1913 (V. Faroult); Sebdu, Forêt de Tenira, August—September 1918 (P. Rotrou).

332. *Eublemma purpurina* (Schiff. & Den.).

*Phalaena purpurina* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 88 (1775) (Vienna).

I have 9 Mauretanian specimens: 2 ♂♂ Aïn Draham, September 1911 (V. Faroult); 1 ♀ Khenchela, May 1912 (W. R. and K. J.); 2 ♂♂, 4 ♀♀ El Mahouna, June 1919 (V. Faroult).

The 2 Aïn Draham ♂♂ are ab. *secunda* Stdgr. with the mauve-lilac colouring reduced to a patch at the apex of forewing.

333. *Eublemma candidana* (Fabr.).

*Pyralis candidana* Fabricius, *Entom. Syst.* vol. iii. pt. ii. p. 245. No. 11 (1794) (Montpellier).

1 ♀ Sidi Ferruch, July 1911 (A. Théry).

334. *Azenia sabulosa* (Rothsch.).

*Eublemma sabulosa* Rothschild, *Novit. Zool.* vol. xx. p. 127. No. 64 (1913) (South Oued Mya).

The type and a second ♀ so far are all that have been recorded.

1 ♀ South Oued Mya, May 1912 (Hartert and Hilgert); 1 ♀ Amgid, February 1914 (Geyr von Schweppenburg).

335. *Synthymia fixa australis* (Oberth.).

*Metoptria monogramma australis* Oberthür, *Etud. Lépid. Comp.* fasc. xvi. p. 199. pl. xdvii. f. 4137 (1919) (Géryville).

I have a very poor series of this handsome species.

5 ♂♂, 5 ♀♀ from Sidi-bel-Abbès, June 1917 (M. Rotrou); Masser Mines, Moroccan Frontier May 1914, Oued Hamidou June 1912 (V. Faroult); Forêt de Tenira, June 1918 (P. Rotrou).

336. *Eriopus latreillei* (Dup.).

*Noctua latreillei* Duponchel, *Lépid. France*, vol. vii. *Noct.* vol. iv. pt. 1. p. 327. pl. 120. f. 2 (1827) (Provence).

Our Mauretanian series is very scanty: 13 specimens from Guelt-es-Stel October 1913, Aïn Sefra July 1915, Masser Mines June 1914, Bou Saada March—May 1912, Metlili north of Laghouat September 1917, Aïn Draham September 1911 (V. Faroult); Sebdou, July 1918 (P. Rotrou).

337. *Eriopus juvenina* (Cram.).

*Phalaena juvenina* Cramer, *Pap. Exot.* vol. iv. pt. xxxiv. p. 245. pl. cccc. f. N. (1782) (Surinam !).

Of this elegant species I have only 6 examples, 5 from Tunisia. I believe this is the first record for Mauretania.

All 6 specimens (4 ♂♂, 2 ♀♀) are very pale, and the ground-colour somewhat rufous, but as they are rather worn, it is not possible to say if the North African examples belong to a separate subspecies.

3 ♂♂, 2 ♀♀ Aïn Draham, Tunisia, September 1911, 1 ♂ Oued Hamidou, June 1912 (V. Faroult).



338. *Phlogophora adulatrix* (Hübner).

*Noctua adulatrix* Hübner, *Samml. Europ. Schmett. Noct.* ff. 517, 649, 650 (1818).

Of this conspicuous insect the series at Tring from Mauretania consists of 161 specimens from Hammam R'hira, May 1908–1911 (W. R., E. H., and K. J., and Faroult); Environs d'Alger, May 1908 (W. R., K. J., and Dr. Nissen); Biskra, March 1908 (W. R. and E. H.); Hammam Meskoutine, May 1914 (W. R., E. H., and K. J.); Sidi-bel-Abbès, August–September 1917 (M. Rotrou); Aïn Draham September 1911, Environs de Setif 1911, El Kantara August 1917, Oued Hamidou June 1912, El Hamel May 1912, Bou Saada and Djebel Kerdada May 1912, Masser Mines June 1914 (V. Faroult); Guelt-es-Stel, May–October 1912–1913 (V. Faroult); Seboud, Forêt de Tenira, May–June 1918 (P. Rotrou).

The British Museum has 1 ♀ Hammam-es-Salahin, April 1904, Lord Walsingham.

339. *Phytometra orichalcea* (Fabr.).

*Noctua orichalcea* Fabricius, *Syst. Entom.* p. 607. No. 70 (1775) (India).

*Noctua aurifera* Hübner, *Samml. Eur. Schmett. Noct.* f. 463 (1822).

Mr. Oberthür adopts Hübner's name for this species, as he figures it, but even under his system in regard to figures he ought to have adopted Martyn's name of *chrysitina* of twenty-five years' earlier date, as he gives a good figure in *Psyche*; perhaps however Mr. Oberthür, like many other people, adopts the very legitimate doubt as to Martyn's *Psyche* having been properly published.

We have 34 Mauretanian specimens at Tring from Mazagan, Morocco, July 1900 (W. Riegenbach); Sidi-bel-Abbès, July–August 1916–1917 (M. Rotrou); Oran, April 1913 (W. R. and E. H.); Environs de Setif, 1911 (V. Faroult); Environs d'Alger (Dr. Nissen).

Mr. Oberthür appears to have only one record of this species from Batna.

340. *Phytometra chalcytes* (Esp.).

*Noctua chalcytes* Esper., *Schmett.* vol. iv. pt. ii. p. 447. No. 167. pl. exli. f. 3 (1789) (Italy).

Here also Mr. Oberthür only seems to have one record, Lambessa.

The Mauretanian series at Tring consists of 72 examples from Sidi-bel-Abbès, Messer, June–September 1916–1917 (M. Rotrou); Hammam R'hira September 1916, Le Tlélat October 1915, Batna October 1910 (V. Faroult); Environs d'Alger (Dr. Nissen); Mazagan, Morocco, July 1900 (W. Riegenbach).

341. *Phytometra daubei* (Boisd.).

*Plusia daubei* Boisduval, *Gen. et Ind. Meth.* p. 159. No. 1281 (1840) (S. France).

The Mauretanian examples at Tring number 13 from Biskra, March–April 1908–1911 (W. R. and E. H.); Sidi-bel-Abbès, September 1917 (M. Rotrou); Bordj-ben-Auérédj November 1911, Bou Saada March 1912, Lalla Marnia November 1914, El Kantara, September 1917 (V. Faroult).

342. *Phytometra accentifera* (Lef.).

*Plusia accentifera* Lefebvre, *Ann. Soc. Linn. Paris.* 1827. p. 94. pl. 5. ff. 1, 2.

Of this species I have 4 Algerian specimens: 1 Batna (A. Nelva); 3 Sidi-bel-Abbès, September 1916–1917 (M. Rotrou).

Mr. Oberthür has no record of this species.

343. *Phytometra intermixta* Warr.

*Phytometra intermixta* Warren in Seitz, *Grossschmett. Erde*, vol. iii. p. 357. pl. 64g. (1913) (Pu-Tsu-Fu, W. China).

This species has always been mixed up with *orichalcea*.

3 Mazagan, Morocco, July 1900 (W. Riggénbach).

344. *Phytometra ni* (Hübner).

*Noctua ni* Hübner, *Samml. Eur. Schmett. Noct.* f. 284 (1802).

Of this species we have 149 Mauretanian specimens at Tring.

I had at one time decided that there were two forms of this species in Algeria, the typical form on the coast and in the Tell and a paler desert form elsewhere, but I find light and dark specimens from the same locality now that I have a good series.

The 149 examples are from Sebdou, June 1918 (P. Rotrou); Les Pins, Environs de Taourirt, July 1918 (M. Rotrou); Blida November 1915, Aflou October 1916 (V. Faroult); Angid, Aïn Tahart, Oued Amra February—March 1914 (Geyr von Schweppenbourg); Biskra, March—April 1908–1909 (W. R. and E. H.); Mazagan, Morocco, July 1900 (W. Riggénbach); Environs d'Alger (Captain Holl); Hammam R'hira May 1908–1916 (W. R., E. H., and K. J., and Faroult); Aïn Sefra, May—July 1913–1915 (W. R. and E. H., and Faroult); Colomb-Bechar March—April 1912, Perrégaux September 1915, Oudida May 1914, Lalla Marnia April 1914, Djebel Kerdada and Bou Saada May 1912, Bir Stil March 1917, El Kantara August 1917, Oued Hamidou June 1912, El Hamel May 1912, north side of Djebel Zaccar Miliana August 1916 (V. Faroult); Sidi-bel-Abbès, May—September 1915–1917 (M. Rotrou); Oran, April 1913 (W. R. and E. H.); Guelt-es-Stel, April—May 1912–1913 (W. R. and K. J., and Faroult); Oued Nça April 1914, El Golea March 1912 (Hartert and Hilgert); Batna (A. Nelva); Hammam Meskoutine, May 1914 (W. R. and K. J.); Belvédère, Tunis, August—September 1915 (M. Blanc); Aïn Draham, September 1911 (V. Faroult).

345. *Phytometra gamma* (Linn.).

*Phalaena gamma* Linnaeus, *Syst. Nat.* edit. x. p. 513. No. 91 (1758) (Sweden).

This almost world-wide species is just as abundant in Algeria as elsewhere. I have not kept nearly all that have come to hand between the years 1908 and 1919, during which I have been amassing Algerian material.

The series retained at Tring from Mauretania consists of 268 examples from Mazagan, Morocco, January—July 1901–1903 (W. Riggénbach); Blida les Glacières, June 1908 (W. R. and K. J.); Biskra January—May 1908–1914, Tlemcen April 1913, Oran April 1913 (W. R. and E. H.); Environs de Batna, 1909–1912 (A. Nelva); Lambessa, July 1914 (A. Nelva); Environs d'Alger, May 1911 (W. R. and E. H.); Hammam R'hira, February—May 1908–1918 (W. R., E. H., and K. J., and Faroult); Sidi-bel-Abbès, Aïn Fezza, Les Pins, July—September 1916–1918 (M. Rotrou); Khenchela May 1912, Souk Ahras April 1914, Hammam Meskoutine May 1914 (W. R. and K. J.); Guelt-es-Stel, April—October 1912–1913 (W. R. and K. J., and Faroult); Perrégaux October 1915,

Oued Hamidou June 1912, Bordj-ben-Anéridj November 1911, Lalla Marnia April—May 1914, Blida February 1916, Nedroma May 1914, Masser Mines May 1914, Mecheria June 1918, Aïn Draham August—September 1911, Bou Saada March—May 1911–1912, Tilghemt April 1912, Boghar May 1912 (V. Faroult); Sebdo, May 1918 (P. Rotrou); Slassel Danoun, December 1913 (Geyr von Schweppenburg).

In British Museum are 1 ♂ Hammam-es-Salahin April 1904, 1 ♂ Tkout, April 1906, Lord Walsingham; 1 ♂, 1 ♀ Hammam Meskoutine, April 1913, P. A. Buxton; 1 ♂ Tangier, Leech coll.

[*Protomeceras mimicaria* (Oberth.).

*Cimelia mimicaria* Oberthür, *Bull. Soc. Entom. France*, 1887, p. 58 (Sebdo).

In spite of the continued doubts evinced by Mr. Oberthür as to the exact classificatory position of this very remarkable insect, I think there can be no doubt that its correct position is next to *Synthimia* and in front of *Megalodes* towards the end of the subfamily *Zenobiinae* (*Acronyctinae*).

I have never received this insect.]

346. *Scoliopteryx libatrix* (Linn.).

*Phalaena libatrix* Linnaeus, *Syst. Nat.* edit. x. p. 507. No. 54 (1758) (Sweden).

I have only had three Mauretanian examples: 1 ♂, 1 ♀ Sidi-bel-Abbès, September 1917 (M. Rotrou); 1 ♀ El Mahouna, June 1919 (V. Faroult).

347. *Amphipyra pyramidea* (Linn.).

*Phalaena pyramidea* Linnaeus, *Syst. Nat.* edit. x. p. 518. No. 119 (1758).

I have just one dozen Mauretanian examples: from Blida les Glacières June 1908 (W. R. and K. J.); Batna (A. Nelva); Aïn Draham September 1911, Hammam R'hira July 1917 (V. Faroult); Sidi-bel-Abbès, July—August 1917 (M. Rotrou).

These all belong to the large and fine form ab. *variegata* Warr.; if this form is proved to be constant in Algeria and Tunis it would have to stand as a distinct subspecies—

*Amphipyra pyramidea variegata* Warr.

*Amphipyra pyramidea* ab. *variegata* Warren in Seitz, *Grossschmett. Erde*, vol. iii. p. 158. pl. 386. (1911) (Algeria).

348. *Pyrois effusa* (Boisd.).

*Amphipyra effusa* Boisdual, *Eur. Lépid. Ind. Meth.* p. 68 (1829) (Sicily).

This insect is widely distributed in Algeria, being found far into the interior and also along the coast, though at Tring we have only examples from the Tell regions.

24 specimens from Hammam R'hira, May—June 1911–1916 (W. R. and E. H., and Faroult); Blida les Glacières, June 1908 (W. R. and K. J.); Hammam Meskoutine, May 1909–1914 (W. R., E. H., and K. J.); El Mahouna, June 1919 (V. Faroult).

349. *Amphipyra tetra* (Fabr.).

*Noctua tetra* Fabricius, *Mant. Ins.* vol. ii. p. 138. No. 31 (1787) (Austria).

Of this species the Tring Museum possesses a very poor Mauretanian series : 7 specimens from Guelt-es-Stel October 1913, Aïn Sefra July 1915 (V. Faroult).

350. *Amphipyra tragopoginis distincta* subsp. nov.

♀. This insect is a very distinct subspecies of *tragopoginis* Linn., being larger and more brightly coloured.

Head and thorax deep black-brown ; abdomen smoky wood-brown ; palpi and antennae black. Forewings basal three-fourths deep black-brown, powdered with dark grey, orbicular represented by a black spot or streak and reniform by two black spots ; outer one-fourth sooty blackish grey. Hindwings rusty wood-brown washed with sooty grey.

Length of forewing, 20 mm ; expanse, 47 mm.

1 ♀ north side of Djebel Zaccar, nr. Miliana August 1916, 1 ♀ Hammam R'hira May 1917 (V. Faroult).

Mr. Oberthür does not record *tragopoginis*.

351. *Mania maura* (Linn.).

*Phalaena maura* Linnaeus, *Syst. Nat.* edit. x. p. 512. No. 88 (1758) (Mauretania).

The series from Mauretania at Tring consists of 82 specimens from Batna (A. Nelva) ; Guelt-es-Stel August 1913, north side of Djebel Zaccar, nr. Miliana August 1916, Aïn Draham July 1911 (V. Faroult) ; Hammam R'hira, May—June 1913–1916 (W. R. and E. H., and Faroult) ; Sebdou, Forêt de Tenira, September 1918 (P. Rotrou) ; Sidi-bel-Abbès, July 1917 (M. Rotrou) ; Lambessa 1912 (A. Nelva).

352. *Apopestes spectrum maura* Warr.

*Apopestes spectrum maura* Warren in Seitz, *Grossschmett. Erde*, p. 370. pl. 68b. (1913) (Algeria).

The name *maura* could not be used for this insect before the genus was split in two, as it is antedated twenty-five years by Staudinger's *maura*, a species near *cataphanes*, described by its author as a subspecies of *cataphanes*, but is quite in order now.

This is not a very distinct subspecies of *spectrum*, but it appears fairly constant, the lines being less diffuse and narrower.

The Tring series comprises 64 specimens from Batna (A. Nelva) ; El Kantara, March 1908–1911 (W. R. and E. H.) ; Mazagan, Morocco, July 1901 (W. Riggensbach) ; Lella Kredidja, Tala Rana, Kabylie, July 1907–1908 (Dr. Nissen) ; Forêt de Tenira, Sebdou, September 1918 (P. Rotrou) ; Sidi-bel-Abbès July 1917, Les Pins August 1918 (M. Rotrou) ; Guelt-es-Stel, April—October 1912–1913 (W. R. and K. J., and Faroult) ; Perrégaux October 1915, Aflou October 1916 (V. Faroult) ; Aïn Sefra, May—June 1913–1915 (W. R. and E. H., and Faroult) ; Bordj-ben-Anéridj October 1912, Medjes October 1912, north side of Djebel Zaccar, nr. Miliana August 1916 (V. Faroult).



353. *Autophila maura* (Stdgr.).

*Spintherops cataphanes* var. *maura*, Staudinger, *Stett. Entom. Zeit.* vol. 49, p. 63 (1888) (Lambessa).  
*Spintherops roseata* Rothschild, *Novit. Zool.* vol. xix, p. 126, No. 6 (1912) (Ghardaïa).

One would not look generally for the description of an Algerian moth in an article dealing with Asiatic species, so I unfortunately redescribed the present species.

Mr. Oberthür as well as Staudinger and most other authors have placed this insect under *cataphanes* Hübn. as a race or variety, but Sir George Hampson is convinced that it and several other forms placed under *cataphanes* are distinct species.

The series at Tring numbers 78 specimens from Biskra, March—April 1908–1909 (W. R. and E. H.); Guelt-es-Stel July—October 1913, Aïn Sefra May 1915, Ras Chergui July 1915, Colomb Bechar March—April 1912, Msila May 1915, Bordj Chegga March 1917, Tilghemt April 1912, Laghouat March 1912, Bon Saada April—May 1911–1912 (V. Faroult); El Kantara March—August 1911–1917 (V. Faroult); El Kantara March—August 1911–1917 (W. R. and E. H., and Faroult); Sebdu, June—July 1918 (P. Rotrou); Oued Abbou, January 1914 (Geyr von Schweppenburg); Ghardaïa, April 1911 (W. R. and E. H.) (including type of *roseata*); north of Aïn Guettera, Aïn Guettera, South Oued Mya, In-Salah Tidikelt Oases, Fort Miribel, north of El Golea April—May 1912, Oued Nça April 1914 (Hartert and Hilgert).

The British Museum has 1 ♀ Algeria, Mrs. Nicholl; 2 ♂♂, 7 ♀♀ Hammam-es-Salahin, March—May 1903–1904, Lord Walsingham.

354. *Autophila ligaminosa* (Eversm.).

*Spintherops ligaminosa* Eversmann, *Bull. Soc. Imp. Nat. Mosc.* 1851, p. 630 (Georgia and Armenia).

This was taken by Mr. Oberthür to be typical *cataphanes*. Sir George Hampson considers it a distinct species.

6 ♂♂, 9 ♀♀ Sebdu, August 1918 (P. Rotrou); 1 ♀ Environs de Batna (Nelva); 1 ♀ Sidi-bel-Abbès, June 1916 (M. Rotrou); 1 ♂ Hammam R'hira, February 1918.

Mr. Oberthür does not record this species, having in error put it down as *cataphanes*.

355. *Autophila dilucida libanotica* (Stdgr.).

*Apopestes dilucida* v. ? *libanotica* Staudinger, *Cat. Lepid. Palaear. Faun.* edit. iii, p. 251, No. 2723e (1901) (Lebanon).

Staudinger, Mr. Oberthür, and most other entomologists have identified this insect as *dilucida dilucida* Hübn., but I consider it agrees best with the subspecies *libanotica* Stdgr.

In the *Stett. Entom. Zeit.* vol. xlix, p. 63 (1888) (Biskra) Dr. Staudinger separated a more rosy red *Autophila* as *Spintherops dilucida* var. *rosea*, and hitherto everyone has followed him without carefully examining a series of this very common insect. I was first struck by the longer and narrower wings of *rosea*, and then I found that I had both *rosea* and *dilucida libanotica* from Guelt-es-Stel and no specimens showing any intermediate characters.

I at once got Dr. Jordan to examine the ♂ genital armature, and we found that this differed in the two insects. I then looked up my **non-Mauretanian**.



material and perceived at once that there was a much greater resemblance between *rosea* Stdgr. and *cerealis* Stdgr. than between *rosea* and the forms of *dilucida*. Dr. Jordan on examining the genital armature of *cerealis* found that it really agreed with that of *rosea*. Therefore *rosca* is a subspecies of *cerealis* and not of *dilucida*, and must stand as *Autophila cerealis rosea* Stdgr.

We have at Tring 102 Algerian examples of *dilucida libanotica* Stdgr. from El Kantara, March—April 1908–1911 (W. R. and E. H., and Faroult); Batna, June 1909–1914 (A. Nelva); Guelt-es-Stel, May—June 1913 (V. Faroult); Djebel Chelia, June 1911 (V. Faroult); Environs d'Alger (Captain Holl); Sidi-bel-Abbès, June 1915–1917 (M. Rotrou); Bou Saada May 1912, Oued Hamidou June 1912 (V. Faroult); Hammam R'hira, May—June 1913–1917 (W. R. and E. H., and Faroult); Masser Mines, June 1914 (V. Faroult).

The British Museum has 1 ♂ Algeria, Mrs. Nicholl.

### 356. *Autophila cerealis rosea* (Stdgr.).

*Spintherops dilucida* var. *rosea* Staudinger, *Stett. Entom. Zeit.* vol. 49. p. 63 (1888) (Biskra).

As the genital armature of the ♂ of this insect differs from that of *dilucida* and agrees with that of *cerealis* Stdgr., it proves *rosea* to be a distinct species from *dilucida* and that it is a subspecies of *cerealis*.

We have at Tring 333 specimens of this species from Biskra, March 1908 (W. R. and E. H.); Gafsa and Biskra (Staudinger); El Hamel May 1912, Mograr Foukani November 1916, Guelt-es-Stel May 1913, Bou Saada May 1912, Laghouat March 1912, Tilghemt April 1912 (V. Faroult); Oued Nça April 1914, South Oued Mya, north of Ain Guettera, El Golea, April—May 1912 (Hartert and Hilgert); Oued Abbou January 1914, south of Ouargla December 1913 (Geyr von Schweppenburg); Ain Sefra, May 1913–1915 (W. R. and E. H., and Faroult).

The British Museum has 1 ♂ Mauretania, Staudinger and Bang-Haas; 1 ♀ Biskra, February 1894, A. E. Eaton; 2 ♀♀ Hammam-es-Salahin, February 1894, Lord Walsingham; 1 ♂ Hammam Meskoutine, March 1911, Meade-Waldo; 1 ♂ Sbietla, Tunisia 1913, G. C. Champion.

### 357. *Tathorhynchus exsiccata* (Led.).

*Spintherops exsiccata* Lederer, *Verh. Zool. Bot. Ver. Wien*, vol. v. p. 204. pl. 2. f. 12 (1855) (Beirut).

This species is by no means numerous in Algeria.

I have only received 15: 5 Guelt-es-Stel, April—May 1912–1913 (W. R. and E. H., and Faroult); 3 Ain Sefra July 1915, 1 Bou Saada May 1912 (V. Faroult); 3 Sidi-bel-Abbès, June 1917 (M. Rotrou); 2 Amgid February, 1 Oued Ag'elil March 1914 (Geyr von Schweppenburg).

### 358. *Anthracia ephialtes* (Hübner).

*Noctua ephialtes* Hübner, *Samml. Eur. Schmett. Noct.* f. 652 (1822).

Of this species I have only 8 specimens from Algeria.

7 ♀♀ Sidi-bel-Abbès, September 1917 (M. Rotrou); 1 ♀ Sebdu, September 1918 (P. Rotrou).

The British Museum has 1 ♂, 1 ♀ Morocco, Meade-Waldo.

359. *Pandesma anysa distincta* subsp. nov.

♂♀. Differ from *anysa anysa* in being smaller, less stoutly built, and more uniform deep grey in colour.

Length of forewing: ♂ *a. anysa* 22 mm., *a. distincta* 15 mm.

Length of forewing: ♀ *a. anysa* 24 mm., *a. distincta* 18 mm.

Expanse: *a. anysa* ♂ 51 mm., ♀ 55 mm.; *a. distincta* ♂ 36 mm., ♀ 42 mm.

1 ♂, 1 ♀ Sidi-bel-Abbès, September 1917 (M. Rotrou); 1 ♀ Belvédère, Tunis (M. Blane); 2 ♂♂ Ain Sefra, July 1915 (V. Faroult).

Mr. Oberthür pointed out the difference from *anysa anysa*, but did not name the form, though he figures it.

360. *Pandesma anysa sennaarensis* Feld. & Rog.

*Pandesma sennaarensis* Felder and Rogenhofer, *Reise der Novara*, Zoology, vol. ii. sect. 2. pl. cxi. and Tafel-Erkl. f. 26 (1872) (Cape Colony and Sennaar).

This form occurs in the interior of the Sahara; the ♂♂ are much whiter and the ♀♀ paler and less pure grey.

4 ♂♂, 5 ♀♀ Amgid, Oued Ag'elil, I-n-Kelemet, Oued Amra, February—March 1914 (Geyr von Schweppenburg). I identified this in 1915 as *a. terregena* Christ., but it agrees best with Felder's form.

Mr. Oberthür does not record this.

361. *Cortyta acrosticta* (Püngl.).

*Pericyma acrosticta* Püngler, *Iris*, vol. xvi. p. 290. pl. vi. f. 6 (1903) (Engeddi, Dead Sea).

This is quite distinct from *vetusta*, under which Sir George Hampson has placed it as an aberration.

1 ♂ Ti-n-tabarik, April 1914 (Geyr von Schweppenburg).

This is also not recorded by Mr. Oberthür.

362. *Cortyta rosacea* (Rebel). (Pl. XVI. f. 17.)

*Pericyma rosacea* Rebel, *Denkschr. Math.-Nat. Akad. Wissensch.* vol. lxxi. p. 60 (1907) (Soeotra).

I have a fine series of this very rare insect from the Algerian Sahara; it does not vary except in size.

1 ♂ South Oued Mya, April 1912 (Hartert and Hilgert); 19 ♂♂, 6 ♀♀ Oued Dehin, Amgid, Rhari, Aeksem, Oued Gif-Aman, Oued Tamoudat, Oued Ag'elil, north of Idelès, February—April 1914 (Geyr von Schweppenburg).

Mr. Oberthür does not record this.

363. *Cortyta leucoptera* (Hmps.).

*Hypaetra leucoptera* Hampson, *Proc. Zool. Soc. Lond.* 1896, p. 264. pl. x. f. 1 (Aden).

*Pericyma dispar* Püngler, *Iris*, vol. xvi. p. 290. pl. v. ff. 7, 7a (1903) (Engeddi, Dead Sea).

*Pericyma fasciolata* Warren, *Novit. Zool.* vol. xii. p. 24. pl. iv. ff. 11, 21 (1905) (Nakheila, Egypt. Sudan).

*Polydesma balnearia* Distant, *Ann. Mag. Nat. Hist.* (7) I. p. 228 (1898) (Waterburg, Transvaal).

*Cortyta impar* Hampson, *Cat. Lepid. Phal. Brit. Mus.* vol. xiii. p. 317. No. 8129. pl. cccxxii. f. 21 (1913) (Punjab).

*Homoptera eremochroa* Hampson, *Journ. Bomb. Nat. Hist. Soc.* vol. xxi. p. 1222 (1912) (Deesa, Bombay).

In the British Museum *Catalogue of Moths* Sir George Hampson has all the above 6 insects as separate species, but since the publication of vol. xiii. of the

above *Catalogue*, two very remarkable series of specimens have come to hand, first a series of 18 specimens from the Algerian Sahara sent me by Herr Geyr von Schweppenburg in 1914, and secondly a very large series received by Professor Poulton from Mr. Feather collected in Somaliland. In these two series every intergradation between the 6 insects named above is represented, proving them all to belong to a single protean species with an extraordinary range of variation. Unfortunately *leucoptera* Hampson, as the oldest name, has to be used for the species, for the very white form to which it was originally given appears to be the rarest; in my series of 21 Algerian specimens, only the ♂ from Colomb-Béchar is of this form.

1 ♂ Colomb-Béchar, Mareh—April 1912 (V. Faroult); 5 ♂♂, 13 ♀♀ Amgid, Oued Behir, Oued Gif-Aman, Oued Tamoudat, Oued Amra, Rharis, Aïn Tahart, February—April 1914 (Geyr von Schweppenburg); 2 ♀♀ South Oued Mya, and north of Aïn Guettera, April 1912 (Hartert and Hilgert).

The last two are type and eotype of *fasciolata subsimilis* Warren, but are only further aberrations of *leucoptera*, as is my *Cortytia pungleri*.

This is also not recorded by Mr. Oberthür.

#### 364. *Hypoglaucitis benenotata moses* Stdgr.

*Hypoglaucitis moses* Staudinger, *Iris*, vol. vii, p. 284, pl. 9. f. 17 (1894) (Egypt [Cairo?]).

Of the 6 ♂♂, 6 ♀♀ from Algeria at Tring, 2 ♂♂ are typical *moses*, 1 ♂ is too worn to be sure of, and 3 ♂♂ are ab. *ochrea* Warr. Of the 6 ♀♀, 5 are ab. *ochrea* and 1 typical *moses*. 4 ♂♂, 3 ♀♀ South Oued Mya, April 1912 (Hartert and Hilgert); Laghouat Mareh 1912, Nedroma and Lalla Marnia May 1914 (V. Faroult); 1 ♀ Aeksem, 1 ♀ Tahihout, April—May 1914 (Geyr von Schweppenburg).

Not recorded by Mr. Oberthür.

#### 365. *Mageutica alchymista alchymista* (Schiff. & Den.).

*Phalaena alchymista* Schiffermüller and Denis, *Ank. Syst. Werk. Schmett. Wienergeg.* p. 89 (1775) (Vienna).

Of typical *alchymista* I only have 3 specimens: 1 Hammam R'hira, June 1917 (V. Faroult); 2 Batna (A. Nelva).

Of ab. *varia* I have 1 ♀ from Batna (A. Nelva).

The British Museum has 1 ♂, 1 ♀ Batna, Staudinger and Bang-Haas.

#### 366. *Mageutica alchymista uniformis* (B.-H.).

*Catephia alchymista* var. *uniformis* Bang-Haas, *Iris*, vol. xxiv, p. 41 (1910) (Aïn Draham).

This form is not found in Europe, and in Eastern Algeria and Tunisia at least 95 per cent. of the individuals belong to it, so I consider it a good subspecies. (I have placed the form *varia* as an aberration under *a. alchymista*, but I am doubtful as to its status. Mr. Oberthür says it is the prevailing form at Lambessa, but I have only 3 Batna examples, 2 being typical *alchymista* and 1 *varia*. My material is useless for decision, being so poor in numbers.)

Of *a. uniformis* we have at Tring 67 specimens from Aïn Draham July—August 1911, Environs de Setif 1911 (V. Faroult).

Of these 67 examples 4 are intermediate between *uniformis* and *alchymista*.

367. *Catephia leucomelas* (Linn.).

*Phalaena leucomelus* Linnaeus, *Syst. Nat.* edit. x. p. 518. No. 121 (1758) (Europe).

Mr. Oberthür makes use of Rambur's name, which is 71 years later than Linnaeus's, although the latter's *leucomelas* is **figured** in Clerck's *Icones*.

We have 7 Mauretanian examples: 4 Environs d'Alger, May—June 1908 (W. R. and K. J., and Dr. Nissen); 3 Hammam R'hira, July 1917 (V. Faroult).

368. *Anumeta atrosignata harterti* Rothsch.

*Anumeta henkei harterti* Rothschild, *Novit. Zool.* vol. xx. p. 469 (1913) (El Golea).

This unfortunate insect has been banded about from pillar to post by Sir George Hampson, Mr. Warren, Mr. Oberthür, and myself. It has been called *henkei* Stdgr., *spilota* Ersch., *henkei harterti* Rothsch., and *atrosignata* Walk. The truth is that *spilota* Ersch., *harterti* Rothsch., and *atrosignata* Walk. are 3 subspecies of one widely-spread desert species.

The Tring Museum has 16 specimens: 2 ♂♂, 1 ♀ El Golea, 1 ♂, 1 ♀ Sandana, south of Ghardaïa, May 1912 (Hartert and Hilgert); 2 ♂♂ Bordj Mgeitla, April 1909 (W. R. and E. H.); 4 ♂♂, 4 ♀♀ Amgid, Aseeksem, Tahihout, Oued Dehin, Aïn Tahart, February—April 1914 (Geyr von Schweppenburg); 1 Colomb-Bechar, March—April 1912 (V. Faroult).

369. *Anumeta sabulosa* Rothsch. (Pl. XVI. f. 15.)

*Anumeta sabulosa* Rothschild, *Novit. Zool.* vol. xx. p. 129. No. 78 (1913) (South Oued Mya).

Of this very distinct species we have 11 examples at Tring from South Oued Mya, May 1912 (Hartert and Hilgert); Amgid, Oued Dehin, Aïn Tahaut, February—April 1914 (Geyr von Schweppenburg).

The type was unfortunately recorded in the original description as a ♂; it is in reality a ♀.

370. *Anumeta spatzi* Rothsch. (Pl. XVI. ff. 11, 12.)

*Anumeta spatzi* Rothschild, *Ann. Mag. Nat. Hist.* (8) xvi. p. 237. No. 51 (1915) (Amgid).

Of this fine species the Tring series contains 11 specimens from Amgid, Tahihout, Aïn Taïba, April—May 1914 (Geyr von Schweppenburg).

371. *Anumeta major* Rothsch. (Pl. XVI. ff. 13, 14.)

*Anumeta major* Rothschild, *Novit. Zool.* vol. xx. p. 130. No. 79 (1913) (N. of El Golea).

In my article on Herr Geyr von Schweppenburg's collection (see above) I recorded 2 ♂♂ and 1 ♀ as being *major*. On closer examination I find all 3 specimens from Aïn Taïba are ♂♂.

1 ♀ north of El Golea, May 1912 (Hartert and Hilgert); 3 ♂♂ Aïn Taïba, May 1914 (Geyr von Schweppenburg).

The most striking difference at first sight between *spatzi* and *major* is that the black spot in the hindwing is free in the white patch in *major*, while in *spatzi* it coalesces with the brown shadow band. This is the insect Warren **described** as *harterti* while figuring the real *harterti*.



[*Anumeta cestis cestis* (Ménét.).

*Catephia cestis* Ménétrières *Mem. Acad. Imp. St. Pet. Scien. Nat.* vol. vi, *Descr. Ins. Rec. feu Lehmann*, p. 74. No. 870. pl. vi. f. 10 (1848) (Bachkirie).

This is a pure desert-loving insect, and where we caught it in 1909 in the Oued Souf region it was taken among the sand-dunes.

The series from Algeria when contrasted with my series from Central Asia appears less robust, and the pattern of the forewings, when the **whole** of each series is compared with the **whole** of the other series, gives a different impression; but the real difference lies in the dark patches in the hindwing, which are very heavy and generally confluent in *cestis cestis* and smaller and generally separated into three in the Algerian race.

Of *cestis cestis* the Tring Museum has 25 examples, of which 4 are ab. *punctata* Mén. and 5 ab. *uniformis* Warrr.]

372. *Anumeta cestis parvamacula* subsp. nov.

♂ ♀. Differ from *cestis cestis* in being less robust and in the black markings on the hindwings being smaller in extent and generally broken up.

65 specimens, of which 10 are ab. *uniformis* Warrr., from Bordj Ferdjan, Bordj Mgeitla, Bordj Mecht-el-Kaid, April 1909 (W. R. and E. H.); Arefidji, halfway between Ouargla and El Golea, north of El Golea, Hassi el Hadjar, Hassi Dinar, March 1912 (Hartert and Hilgert); Tilghemt April, Bou Saada May 1912 (V. Faroult).

373. *Anumeta hilgerti* (Rothsch.).

*Palpangula hilgerti* Rothschild, *Entom. Zeit. Stuttgart.* vol. xxiii. p. 142 (1909) (Bordj Ferdjan).

The series at Tring contains 34 examples, of which 3 are ab. *brunnea* Warrr. from Amgid, Oued Dehir, Temassinin, Oued Gif-Aman, Aïn Taïba, Oued Amra, and north of Idelès, January—May 1914 (Geyr von Schweppenburg); Oued Abiod, Hassi el Hadjar, El Golea, halfway between Ouargla and El Golea, Arefidji, March—May 1912 (Hartert and Hilgert); Colomb Bechar, March—April 1912 (V. Faroult); Bordj Ferdjan, Bordj Mgeitla, April 1909 (W. R. and E. H.).

[At the end of the paragraph on *Palpangula harterti* Mr. Oberthür mentions *Anumeta sabulosa*, stating it was described by Warren in *Seitz*, but that as it was not figured it was a “nomen nudum.” This is Mr. Oberthür’s usual proceeding, but as he goes so far as to tell his readers that **such a creature** had been **described**, he might at least have given the author’s name **correctly**. *Anumeta sabulosa* was described by me, and therefore the **author** of the name is **Rothschild not Warren**. As to the question of the authenticity of a name depending on a **good figure**, I maintain that far oftener a **good description** is more easily recognised than even a **good figure**; especially as the figure only represents one specimen and not a whole series, and in nine times out of ten represents the peculiarities which struck the artist’s eye, while the differentiating characters may **not** be those **emphasised** in the drawing.

In addition the International Rules of Nomenclature nowhere insist on anything more than a fairly accurate and consequently recognisable description,



and therefore Mr. Oberthür and his friends who support him in his view about figures are not in accord with the general body of zoological opinion all over the world.]

### 374. *Anydrophila sabourodi* (D. Luc.).

*Palpangula sabourodi* Daniel Lucas, *Bull. Soc. Entom. France*, 1907. p. 180 (Zarcine, Tunisia).

Mr. Oberthür as well as the author place this species in *Palpangula* = *Anumeta*. This is quite wrong as *sabourodi*, and the 4 Central Asian species which form the genus *Anydrophila* are *Catocalinae*, whereas *Anumeta* (*Palpangula*) is a genus of *Noctuinae* separated by two families from the *Catocalinae*.

We have the other 4 only recorded specimens, beyond the type, at Tring. 2 ♂♂ Oued Nça, April 1914 (Hartert and Hilgert); 1 ♂ Aceksem, April 1914 (Geyr von Schweppenburg); 1 ♀ Aïn Sefra, June 1915 (V. Faroult).

### 375. *Anumeta straminea* (B.-H.).

*Palpangula straminea* Bang-Haas, *Iris*, vol. xix. p. 135. pl. v. f. 11 (1906) (Gafsa, Tunisia).

Of this characteristic species we have at Tring a large series; but curiously enough, although Mr. Oberthür says it is common at Biskra, we only obtained two specimens there during our four prolonged visits. 347 specimens from Colomb Bechar March—April 1912, Bou Saada March—May 1912 (V. Faroult); Nza-ben-Rzig, Mraier, Tamerna, half-way between Touggourt and Ouargla, Arefidji, Hassi el Hadjar, north of El Golea, halfway between Ouargla and El Golea February—May 1912 (Hartert and Hilgert); south of Bledet-Ahmar, south of Ouargla, Slassel Dhanoun, Hassi Abbou, Oued Abbou, Timassinin, I-n-Kelemet, Amgid, December 1913—February 1914 (Geyr von Schweppenburg); Biskra February 1908–1911, Bordj Ferdjan, Bordj Mgeitla April 1909 (W. R. and E. H.); Tunis (Staudinger).

The British Museum has 2 ♀♀ Hammam-es-Salahin, March 1904, Lord Walsingham; 1 ♂, 2 ♀♀ Colomb-Bechar, February 1912, V. Faroult ex Tring Museum.

### 376. *Leucanitis kabylaria* B.-H.

*Leucanitis kabylaria* Bang-Haas, *Iris*, vol. xix. p. 136. pl. v. f. 7 (1906) (Gafsa, Tunisia).

We have at Tring 48 specimens of this insect from halfway between Ouargla and El Golea, March 1912 (Hartert and Hilgert); Bordj Mgeitla, Bordj Ferdjan April 1909, Ghardaïa April 1911 (W. R. and E. H.); Bou Saada April 1911, Bordj Chegga March 1917 (V. Faroult); Amgid, north of Idelès, Oued Ag'elil, Oued Dehin, Oued Gif-Aman, February—March 1914 (Geyr von Schweppenburg).

The British Museum has 1 ♂ Tunis, Staudinger and Bang-Haas.

### 377. *Drasteria oranensis* sp. nov. (Pl. XVI. f. 16.)

♂♀. Antennae black-brown; head and thorax pale sandy cinnamon, central streak on tegulae and edge of patagia deep rufous; abdomen pale sandy cinnamon.

Forewing sandy cinnamon, basal one-fourth almost completely saturated with brown with a number of irregular lines and rings of black, a clear transverse convex

sandy band followed by two-thirds of remainder of wing being suffused with brown and covered with irregular black lines, leaving a whitish buff irregular patch, outer part beyond brown greyish sandy cinnamon, with brown marginal hair line, fringe white with brown central line and a dark cinnamon patch between veins 3 and 4. Hindwing white on basal two-fifths, black on outer three-fifths, black central stigma joined to black outer part in which fringe and large patch between veins 4 and apex and a small patch at vein 2 are white.

Length of forewing, 15 mm.; expanse, 33 mm.

2 ♂♂, 3 ♀♀ Ain Sefra, May 1913 (W. R. and E. H.).

### 378. *Acrobyla panaceorum distincta* (Rothsch.).

*Armada panaceorum distincta* Rothschild, *Novit. Zool.* vol. xxii. p. 234. No. 49 (1915) (Oued Nçà).

The Tring series of this insect contains 5 ♂♂, 4 ♀♀ from Oued Nçà, Hassi Sidi Mahmud April 1914 (Hartert and Hilgert); Bou Saada May 1912, Ain Sefra May 1915, Colomb Bechar March—April 1912 (V. Faroult).

### 379. *Syneda cailino cailino* (Lef.).

*Heliothis cailino* Lefebvre, *Ann. Soc. Linn. Paris*, 1827. p. 94. t. 5. f. 1 (Sieily).

Of this species we have at Tring 24 Algerian examples from Bou Saada, Djebel Kerdada, April—May 1911–1912 (V. Faroult); El Kantara, March—April 1911 (W. R. and E. H., and Faroult); Oued Nçà, April 1914 (Hartert and Hilgert).

### 380. *Syneda cailino philippina* (Aust.).

*Lucanitis philippina* Austaut, *Le Nat.* vol. ii. p. 237 (1880) (Oran).

Differs from *c. cailino* in its darker more rufous colouration and wider dark outer portion of hindwings.

1 ♂, 1 ♀ Colomb-Bechar, March—April 1912 (V. Faroult).

### 381. *Raphia hybris* (Hübner).

*Noctua hybris* Hübner, *Samml. Eur. Schmett. Noct.* f. 518 (1818).

I have received 19 specimens in all from Algeria.

6 ♂♂, 9 ♀♀ Sidi-bel-Abbès, 3 ♀♀ Messer, September 1917 (M. Rotrou); 1 ♀ Forêt de Tenira, September 1918 (P. Rotrou).

1 ♂, 5 ♀♀ are normal in colouration; the rest are very melanistic.

### 382. *Catocala elocata* (Esp.).

*Noctua elocata* Esper, *Schmett.* vol. iv. pt. i. p. 127. No. 43. pl. xcix. ff. 1, 2 (1786).

I have received comparatively few specimens of this species.

We have 36 Mauretanian examples: Mauretania!! (Staudinger); bred ex larvæ ex Batna (Dr. A. Seitz); Environs de Batna, 1909–1914 (A. Nelva); Bordj-ben-Anéridj October 1912, Ain Draham July—September 1912 (V. Faroult); Sidi-bel-Abbès, August 1916 (M. Rotrou); Ain Sefra, June 1915 (V. Faroult).

383. *Catocala oberthuri* Aust.

*Catocala oberthuri* Austaut, *Le Nat.* vol. i. p. 85 (1879) (Sidi-bel-Abbès).

I have received a large series of this insect, mostly from the topotypical locality. It appears to be much commoner in the province of Oran than in Eastern Algeria.

The series at Tring contains 386 examples from Environs d'Alger (El Biar), August 1905 (Captain Holl); Alger and Mauretania!! (Staudinger); Batna and ex larva ex Batna, July—August 1903–1912 (A. Nelva, Dr. A. Seitz, and Maître Sellier Taillefer); Aïn Sefra, July 1915 (V. Faroult); Aïn Draham, July—September 1911 (V. Faroult); Sidi-bel-Abbès, August 1918 (M. Rotrou); Sebdo, September 1918 (P. Rotrou).

The series varies much in the shade of colour and accentuation of pattern in the forewings and in the width of the black outer margin of the hindwings. Among this series are specimens distinctly referable to ab. *transiens* B.-H., but I have not received either ab. *flavicans* Oberth. or ab. *haroldiana* Oberth.

Among the Aïn Sefra series are 3 ♂♂ and 2 ♀♀ of a very strange aberration, very large and suffused with red; this I propose to call ab. *erubescens* ab. nov.

The genitalia of *oberthuri* and *elocata* are alike, and there are in my series some which look suspiciously like intermediates more or less. I am therefore very doubtful as to the validity of the two species; it may very well turn out that *oberthuri* is a subspecies of *elocata* still in the making.

The British Museum has 1 ♀ Morocco, August—September, Meade-Waldo; 2 ♂♂ Crowley coll.; 4 ♂♂, 2 ♀♀ Staudinger and Bang-Haas and Leech coll.

384. *Mormonia dilecta powelli* (Oberth.).

*Catocala dilecta powelli* Oberthür, *Etud. Lépid. Comp.* fasc. iii. expl. pl. and pl. xii. f. 13 (1909) (Daya).

The Algerian race of *dilecta* Hübn. differs from *dilecta dilecta* by its more intense crimson hindwings and its greater variation in colour and pattern of forewing. The ab. *dayremi* Oberth. is the extreme melanistic phase and = ab. *obscurata* Spul. of *dilecta dilecta* Hübn.

The large series at Tring includes most of the intergradations as well as extreme *dayremi*.

We have 1,035 examples from Environs d'Alger (Captain Holl); Aïn Draham, September 1909–1911 (V. Faroult); Sebdo, July—August 1918 (P. Rotrou); Sidi-bel-Abbès, August 1918 (M. Rotrou).

The British Museum has 1 ♂ Batna, August 1910, A. E. Eaton; 1 ♂, 1 ♀ Aïn Draham, Staudinger and Bang-Haas.

385. *Mormonia sponsa laeta* (Oberth.).

*Catocala sponsa laeta* Oberthür, *Etud. Lépid. Comp.* fasc. iii. expl. pl. and pl. xii. f. 15 (1909) (Yakouren).

The Algerian race of *sponsa* Linn. differs from *sponsa sponsa* in being larger and brighter and more variegated with white. Mr. Oberthür has also named a melanistic form ab. *obscura*.

The Algerian series at Tring is a very poor one, and mostly not in good condition.

22 specimens from Aïn Draham, September 1909–1911 (Faroult and Staudinger); Sebdo, August 1918 (P. Rotrou).

386. *Catocala promissa hilaris* Oberth.

*Catocala promissa hilaris* Oberthür, *Etud. Lépid. Comp.* fasc. iii. expl. pl. and pl. xiii. f. 17 (1909) (Yakouren).

*Catocala electra* Bang-Haas, *Iris*, vol. xxiv. p. 41. pl. iv. f. 1 (1910) (Ain Draham).

The figure of Mr. Oberthür's *hilaris* from Yakouren is considerably darker and the median black band on the hindwing is shown much broader than in any Ain Draham specimen; it also is smaller than most of those from there.

Dr. Jordan has examined the genital armature for me of this and European *promissa*, and finds them similar. My readers will surely take me to task for adopting Mr. Oberthür's views here as to the status of *promissa* and *hilaris*, while I keep the much more similar insects as regards outward appearance, *elocata* and *oberthuri* separate.

Although the genitalia are alike, I can only say that in that case they occur together, while here *hilaris* replaces *sponsa*.

Time will show also whether after all the case may not be similar and that *oberthuri* replaces *elocata*, but is not yet so fixed as *hilaris* and therefore still produces a certain number of specimens, indistinguishable from *elocata*.

I have one specimen only other than Ain Draham ones; of these latter we possess 198 Ain Draham, July—August 1909–1911 (V. Faroult and Staudinger); 1 ♂ Le Tarf, July 1908 (Captain Holl).

The British Museum has 1 ♂, 1 ♀ Ain Draham, Staudinger and Bang-Haas.

387. *Catocala optata sultana* B.-H.

*Catocala sultana* Bang-Haas, *Iris*, vol. xxiv. p. 42. pl. iv. f. 2 (1910) (Ain Draham).

Mr. Oberthür is very emphatic as to the *optata* found in Algeria, Tunisia, and Morocco being all one entity and found in two forms named *amanda* Boisd. and *selecta* Boisd., and that Bang-Haas renamed this form *sultana*. Also because he has received a single specimen from **Tangier** less strongly marked and less bright than **Bordeaux** specimens, he says there is no fixity in local races, i.e. **subspecies**.

If these subspecies were absolutely fixed and showed a constant strong difference they would be **species** and not **subspecies**. To my mind, if 75–80 per cent. of specimens in one locality are constantly different from those of another locality, the form is worthy of a name.

The Ain Draham form has at least 95 per cent. of the individuals larger and the colour above brighter than *optata optata*, and it is also larger and brighter than *optata amanda* Boisd., which only differs from *optata optata* in the sandy tint and deeper rose-colour beneath. This large Mauretanian form extends all along the Tell of Algeria, north of the Atlas, from Sidi-bel-Abbès in the west to Ain Draham in Tunisia (Kroumerie) at least in the east.

The series at Tring contains 143 specimens from Ain Draham, July—August 1909–1911 (V. Faroult and Staudinger); Sidi-bel-Abbès, July—August 1917 (M. Rotrou).

The British Museum has 1 ♂, 1 ♀ Ain Draham, Staudinger and Bang-Haas.



388. *Catocala optata intermedia* Hmps. (Bang-Haas in litt.).

*Catocala optata* ab. *intermedia* Bang-Haas ined. Hampson, *Cat. Lepid. Phal. Brit. Mus.* vol. xii. p. 72. ab. I (1913) (Algeria (Batna)).

This is the form Mr. Oberthür says is *amanda* Boisd.; it differs from both *optata optata* and *optata amanda* in the black central band of the hindwings being much less irregularly dentate, and in being narrow for the costal half and suddenly becoming broader from vein 5 where it forms a sharp angle. It also is still brighter rose than *o. amanda* on the underside of the hindwings.

Our series contains 38 specimens from Batna, July—August 1910–1914 (A. Nelva and Faroult).

The British Museum has 1 ♂ Batna, Staudinger and Bang-Haas.

389. *Catocala puerpera rosea* Aust.

*Catocala puerpera* var. *rosea* Austaut, *Le Nat.* vol. vi. p. 391 (1884) (Morocco).

The rather poor series I have are all characteristic *rosea*, being larger than *puerpera puerpera* Giorn. with the forewings sandy cinnamon, strongly washed with rose.

17 examples from Aïn Sefra, July 1915 (V. Faroult); Sidi-bel-Abbès, July—August 1917–1918 (M. Rotrou); Sebdo, July 1918 (P. Rotrou).

390. *Catocala conjuncta vivida* Warr.

*Catocala conjuncta vivida* Warren in Seitz, *Grossschmett. Erde.* vol. iii. p. 308. pl. 56b (1913) (Algeria).

We have 749 Algerian examples, including the type of Warren's ab. *fulva* with fulvous yellow hindwings, from Sidi-bel-Abbès September 1917 (M. Rotrou); Aïn Draham September 1909–1911 (V. Faroult and Staudinger); Environs d'Alger (Captain Holl); Sebdo, Forêt de Tenira, July 1918 (P. Rotrou).

The colour of the hindwings in Mauretanian examples is deeper and richer.

391. *Ephesia nymphaea* (Esp.).

*Noctua nymphaea* Esper, *Schmett.* vol. iv. pt. i. p. 153. No. 52. pl. cv. f. 4 (1787) (Lyons).

This insect is also very variable as to colour and intensity of pattern of forewings, many specimens almost exactly resembling *Ephesia flavescens* Hampson from India, which must stand as *Ephesia nymphaea flavescens* Hampson.

Our Mauretanian series contains 289 specimens from Blida les Glacières larvae June, emerged Alger July 1908 (W. R. and E. H.); Tala Rana, July 1906 (Dr. Nissen); Mazagan, Morocco, July—September 1901–1902 (W. Riegenbach); El Kantara, June 1909 (Cheli Ibrahim); Aïn Draham, July 1909–1911 (V. Faroult and Staudinger); Batna, July 1908–1914 (Nelva and Taillefer); Aïn Sefra, July 1915 (V. Faroult); Sidi-bel-Abbès July 1917, Les Pins July 1918 (M. Rotrou); Sebdo, July 1918 (P. Rotrou).

392. *Catocala conversa* (Esp.).

*Noctua conversa* Esper, *Schmett.* vol. iv. pt. i. pl. cv.B. ff. 1, 2, 3 (1787).

Of this species our Algerian and Tunisian examples number 228, including the aberrations *carbonaria* Staud. and *seminigra* Warr. 156 from Tunis (Stau-



dinger) ; Ain Draham July—August 1911, Hammam R'hira June—August 1916, north side of Djebel Zaccar August 1916, Mecheria August 1918 (V. Faroult) ; Batna, July 1909–1912 (A. Nelva) ; Sidi-bel-Abbès July 1917, Les Pins July 1918 (M. Rotrou) ; Sebrou, July 1918 (P. Rotrou).

### 393. *Ephesia eutychea* (Treit.).

*Catocala eutychea* Treitschke, *Schmett. Eur.* vol. x. pt. ii. p. 165 (1835) (Corfu).

Although I have only the small series of 15 specimens of this southern species from Mauretania, it appears widely spread. It is here recorded for the first time for our region.

4 ♂♂, 4 ♀♀ Hammam R'hira June 1916, 2 ♂♂, 1 ♀ Masser Mines June 1914 (V. Faroult) ; 1 ♂ Sebrou, 1 ♂, 1 ♀ Forêt de Tenira June 1918 (P. Rotrou) ; 1 ♀ Sidi-bel-Abbès, June 1918 (M. Rotrou).

[On the status of *Catocala vallantini* Oberth. (Pl. XIV.)

This insect was described as a species and figured *Étud. Entom.* livr. xix. p. 36. pl. vi. f. 53 (1894) (Bône) by Mr. Oberthür. In 1901 Messrs. Staudinger and Rebel in *Cat. Lepid. Pal. Faun.* on p. 250 (pt. i.) place this as a species following *nymphagoga* with the number 2,716 ; but make certain remarks which I translate as follows : “ Described from a single ♂ ; judging from the type specimen, this appears to be an aberration of the preceding species (*nymphagoga*), although Staudinger would rather see in it a **subspecies**.” In 1912, when Sir George Hampson was writing vol. xii. of the *British Museum Catalogue*, I lent him all my large series of *Catocalas* captured by Victor Faroult at Ain Draham in July—September 1911, among which were 3 *vallantini* and a long series of the insect Mr. Oberthür has recorded as *nymphagoga* **without** any qualification. Among these so-called *nymphagoga* are a considerable number in which the median black band of the hindwing is in process of reduction, and there is a complete gradation from the normal band to a band almost obsolete. Besides these there are two specimens, one a *vallantini* showing a distinct shadowy trace of the band, and a second in which the band is present, but almost gone. I suggested to Sir George Hampson that *vallantini* was only an aberration of the so-called *nymphagoga*. Sir George, however, after examining the series, came to a different conclusion ; in fact he declared, and afterwards published in vol. xii. of the *Catalogue*, that *vallantini* was a distinct species and belonged to Hübner's genus *Ephesia*, while *nymphagoga* was a true *Catocala*. In 1913 in *Seitz* Mr. William Warren published *vallantini* as a **subspecies** of *nymphagoga*, at the same time treating some of the Algerian examples, with a normal central band to the hindwing, as *nymphagoga*, and describing others as **subspecies** !! under the names of *griseata* and *albimixta* ; while others again he described as **aberrations** under the names of *contorta*, *fasciata*, and *fulvipennis*. Finally Mr. Oberthür in the volume dealt with in this article, viz. *Études de Lépidoptérologie Comparée*, fascicule xvi., treats his so-called *nymphagoga* and his *vallantini* as two separate species ; and under *vallantini* makes the following remarks : “ C'est une Espèce des plus tranchées et les moins contestables parmi les *Catocala* à ailes inférieures jaunes de la Faune paléarctique.”

When I was working at the British Museum during the months of March—

July of this year (1919) preparing for this article and correcting identifications of Mauretanian *Noctuidae*, I again submitted the series of Ain Draham so-called *nymphagoga* and my 3 *vallantini* to Sir George Hampson, saying I could not feel satisfied with his former decision, and was still of opinion that *vallantini* was an aberration without the central band of the hindwings. He again said he was sure they were different species, and now laid great stress on what he pointed out as the different position and direction of the transverse lines of the forewings.

I was not satisfied with this answer, and got Dr. Jordan to examine a series of these insects, both from Europe and Algeria.

Sir George Hampson in the *Catalogue*, vol. xii. gives long diagnoses of the genera *Catocala* and *Ephesia* which I have carefully compared, and find all the characters given by him for both genera are **the same** except the following :

*Ephesia*. "Fore and hind tibiae not spined; mid tibiae spined. . . ."

*Catocala*. "Fore tibiae not spined; mid and hind tibiae spined, the latter only between the spurs. . . ."

Dr. Jordan found both European *nymphagoga* and the Algerian specimens with complete median band on hindwing, **as well as** *vallantini*, to have one or two spines on the hind tibiae; thus in the first place proving that *vallantini* is a true *Catocala* and not an *Ephesia*. (These spines are more of the nature of stiff bristles, protruding between the scales of the legs, and must not be confused with the spurs.)

Now, after Dr. Jordan had proved *vallantini* to be possessed of spines exactly as in *nymphagoga*, he and I carefully compared the pattern of the forewings to test the validity of Sir George Hampson's contention that the transverse lines on the forewings were different in *vallantini*. At first sight this really appeared to be the case, but we soon found that when the strongly dentate and sinuate postmedian line had become obsolete, the ordinarily much less conspicuous submarginal band stood out more plainly. This submarginal band is much further from the termen than in most other groups of *Noctuidae*, and is easily mistaken for the postmedian line in the specimens where this latter has become obliterated. There are, however, in the series from Ain Draham a number where the postmedian line on the forewings is quite as much absent as in *vallantini*, while the hindwings have the central band. These at once proved to us that the *Catocala vallantini* Oberth. = *Ephesia vallantini* of Hampson was nothing more than an extreme aberration in which the greater part of the pattern of the forewings had become obliterated, and the central band of the hindwings had disappeared altogether. To prove this and also illustrate the great variability of this insect, I propose to publish a coloured plate showing a complete gradation from the forewing with all markings extremely sharp to the almost complete obliteration exhibited in Warren's ab. *griseata* ♂, and also every gradation in the hindwing from one with a distinct sharply defined central band = ab. *normalis* Rothsch. to the total absence of the band = ab. *vallantini* Oberth.

But our thus proving that *vallantini* Oberth. is only an extreme aberration does not entirely explain all points connected with this insect. When in 1901 Drs. Staudinger and Rebel made their observations on the type and unique specimen, as it was then, of *Catocala vallantini* Oberth., there were no other examples of a *Catocala* known from Algeria of the *nymphagoga* type, and this was what chiefly induced Staudinger in opposition to Rebel to consider it to be the Mauretanian subspecies of *nymphagoga*. The large series sent from Algeria and

Tunisia since 1901 make it at once apparent that Staudinger was wrong and Rebel right as regards *vallantini* itself.

Now, however, the question arises, What are the specimens with median bands on the hindwings? Are they true *nymphagoga* or are they not? Esper described and figured his *Noctua nymphagoga* Schmett. vol. iv. pt. i. p. 159. No. 53. pls. cv. f. 5 and cv.b. f. 5 (1787) from Lyons and South Italy, and I have examined at Tring a series of 146 European specimens consisting of 8 without any locality and 138 from Quillery, France; Landes, S. France; Germany; Dalmatia; Austria; Hereulesfürdő, Hungary; Sorgento, Sardinia; Sicily; and Amanus Mts., Syria, and I have compared them with 367 Algerian and Tunisian examples. Among the European examples are specimens of the ab. *anthracita* Th. Mieg., ab. *tinolia* Led., ab. *curvifascia* and ab. *nubilosa* Schulze, as well as the type of ab. *albinata* Warr.; while among the Mauretanian examples are the ab. *vallantini* Oberth., ab. *normalis* Rothsch., ab. *leucomelas* Oberth., ab. *albimixta* Warr., ab. *griseata* Warr., ab. *fasciata* Warr., ab. *fulvipennis* Warr., and ab. *contorta* Warr. I find the general run of Mauretanian examples (in fact 95 per cent.) are smaller, and in all of them the yellow of the hindwing is very bright, and there is much more tendency for the pattern of the forewings to become obliterated, while the central band of the hindwings shows all degrees of reduction till it is absent altogether in typical ab. *vallantini*.

In the whole of the 146 European *nymphagoga* at Tring there is no specimen exhibiting any reduction of this central band, nor is there in the British Museum series. From all these points of difference, it is clear that the Mauretanian *nymphagoga* differ from the European ones. It remains to be seen what they ought to be called. Of the 8 names applied to Mauretanian specimens, that of *vallantini* Oberth. is not only the oldest but also was not used in an *aberrational* sense when first given. Therefore the name for the Mauretanian subspecies of *nymphagoga* must stand as *Catocala nymphagoga vallantini* Oberth., with two extreme forms ab. *normalis* Rothsch. with complete median band to the hindwing and ab. *vallantini* Oberth. with this band absent.]

394. *Catocala nymphagoga vallantini* Oberth. (Pl. XIV. ff. 1-24 & 30-39.)

*Catocala vallantini* Oberthür, *Etud. Entom.* livr. xix. p. 36. pl. vi. f. 53 (1894) (Bône).

This subspecies differs from *nymphagoga nymphagoga* Esp. in its generally smaller size, brighter colouration, especially the yellow colour, and the narrower outer margin of the hindwing, and in the strong tendency to obliteration of pattern of forewing and the central band of the hindwing. There are two extreme forms: one ab. *normalis* ab. nov. with pattern of forewing and central band of hindwing strongly defined, and ab. *vallantini* Oberth. with the pattern of forewing almost obliterated and the band of hindwing absent. Between these extremes all intergradations occur; for the names of the various intermediates see *antea*.

The Tring series contains 376 Mauretanian examples from Ain Draham, Tunisia, July 1909-1911 (V. Faroult and Staudinger); 6x larva, the larvae Blida les Glacières May, emerged Alger July 1908 (W. R. and E. H.); Tala Rana, Kabylie July 1908, Mezarir July 1906, Lella Kredidja, Kabylie July 1907 (Dr. Nissen); Sebdou, Forêt de Tenira, July 1918 (P. Rotrou); Sidi-bel-Abbès, July 1918 (M. Rotrou); El Mahouna, July 1919 (V. Faroult).

[Note on the genus *Ephesia* Hübn.]

Sir George Hampson takes as the type of *Ephesia*, *Phalaena fulminea* Scop.

On examination of the long series of the species at Tring, Dr. Jordan found spines present on the hind tibiae in some individuals, while they were absent in others.]

### 395. *Anua tirhaca* (Cram.).

*Phalaena tirhaca* Cramer, *Pap. Exot.* vol. ii. pt. xv. p. 116. pl. elxxii. f. E. (1777) (Cape of Good Hope).

Of this conspicuous insect the Mauretanian series at Tring comprises 36 examples from El Kantara, March 1911 (W. R. and E. H.); Batna September 1910, Aïn Draham September 1911, Guelte-es-Stel September—October 1912—1913, Bou Saada July 1911, Bordj-ben-Anéridj October 1912, Perrégaux October 1915, Lalla Marnia 1914 (V. Faroult); Sidi-bel-Abbès, September 1917 (M. Rotrou); Environs de Taourirt, July 1918 (M. Rotrou); Hammam R'hira, June 1918 (V. Faroult).

[*Minucia lunaris* (Schiff. & Den.).

*Phalaena lunaris* Schiffermüller and Denis, *Ank. Syst. Werk. Schmelt. Wienergeg.* p. 94 (1775) (Vienna).

Mr. Oberthür records the Mauretanian race of this species under the name of the European form, and only treats certain striking aberrations as such under the names of *maura*, *rufa*, and *murina*. It is quite true that while Mr. Oberthür has several hundred specimens from Mauretania, the Tring Museum has only 89, but yet among those 89 there are none like typical European specimens. I therefore propose to separate the Mauretanian race as a separate subspecies, and as it is very appropriate I shall adopt for it Mr. Oberthür's name of *maura*, although only given to an aberration.]

### 396. *Minucia lunaris maura* (Oberth.).

*Pseudophia lunaris* ab. *maura* Oberthür, *Etud. Entom.* livr. ix. p. 39. pl. iii. f. 13 (1884) (Sebdou).

The Tring series of *l. maura* contains 5 ab. *rufa* Oberth., 4 ab. *murina* Oberth., but no typical *maura*, all the rest being intermediates between *murina* and *maura*.

89 examples from Batna, Lambessa (A. Nelva); Khenchela May 1912, Souk Ahras April 1914 (W. R. and K. J.); Sebdou, Forêt de Tenira, April 1918 (P. Rotrou); Lambessa May 1909, Environs d'Alger May 1908 (W. R. and E. H.).

So far as I have seen, the sandy cinnamon-grey colour of the European form is never found in Mauretanian specimens, so that the diagnosis should read: "Differs from *l. lunaris* in the less sandy, more silvery grey ground-colour and in the much greater frequency of aberrations with red, olive, or mouse-grey ground-colour, and with obliterated bands."

[The genus *Clytie* and the forms allied to *illunaris* Hübn.]

Mr. Oberthür records *Clytie illunaris* from Algeria and says he has received specimens from various places all extremely variable, some being identical with *illunaris*, while others agreed with *sancta* Stdgr. and *syriaca* Bugn. I myself have, in addition to describing *Clytie arenosa* as new, from time to time recorded various



*Clyties* from Mauretania, viz. *terrulenta* Christ.; *delunaris* Stdgr.; and *syndaja* Hmps. n.

Now, the various species and races of this genus are very puzzling, owing mainly to the variation in the submarginal or postdiscal band on the forewings. Sir George Hampson enumerates the following as distinct species: *devia* Swinh.; *scotorrhiza* Hmps. n.; *sancta* Stdgr.; *illunaris* Hübn.; *haijæ* Habich; *distincta* B.-H.; *sydaja* Hmps. n.; *arenosa* Rothschild; *syriaca* Bugn.; *sublunaris* Stdgr.; *nabataea* Hmps. n.; *delunaris* Stdgr.; and *terrulenta* Christ. Mr. Warren in Seitz has described and figured in addition to these *luteonigra* from the Amu Darya. I have non-Algerian examples of all these, except *distincta* B.-H., *scotorrhiza* Hmps. n., *devia* Swinh., and *nabataea* Hmps. n., more or less from their typical localities, and I find that I have among my Algerian material certainly the following: *nabataea* Hmps. n., *arenosa* Rothschild, *sancta* Stdgr., and *syriaca* Bugn., but I have not got a single specimen at all agreeing with *illunaris*. In addition to these 4 I have 1 ♀ from Aïn Draham which agrees exactly with Warren's *luteonigra*, except that it is larger than the 3 Amu Darya examples. There remain the insects I recorded as *sublunaris* and *terrulenta*.

The series collected by Herr Geyr von Schweppenburg in and north of the Hoggar Mountains recorded by me as *delunaris* are, I am now convinced, only very fresh and sharply marked *sancta* Stdgr. The insects recorded as *terrulenta* are certainly very small, but I am more inclined now to admit an error of identification and consider them sandy *sancta*.]

### 397. *Clytie sancta* (Stdgr.).

*Pseudophia sancta* Standinger, *Iris*, vol. x. p. 301 (1897) (Palestine).

By far the larger number of *Clytie* at Tring consist of this form.

95 examples from South Oued Mya, May 1912 (Hartert and Hilgert); Oued Ahmra, Oued Ag'elil, Oued Gif-Aman, Oued Tamoudat, Idelès, north of Idelès, March 1914 (Geyr von Schweppenburg); Aïn Sefra July 1915, Masser Mines, June 1914, Guelt-es-Stel October 1912, El Mesrane June 1913, Bou Saada May 1911, El Kantara March—August 1911–1917, Batna 1910 (V. Faroult); Les Pins August 1918 (M. Rotrou).

### 398. *Clytie arenosa* Rothschild.

*Clytie arenosa* Rothschild, *Novit. Zool.*, vol. xx. p. 128. No. 69 (1913) (South Oued Mya).

Of this rare species we have at Tring 3 specimens: 1 ♂, 1 ♀ Oued Mya, May 1912 (Hartert and Hilgert); 1 ♂ Oued Tahihout, April 1914 (Geyr von Schweppenburg).

### 399. *Clytie syrdaja* Hmps. n.

*Clytie syrdaja* Hampson (*Pseudophia syrdaja*, B.-H. ined.), *Cat. Lepid. Phal. Brit. Mus.* vol. xiii. p. 293. No. 8102. pl. cccxxi. ff. 19, 20 (1913) (Aulic Ata).

1 ♀ El Mesrane June, Guelt-es-Stel July 1913 (V. Faroult).

### 400. *Clytie luteonigra* Warr.

*Clytie luteonigra* Warren in Seitz, *Grossschmett. Erde*, vol. 3. p. 338. pl. 62d. (1913) (Amu Darya).

1 ♀ Aïn Draham, Tunisia, September 1911 (V. Faroult).



401. *Parallelia algira* (Linn.).

*Phalaena algira* Linnaeus, *Syst. Nat.* edit. xii. p. 836. No. 98 (1767) (Algeria).

There appear to be two forms of this species: **one**, a smaller one with the median band narrow and much constricted in the centre on forewing and more or less obscured by dark scales giving it a mauve tinge and with the band on hindwing very narrow; and **two**, a larger one with the band on forewing broad and very little constricted and white and the band on hindwing much broader.

This latter has been placed together with Syrian, Egyptian, and Arabian specimens under *albivitta* Guen. by Warren, who says in *Seitz*: "Always larger than *algira*," forgetting that Guenée says his *albivitta* is the same size as *algira*. Warren also attributes the name *albivitta* erroneously to Moore instead of Guenée.

Sir George Hampson unites *torrida* Guen., *albivitta* Guen., *festina* Walk., *olympia* Swinh., and *algiroides* Schultz under *algira*, and gives it an enormous range from France to Turkestan, all over Africa, Asia Minor, India, and Ceylon. I have too small a material to judge if he is right or whether there are two or more species or a series of subspecies.

We have at Tring 59 Mauretanian examples from Environs d'Alger (Dr. Nissen); Hammam Meskoutine, May 1909–1914 (W. R., E. H., and K. J.); Hammam R'hira, May–August 1908–1916 (W. R. and K. J., and Faroult); Aïn Draham, Tunisia August 1911, north side of Djebel Zaccar August 1916, Guelt-es-Stel September 1913, Aïn Sefra July 1915, Perrégaux October 1915, Aflou October 1916 (V. Faroult); Oran, April 1913 (W. R. and E. H.); Djebel Kerdada May 1912, El Kantara August 1917 (V. Faroult); Biskra, June 1912 (Hartert and Hilgert); Sebdo, Forêt de Tenira, June 1918 (P. Rotrou); Sidi-bel-Abbès, September 1917 (M. Rotrou); El Mahouna, July 1919 (V. Faroult).

402. *Grammodes stolidia* (Fabr.).

*Noctua stolidia* Fabricius, *Syst. Entom.* p. 599. No. 38 (1775) (East India).

Of this species the series from Algeria at Tring comprises 44 specimens from Ghardaïa May, Oued Nça June 1912 (Hartert and Hilgert); Guelt-es-Stel July–September 1912–1913, Tilghemt April 1912, Bou Saada April 1912, El Outaya August 1918, Batna July 1910, north side of Djebel Zaccar August 1916, Alger January 1914 (V. Faroult); El Kantara, June–August 1909–1917 (Cheli Brahim and Faroult); Sidi Ferruch, July 1911 (A. Théry); Sidi-bel-Abbès, Les Pins, May–September 1917–1918 (M. Rotrou); Sebdo, Forêt de Tenira, August 1918, (P. Rotrou).

The British Museum has 1 ♀ Batna, August 1910, A. E. Eaton.

403. *Grammodes boisdeffrei* (Oberth.).

*Ophiura boisdeffrei* Oberthür, *Etud. Entom.* livr. i. p. 54. pl. 4. f. 6 (1876) (Biskra).

2 ♂♂, 1 ♀ Biskra, March 1914 (W. R. and E. H., and Staudinger).

The British Museum has 1 ♂ Batna, August 1910, A. E. Eaton; 3 ♂♂, 2 ♀♀ Hammam-es-Salahin, April 1904, Lord Walsingham.

404. *Grammodes geometrica* (Fabr.).

*Noctua geometrica* Fabricius, *Syst. Entom.* p. 599. No. 37 (1775) (East India).

1 ♀ Aïn Draham, Tunisia, August 1911; 1 ♂ Hammam R'hira, May 1917 (V. Faroult).

[On *Cerocala scapulosa* Hübn., *sana* Stdgr., *insana* Herr-Sch.,  
and *algiriae* Oberth.]

Mr. Oberthür is continually complaining that other authors neglect his work and do not trouble to look up his species; in the case of the Mauretanian *Cerocalas* it is he who has neglected other people's work, and persisted in uniting *sana* and his own *algiriae* **specifically** with *scapulosa*, with which they have nothing to do—being very distinct species differing from **each other** and from *scapulosa* in the genital armature, in the antennae, and in the legs. Sir George Hampson in vol. xiii. of the *Catalogue* already separated the 3 forms into 3 species, but after catching a large series at Aïn Sefra and receiving many from elsewhere I was not sure if there might not be more and I asked Dr. Jordan to investigate the material we possessed. This he did very thoroughly, and published the result in *Novitates Zoologicae*, vol. xxii, pp. 267–270, text figures 1–10 (1915). While Sir George Hampson is right in separating this group of *Cerocala* into 3 species, he has not got the synonymy of the two Mauretanian species quite right, as *scapulosa* Luc. **nec** Hübn. belongs to *sana* and not to what he calls *insana*, but which must stand as *algiriae* Oberth. I consider the figure of Herrich-Schäffer and his locality so doubtful that the name cannot be used for either of the Mauretanian species and I call them *Cerocala sana* Stdgr. and *Cerocala algiriae* Oberth. Mr. Oberthür says he has never received what he calls the typical form of *scapulosa*, as found in Andalusia, from Algeria; this is quite natural, for the true *scapulosa* is a perfectly distinct species from the two found in Mauretania and so far has **never** been recorded from **south of the Mediterranean**, although the 2 other species have been at various times called *scapulosa* and otherwise confused with it. Mr. Oberthür, at the end of his article on *Cerocala scapulosa*, somewhat qualifies his statements by saying that the fact of not finding the larger and darker true *scapulosa* in Mauretania might lead one to consider *algiriae* a distinct species. As a matter of fact Sir George Hampson's, William Warren's, and lastly Dr. Jordan's exhaustive studies and dissections of these *Cerocalas* have proved beyond doubt that there are 3 distinct species of *Cerocala* of this section, distinct in structure of genitalia, legs, and antennae as well as in appearance, viz. *Cerocala scapulosa* (Hübn.), *Cerocala algiriae* Oberth., and *Cerocala sana* Stdgr.]

#### 405. *Cerocala algiriae* Oberth.

*Cerocala scapulosa* var. *algiriae* Oberthür, *Etud. Entom.* vol. i. p. 55. pl. iv. f. 7 (1876) (Bou Saada).  
*Cerocala insana* Hampson, *Cat. Lepid. Phal. Brit. Mus.* vol. xiii. p. 270. No. 8076 (1913) (Biskra).  
? ? *Grammodes insana* Herrich-Schäffer, *Aussereur. Schmett.* f. 395 (1850) (Cape of Good Hope).  
*Cerocala scapulosa* form. *biskrensis* Culot, *Noct. et Géom. d'Eur.* pt. i. vol. ii. p. 182. pl. 73. f. 5 (1916) (Biskra).

The series of this species at Tring includes individuals agreeing both with the figures of *algiriae* Oberth. and *biskrensis* Culot, the latter being rubbed specimens, and consists of 194 examples from Colomb Bechar March and April 1912, Bou Saada March—May 1911–1912, Tilghemt April 1912, Laghouat March 1912, El Hamel May 1912, Bordj Chegga and Bir Stil March 1917 (V. Faroult); Ghardaïa and Tilghemt, April 1911 (W. R. and E. H.); Guelt-es-Stel, March—April 1912–1913 (W. R. and K. J., and Faroult); El Kantara March—April 1911, Aflou October 1916 (V. Faroult); halfway between Ouargla and El Golea, Hassi el Hadjar, Arefidji north of Ouargla, Bordj Chegga, north of El Golea, February—

March 1912, Hassi Sidi Mahmoud and Oued Nça April 1914 (Hartert and Hilgert); Biskra, March 1908 (W. R., and E. H.); Gafsa, Tunisia (Staudinger); Aïn Sefra, May 1913–1915 (W. R. and E. H., and Faroult).

The British Museum has 1 ♂ Biskra, April 1894, A. E. Eaton; 1 ♂ Biskra March 1906, 2 ♂♂, 2 ♀♀ Hammam-es-Salahin March–April 1904, Lord Walsingham; 1 ♂ Tozeur, Tunisia, 1913, G. C. Champion.

#### 406. *Cerocala sana* Stdgr.

*Cerocala scapulosa* var. *sana* Staudinger, *Cat. Lepid. Pal. Faun.* p. 241. No. 2594a (1901) (Antioch, Syria).

*Cerocala scapulosa* var. Lucas, *Ann. Soc. Entom. France* (2) 8. p. 103. pl. 2. f. 3 (1850) (Djebel Amour).

*Cerocala scapulosa* var. *insana* Staudinger, *Cat. Lepid. Europ. Faun.* edit. ii. p. 135. No. 1923a (1871) (Syria).

Of this species the series at Tring consists of 192 examples from Aïn Sefra, May 1912–1915 (W. R. and E. H., and Faroult); Biskra March 1908, Kef-el-Dor, Bordj Ferdjan and Bordj Mgeitha April 1909 (W. R. and E. H.); South Oran (Staudinger); Colomb-Bechar March–April 1912, Bon Saada May 1911–1912, Laghouat March 1912 (V. Faroult); Bordj Chegga, Nça ben Rzig, halfway between Ouargla and El Golea, Arefidji north of Ouargla, north of El Golea, Hassi el Hadjar February–March 1912 (Hartert and Hilgert); Ghardaïa, April 1911 (W. R. and E. H.); El Hamel May 1912, Guelt-es-Stel May 1913, Djelfa May 1913 (V. Faroult); Oued Nça April 1914 (Hartert and Hilgert); Hammam R'hira, May 1916 (V. Faroult).

#### 407. *Antarchaea viridaria* (Clerck).

*Phalaena viridaria* Clerck, *Icones Ins. Rar.* sect. i. pl. 9. f. 12 (1759).

This species is not recorded by Mr. Oberthür; all my 6 specimens belong to the ab. *modesta* Car. with the maroon colour almost absent.

5 Hammam R'hira, May 1911 (W. R. and E. H.); 1 Souk Ahras, April 1914 (W. R. and K. J.).

#### 408. *Antarchaea sanctiflorentis aurantiacus* subsp. nov.

♂♀. Differ from *sanctiflorentis sanctiflorentis* Boisd. from Spain by the orange-rufous ground-colour and the generally larger size, outer half more or less suffused with maroon red.

Mr. Oberthür records *sanctiflorentis* from Aïn Draham with no remarks. If he really got typical grey *sanctiflorentis* from Aïn Draham, my insect is a new species; but until I have seen Mauretanian specimens of true *sanctiflorentis* I prefer to treat this form as a good subspecies only.

9 Aïn Draham, Tunisia, July 1911 (V. Faroult).

#### 409. *Antarchaea erubescens* (B.-H.). (Pl. XVI. f. 10.)

*Prothymnia erubescens* Bang-Haas, *Iris*, vol. 24. p. 40. pl. iii. f. 11 (1910) (South Oran).

The figure given in *Seitz* appears to be quite wrong. My ♀ is the second specimen recorded and differs from the ♂ in the whole forewings being so strongly

suffused with red that the yellow ground so apparent in the ♂ is entirely invisible ; the median line of forewings more complete and visible than in the ♂.

1 ♀ Djebel Mekter, nr. Aïn Sefra, 1,600–1,900 metres = 5,200–6,175 ft., May 1913 (W. R. and E. H.).

410. *Rivula sericealis distincta* subsp. nov.

♂. Differs from *sericealis sericealis* Schiff. and Den. in having the curved band, leading from the reniform obliquely to the inner margin, distinctly defined instead of being a shadowy outline only ; smaller and less yellow, more cream-buff.

♀. With similarly well-defined band, but not so extended as in ♂, and ground-colour yellower.

1 ♂ Oued Hamidou, June 1912 (V. Faroult) ; 1 ♂ Hammam Meskoutine, May 1909 (W. R. and E. H.) ; 1 ♀ Environs d'Alger, May 1908 (W. R. and K. J.) ; 1 ♂ Sidi-bel-Abbès, October 1917 (M. Rotrou) ; 1 ♂ Sebdou, September 1918 (P. Rotrou).

411. *Parascotia nisseni* Turati.

*Parascotia nisseni* Turati, *Il Natur. Sicil.* vol. xx. p. 34 (1908) (Alger).

Of this rare species I have only received 5 specimens. Neither Mr. Culot nor Mr. Oberthür mention the insect.

1 Environs d'Alger, May 1906 (Dr. Nissen) (co-type) ; 1 Aïn Draham, Tunisia, July 1911 (V. Faroult) ; 1 Hammam Meskoutine, May 1914 (W. R. and K. J.) ; 1 Hammam R'hira, May 1916 (V. Faroult) ; El Mahouna, June 1919 (V. Faroult).

412. *Zethes insularis* Ramb.

*Zethes insularis* Rambur, *Ann. Soc. Entom. France*, vol. ii. p. 29. pl. 2. f. 1 (1833) (Ajaccio).

Of this Mediterranean species the Mauretanian series at Tring contains 38 examples from Hammam R'hira, May–September 1908–1917 (W. R., E. H., and K. J., and Faroult) ; Hammam Meskoutine, May 1914 (W. R., E. H., and K. J.) ; north side of Djebel Zaccar August 1916, Guelt-es-Stel May 1913, Oued Hamidou June 1912, Aïn Sefra July 1915 (V. Faroult) ; El Mahouna, June 1919 (V. Faroult).

One of the 3 Aïn Sefra specimens stands out from the rest of the 37 examples by its brilliant colouration and very sharply defined markings.

413. *Hydrilla caliginosa* (Hübner).

*Noctua caliginosa* Hübner, *Samml. Eur. Schmelt. Noct.* No. 474 (1818).

I have only received a single example of this species from Mauretania.

1 ♂ Blida, December 1915 (V. Faroult).

414. *Miselia softa luteocinnamomea* subsp. nov. (Pl. XVII. f. 7.)

Differs from *softa softa* Stdgr. from Palestine in its sandy rufous-cinnamon not grey ground-colour and in the pattern being more sharply defined.

1 ♂ El Kantara March–April 1911, 1 ♂ Perrégaux October 1915, 2 ♂♂ Bou Saada May 1911 (V. Faroult).

There are 1 ♂, 1 ♀ in the British Museum from Hammam-es-Salahin, May 1904 (Lord Walsingham).



415. *Miselia peregrina* (Treit.).

*Hadena peregrina* Treitschke, *Schmett. Eur.* vol. v. pt. i. p. 330. No. 11 (1825) (South of France).

I have received 2 specimens of this species.

1 ♂, 1 ♀ Tebessa (M. Bartel).

416. *Bryophila maeonis* Led.

*Bryophila maeonis* Lederer, *Ann. Soc. Entom. Belg.* vol. ix. pp. 63 and 78. pl. iii. f. 8 (1865) (Kisilgye-Aolé).

1 ♂ Environs de Batna (A. Nelva).

417. *Athetis euxoides* sp. nov. (Pl. XVI. f. 8.)

♀. This is a giant among the *Athetis* and is like nothing hitherto described. Abdomen brown; head and thorax purple-brown; abdomen wood grey.

Forewings basal two-thirds purplish maroon-brown irrorated and streaked with grey, outer one-third brighter maroon strigillated with grey; a marginal maroon-black band, fringe greyish rufous. Hindwings basal two-thirds semi-hyaline white washed with grey, outer one-third more strongly suffused and saturated with grey.

Length of forewing, 18 mm.; expanse, 42 mm.

1 ♀ Batna (Nelva coll.).

418. *Athetis persimilis* sp. nov. (Pl. XVI. f. 9.)

♂. Similar to the dark form of *quadripunctata* F., but without the rufous submarginal band and with shorter broader wings. Head and thorax dark brownish grey; abdomen slightly paler.

Forewings dark brownish grey, costal edge deep buff, the black earadrine spots very conspicuous; an oblique dark band from first spot, post-discal area sooty black-brown with buffish lines. Hindwings white, veins and edge of wing brownish grey.

Length of forewing, 15 mm.; expanse, 35 mm.

3 ♂♂ Souk Ahras, April 1914 (W. R. and K. J.); 1 ♂ Sidi-bel-Abbès, September 1917 (M. Rotrou).

[*Agrotis picata* B.-H.]

*Agrotis picata* Bang-Haas *Iris*, vol. xxvi. p. 140 (1912) (Batna).

This species is near *glareosa* Esp. and is most striking owing to the very dark hindwings.

I have not received this and Mr. Oberthür does not record it.]

[*Epia cinochrea* (Chrét.).

*Diantheia cinochrea* Chrétien, *Ann. Soc. Entom. France*, vol. lxxix. p. 500 (1911) (Gafsa).

This species is nearest to *silenes* Hübn., but smaller and paler purer grey.

I have not received it, and Mr. Oberthür believes it to be *Pronotestra silenides* Stdgr.]



[*Miselia grisea* (D. Lucas).

*Polia grisea* Daniel Lucas, *Bull. Soc. Entom. France*, 1908, p. 93 (Kébili, S. Tunisia).

I have not received this species.]

[*Crosia hachem* Dupont.

*Crosia hachem* Dupont, *Bull. Soc. Entom. France*, 1910, p. 369, text fig. 1 (Mascara).

I have not received this, and the type remains unique. Mr. Oberthür should have acknowledged this as it is figured.]

[*Parastichtis spinosa* (Chrét.).

*Hadena spinosa* Chrétien, *Ann. Soc. Entom. France*, vol. lxxix, p. 501 (1911) (Gafsa).

This fits better into *Parastichtis* than *Eumichtis* and is surely one of the *Zenobiinae*. I have never received it.]

[*Athetis distigma* (Chrét.).

*Caradrina distigma* Chrétien, *Bull. Soc. Entom. France*, 1913, p. 282 (Biskra).

The author places this near *atriluna* Guen.; but I think it comes next to my *oberthuri* and *proximans*. I have not received it.]

[*Athetis halimi* (Chrét.).

*Caradrina halimi* Chrétien, *Bull. Soc. Entom. France*, 1913, p. 282 (Biskra).

I have not received this species.]

[*Proxenus bicolor* Chrét.

*Proxenus bicolor* Chrétien, *Bull. Soc. Entom. France*, 1913, p. 304 (Biskra).

I have not received this species.]

[*Bombycia angularis* (Chrét.).

*Calophasia angularis* Chrétien, *Ann. Soc. Entom. France*, vol. lxxix, p. 504 (1910) (Gafsa).

I have no Tunisian *Bombycia* of this group, and as I said antea under *Bombycia chrétienii* mihi I am not sure whether the Sakamodi example enumerated under that species is not *angularis*.

This question must await more material.]

419. *Eublemma nelvai* sp. nov. (Pl. XVI. f. 24.)

♂. Antennae amber; head and tegulae pale cinnamon, rest of thorax apparently also pale cinnamon; abdomen dark cinnamon-grey.

Forewings pale rosy lavender, costal edge buff passing into rufous towards apex, a cinnamon rufous median line edged with cream-buff strongly angled outwards at discocellulars, inside this angle is the sooty black reniform, a postmedian rather less distinct line rufous also angled outwards, a submarginal broken line of sooty black spots, marginal line cream-colour edged inwardly with rufous, fringe rufous. Hindwings mouse-grey, marginal line cream edged inwardly with rufous; fringe grey, tinged with rufous.

Length of forewing, 9 mm.; expanse, 20 mm.

1 ♂ Environs de Batna, 1914 (A. Nelva).

Mr. Oberthür, following Guenée's classification, omits from his list all the insects placed by Guenée in his *Deltoides*. This group, according to Guenée, contains what have hitherto been called the *Hypeninae*, together with several of the *Noctuinae* such as *Rivula*.

The insects formerly called *Hypeninae* now make up the fourteenth sub-family of *Noctuidae* and must stand as *Polypogoninae*, according to Sir George Hampson's classification.

#### 420. *Nodaria cornicalis* (Fabr.).

*Phalaena cornicalis* Fabricius, *Entom. Syst.* vol. iii. pt. ii. p. 229. No. 374 (1794) (India).

*Herminia nodosalis* Herrich-Schäffer, *Syst. Bearb. Schmett. Eur.* vol. ii. p. 385. No. 607. pl. 118. f. 605 (1845) (Sicily).

*Nodaria externalis* Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* vol. viii. p. 64. No. 78 (1854) (Coast of Coromandel).

I consider both these insects to be the same, although the late Mr. William Warren in *Seitz, Grossschmetterlinge der Erde*, kept them separate. Fabricius's name is undoubtedly the oldest.

We have at Tring 35 Mauretanian examples from Environs d'Alger, May—November 1905–1908 (W. R. and E. H., Dr. Nissen and Captain Holl); Oued Hamidou June 1912, Bordj-ben-Anéridj October 1912, Aïn Draham September 1911, Bou Saada June 1912, Perrégaux October 1915, Moroccan Frontier May 1914 (V. Faroult); Rabat, Morocco, January 1913 (A. Théry); Blida, November 1915 (V. Faroult); Sebdo, September 1918 (P. Rotrou).

#### 421. *Hypena obsitalis* (Hübner).

*Pyrallis obsitalis* Hübner, *Samml. Eur. Schmett. Pyr.* ff. 164, 165, 179 (1827).

Of this insect the Mauretanian series at Tring consists of 119 specimens from Mazagan, Morocco, Mhoila nr. Mazagan, January—April 1902–1903 (W. Riggensbach); Rabat, Morocco, January 1913 (A. Théry); Environs d'Alger, March—May 1908–1912 (W. R., E. H., and K. J., and Dr. Nissen); Hammam R'hira May 1916, north side of Djebel Zaccar August 1916, Aïn Sefra July 1915, Blida November 1915 (V. Faroult); Sidi-bel-Abbès, August—September 1917 (M. Rotrou); Sebdo, Forêt de Tenira, May—August 1918 (P. Rotrou).

#### 422. *Pechipago* (*Zanclognatha* auct.) *crinalis* (Treit.).

*Herminia crinalis* Treitschke, *Schmett. Eur.* vol. vii. p. 17. No. 8 (1829).

We have of this species 57 Mauretanian examples from Environs d'Alger, May 1906 (Dr. Nissen); Hammam R'hira, May—June 1913–1916 (W. R. and E. H., and Faroult); north side of Djebel Zaccar August 1916, Aïn Draham September 1916, Bou Saada October 1911, Blida November 1915 (V. Faroult); Sidi-bel-Abbès, August—September 1917 (M. Rotrou); Sebdo, Forêt de Tenira, September 1918 (P. Rotrou).

423. *Pechipago flavicrinalis* sp. nov.

♂. Differs at a glance from *crinalis* Treit. in the lunate reniform and much postmedian line of forewing, and in the greyish sandy-yellow colour of wings and body.

♀. Similar, but even brighter sandy-yellow colour.

Length of forewing, ♂ 13–16 mm., ♀ 12–15 mm.; expanse, ♂ 29–35 mm., ♀ 27–33 mm.

5 ♂♂, 8 ♀♀ from Aïn Draham August–September 1911, Bou Saada October 1911 (V. Faroult); Hammam R'hira, May 1913 (W. R. and E. H.); Environs d'Alger, May 1908 (W. R. and K. J.); Aïn Draham (Staudinger); Philippeville, bred from egg (Andreas); Forêt de Yakouren, May 1909 (Mrs. Walsh).

424. *Ophiuche lividalis* (Hübner).

*Hypena lividalis* Hübner, *Beitr. Gesch. Schmett.* vol. ii. p. 4. No. 1 (1791).

Of this species I have 2 specimens from 1 ♂ Sidi-bel-Abbès, September 1917 (M. Rotrou); 1 ♂ Environs de Tunis, 1916 (M. Blane).

The Sidi-bel-Abbès ♂ expands 22 mm., while the Tunis one expands 32 mm.

There are doubtless several other species of *Polypogoninae* in Mauretania, but I cannot find records of any others.

In order to complete the list of the recorded *Noctuidae* from Mauretania, I enumerate here certain *Westermanniinae* and others already enumerated by me in the earlier portions of these supplemental notes.

425. *Nycteola falsalis* (Herr.-Sch.).

*Nycteola falsalis* Herrich-Schäffer, *Deutsch. Ins.* vol. i. pl. 166. f. 1 (1829) (Germany).

Our series at Tring from Mauretania consists of 58 examples from Environs d'Alger, May 1908 (W. R. and K. J.); Sidi Ferruch, July–August 1911 (A. Théry); Hammam Meskoutine, April–May 1914 (W. R., E. H., and K. J.); Hammam R'hira May 1911–1913 (W. R. and E. H.); Guelt-es-Stel, April 1912 (W. R. and K. J.); Sidi-bel-Abbès, September 1917 (M. Rotrou); Sebdou, May 1918 (P. Rotrou).

The British Museum has 1 Hammam-es-Salahin, March 1904, Lord Walsingham.

One of the Sidi-bel-Abbès examples has the median band absent all but a round black spot above inner margin.

426. *Sarrothripus revayana* (Scop.).

*Tortrix revayana* Scopoli, *Annus Nat. Hist.* vol. v. p. 116 (1772) (Germany).

Our Mauretanian series contains 17 specimens from Environs de Batna, 1911–1912 (A. Nelva); Sidi-bel-Abbès, July–September 1917 (M. Rotrou); Sebdou, June 1918 (P. Rotrou); Masser Mines June 1914, Aïn Sefra July 1915, Aïn Draham July–September 1911 (V. Faroult); Hammam Meskoutine, May 1909 (W. R. and E. H.).

10 of these are ab. *glauca* Lampa; 4 are ab. *obscura* Warr.; 1 is ab. *usculana* Schmid; and 2 are ab. *ilicana* Fabr.

427. *Earias chlorophyllana* Stdgr.

*Earias chlorophyllana* Staudinger, *Iris*, vol. iv. p. 249 (1891) (Mardin).

When writing on this species (*Novit. Zool.* vol. xxiv. p. 404 (1917)) I had no Mauretanian specimens, but since then the Tring Museum has received 6 specimens from Sidi-bel-Abbès, August—September 1917 (M. Rotrou).

428. *Earias albovenosana* Oberth.

*Earias albovenosana* Oberthür, *Etud. Lépid. Comp.* fasc. xiii. p. 27. pl. cdxxxvi. ff. 3767, 3768 (1917) (Lambessa).

The Tring series of this now numbers 10 examples from Aïn Draham September 1911, Khenchela June 1911, Hammam R'hira June 1917, Aïn Sefra, June 1915 (V. Faroult); Sidi-bel-Abbès, June—August 1917 (M. Rotrou); Forêt de Tenira, September 1918 (P. Rotrou).

429. *Earias chlorion* Ramb.

*Earias chlorion* Rambur, *Cat. Syst. Lépid. Andal.* livr. ii. pl. xv. f. 6 (1866) (Andalusia).

Of this species there are 2 at Tring from Biskra, 1911 (W. R. and E. H.).

430. *Earias insulana* (Boisd.).

*Tortrix insulana* Boisduval, *Faun. Madag.* p. 121. pl. 16. f. 9 (1833) (Madagascar).

Of this species we have 2 Mauretanian specimens from Sidi-bel-Abbès, September—October 1917 (M. Rotrou).

431. *Hylophila africana* Warr.

*Hylophila africana* Warren in Seitz, *Grossschmett. Erde*, vol. iii. p. 298. pl. 53m. (1913) (Aïn Draham).

1 ♂, 1 ♀ Aïn Draham, ♂ July 1911, ♀ no date (V. Faroult and Max Bartel).

432. *Abrostola tripartita* (Hufn.).

*Phalaena tripartita* Hufnagel, *Berl. Mag.* vol. iii. p. 414 (1766) (Berlin).

Mr. Oberthür on p. 201, after *Phytometra gamma*, mentions 3 species which he considers of very doubtful occurrence in Algeria; among them is *Abrostola triplasia*. I have not received *triplasia* it is true, but I myself have captured *tripartita*.

1 ♂ Environs d'Alger, May 6th, 1908 (W. R. and E. H.).

This species was overlooked by me.

The following are the doubtful species mentioned by Mr. Oberthür in livr. i. of his *Etudes Entomologiques* in 1876 as having been taken by Dr. Seriziat and Mr. Gandolph and afterwards proved doubtful:

*Cirphis comma* (Linn.).

*Abrostola triplasia* (Linn.).

*Phytometra chrysitis* (Linn.).

*Phytometra festucae* Linn.

[*Borolia sesamiodes* Hampsn.]

*Borolia sesamiodes* Hampson, *Cat. Lepid. Phal. Brit. Mus.* vol. v. p. 575. pl. xcv. f. 17 (1905) (Hammam-es-Salahin).

I have never had this.

There are in the British Museum 4 ♂♂, 2 ♀♀ Hammam-es-Salahin, March—April 1904–1906 (Lord Walsingham).

This species was overlooked by me.]

433. *Pseudomecia lithoxylea* (Bang-Haas).

*Hypomecia lithoxylea* Bang-Haas, *Iris*, vol. xxvi. p. 157. pl. vi. f. 19 (1912) (Batna).

1 ♂ October 1913 (V. Faroult).

The only specimen received at Tring of this species had been mislaid, and so was omitted from its proper place in this article.

434. *Miselia cappa* (Hübner).

*Noctua cappa* Hübner, *Samml. Eur. Schmett. Noct.* f. 447 (1827).

The single specimen received was mislaid when the portion of the article treating of the *Miseliæ* was being written. This appears to be the first record for Algeria.

1 ♀ Sidi-bel-Abbès, May 1918 (M. Rotron).

435. *Epipsilia faroulti* sp. nov.\*

♀. Uniform mouse-grey. Hindwings darker, with paler fringe and base. Forewings with two obsolete black antemedian lines, orbicular with faint and reniform with very pronounced black ring, 2 postmedian black lines, with row of black dots between.

Length of forewing, 18 mm.; expanse, 42 mm.

1 ♀ El Mahouna, September 27, 1919 (V. Faroult).

This species is added here as it came to hand after the article had gone to press.

The total number of species and subspecies of *Noctuidæ* enumerated in this paper as recorded from Mauretania is 471 and 4 doubtful records.

Mr. Oberthür records 337 and 3 doubtful ones. As, however, Mr. Oberthür follows Guenée's classification, he has omitted the *Polygoninæ* and the genera *Sarothrips*, *Nycteola*, *Earias*, *Hylophila*, *Rivula*, and *Parascotia*, which are not *Noctuidæ* according to Guenée. If we deduct from my list the 14 species included in these genera I have enumerated 457 species and subspecies as opposed to Mr. Oberthür's 337—an increase of 120. Of Mr. Oberthür's 337 there are 32 which I do not possess or else have not received from Mauretania. Of the 471 I enumerate there are altogether 36 either not in the Tring Museum or else not from Mauretania. Of the 441 species represented at Tring from Mauretania, the number of examples is 30,691.

\* All recent authors spell Hübner's genus *Epipsilia* "*Episilia*," but the former spelling is that of the author.



LIST OF SPECIES IN THE ORDER OF THE CATALOGUE OF  
*LEPIDOPTERA PHALAENAE* IN THE BRITISH MUSEUM.**NOCTUIDAE.****Agrotinae.**

1. *Heliothis chanzyi* (Oberth.).
2. *Rhodocleptria incarnata* (Freyer).
3. *Chlorideu dipsacea* (Linn.).
4. *Chlorideu peltigera* (Schiff. & Den.).
5. *Chloridea nubigera* (Herr.-Sch.).
6. *Chloridea obsoleta* (Fabr.).
7. *Xylina delphinii darollesi* (Oberth.).
8. *Melicleptria scutosa* (Schiff. & Den.).
9. *Timora albida* Hmps.
10. *Erithrophaia canroberti* Oberth.
11. *Cladocerotis optabilis* (Boisd.).
12. *Euxoa obesa lipara* (Ramb.).
13. *Euxoa crassa* (Hüb.).
- 13a. *Euxoa lata* (Treit.).
14. *Euxoa lasserrei* (Oberth.).
15. *Euxoa messaouda* (Oberth.).
16. *Euxoa noctambulatrix* (Chrét.).
17. *Euxoa rugifrons* (Mab.).
18. *Euxoa capsensis* (Chrét.).
19. *Euxoa segetum* (Schiff. & Den.).
20. *Euxoa vestigialis* (Rott.).
21. *Euxoa spinifera spinifera* (Hüb.).
22. *Euxoa hoggari* Roths.
23. *Euxoa hastifera abdallah* (Oberth.).
24. *Euxoa mauretanica* (B.-H.).
25. *Euxoa doufanae* (Oberth.).
26. *Euxoa powelli* (Oberth.).
27. *Euxoa robiginosa* Stdgr.
28. *Euxoa obelisca* (Schiff. & Den.).
29. *Euxoa radius radius* (How.).
30. *Euxoa radius erythroxylea* (Treit.).
31. *Euxoa oranaria* (B.-H.).
32. *Euxoa rottroui* Roths.
33. *Euxoa cos cycladum* (Stdgr.).
34. *Euxoa constanti* (Mill.).
35. *Euxoa eos* (Oberth.).
36. *Euxoa christophi* (Stdgr.).
37. *Euxoa trux* (Hüb.).
38. *Euxoa tritici* (Linn.).

39. *Euxoa distinguenda* (Led.).
40. *Euxoa bugeaudi bugeaudi* (Oberth.).
41. *Euxoa bugeaudi islyana* (Oberth.).
42. *Euxoa cursoria* (Hufn.).
43. *Euxoa celsicola gueddelanea* (Oberth.).
44. *Euxoa kaaba* (Oberth.).
45. *Euxoa imperator* (B.-H.).
46. *Euxoa lucipeta* (Schiff. & Den.).
47. *Agrotis ypsilon* (Rott.).
48. *Agrotis orbona* (Hufn.).
49. *Agrotis comes* (Treit.).
50. *Agrotis pronuba* (Linn.).
51. *Agrotis nona* Oberth.
52. *Agrotis c. nigrum* (Linn.).
53. *Agrotis flammatra* (Schiff. & Den.).
54. *Agrotis leucogaster* (Frr.).
55. *Agrotis picata* B.-H.
56. *Agrotis nisseni* Rothsch.
57. *Agrotis xanthographa* (Schiff. & Den.).
58. *Agrotis auguroides* Rothsch.
59. *Agrotis praecipuina* (Rothsch.).
60. *Epipsilia simulatrix* (Gey.).
61. *Epipsilia faceta* (Treit.).
62. *Epipsilia straminea* (Rothsch.).
63. *Epipsilia lycophotoides* (Rothsch.).
- 63a. *Epipsilia faroulti* Rothsch.
64. *Lycophotia mansoura* (Chrét.).
65. *Lycophotia agrotina* (Rothsch.).
66. *Lycophotia kermesina* (Mab.).
67. *Lycophotia margaritosa* (Haw.).
68. *Lycophotia photophila* (Guen.).
69. *Lycophotia ignipeta* (Oberth.).
70. *Epilecta linogrisea lutosa* (Stdgr.).
71. *Triphaena janthina algerica* Oberth.
72. *Triphaena janthina intermedia* Rothsch.
73. *Triphaena fimbria* (Linn.).

#### Hadeninae.

74. *Saragossa seeboldi arabum* Oberth.
75. *Scotogramma trifolii cinnamomina* Rothsch.
76. *Scotogramma chimaera* Rothsch.
77. *Scotogramma sodae rosacea* Rothsch.
78. *Scotogramma implexa* (Hüb.).
79. *Miselia luteago* (Schiff. & Den.).
80. *Miselia peregrina* (Treit.).
81. *Miselia oleracea variegata* (Aust.).
82. *Miselia softa luteocinnamomea* Rothsch.
- 82a. *Miselia cappa* (Hüb.).

83. *Miselia dysodea faroulti* (Rothsch.).
84. *Miselia serena* (Schiff. & Den.).
85. *Miselia grisea* (D. Lucas).
86. *Miselia bicruris* (Hufn.).
87. *Miselia antitypina* (Rothsch.).
88. *Miselia carpophaga* (Borkh.)
89. *Miselia magnolii* (Boisd.).
90. *Miselia filigramma* (Esp.).
91. *Miselia conspersa* (Schiff. & Den.).
92. *Miselia compta galactina* (Turati).
93. *Luperina (Pachetra) leucophaea* (Schiff. & Den.).
94. *Pronotestra silenides* (Stdgr.).
- 94a. *Aglossestra mariae-ludovicæ* (D. Lucas).
95. *Epia silenæ* (Hübner).
96. *Epia cinochrea* (Chrét.).
97. *Cardepia deserticola* Hmps.
98. *Cardepia irrisor mauretanica* Rothsch.
99. *Hadula pulverata* (B.-H.).
100. *Hadula griseola* (Rothsch.).
101. *Monima stabilis* (Schiff. & Den.).
102. *Monima cruda* (Schiff. & Den.).
103. *Sideridis lithargyria argyritis* Ramb.
104. *Sideridis albipuncta* (Schiff. & Den.).
105. *Sideridis vitellina* (Hübner).
106. *Brithys pancratii* (Cyr.).
107. *Brithys encausta* (Hübner).
108. *Cirphis loreyi* (Dup.).
109. *Cirphis l. album* (Linn.).  
(*Cirphis comma* (Linn.)).
110. *Cirphis riparia* (Ramb.).
111. *Cirphis algerica* (Oberth.).
112. *Cirphis sicula* (Treit.).
113. *Cirphis punctosa* (Treit.).
114. *Cirphis putrescens* (Gey.).
115. *Cirphis zeæ* (Dup.).
116. *Cirphis unipuncta* (Haw.).
117. *Cirphis congrua* (Hübner).
118. *Borolia sesamiodes* Hmps.
119. *Leucania obsoleta* (Hübner).
120. *Leucania languida* (Stdgr.).

#### Cuculliinae.

121. *Copicucullia syrtana* (Mab.).
122. *Copicucullia oberthuri* (Culot).
123. *Cucullia chamomillæ calendulae* Treit.
124. *Cucullia santolinæ* Ramb.
125. *Cucullia scrophulariphaga* Ramb.

126. *Cucullia blattariae* (Esp.).
127. *Cucullia scrophulariphila* Stdgr.
128. *Cucullia thapsophaga* Treit.
129. *Cucullia oberthuri* Rothsch.
130. *Cucullia verbasci* (Linn.).
131. *Cucullia beata* Rothsch.
132. *Cucullia biskrana*.
133. *Empusada argentina* (Fabr.).
134. *Lophoterges millieri* (Stdgr.).
135. *Hypomecia quadrivirgula* (Mab.).
136. *Copiphana gafsana* (Blach.).
137. *Cleophana chabordis* Oberth.
138. *Cleophana boetica diluta* Rothsch.
139. *Cleophana pectinicornis* Stdgr.
140. *Cleophana jubata* Oberth.
141. *Cleophana vanlogeri* Stdgr.
142. *Cleophana affinis* Rothsch.
143. *Cleophana fatima* B.-H.
144. *Cleophana diffuens mauretaniae* Rothsch.
145. *Cleophana versicolor* Stdgr.
146. *Cleophana mauretanica* Stdgr.
147. *Amephana warionis* (Oberth.).
148. *Amephana aurita* (Fabr.).
149. *Omphalophana serrata* (Treit.).
150. *Omphalophana adamantina* (Blach.).
151. *Omphalophana pauli* Stdgr.
152. *Omia cyclopea* (Gras.).
153. *Omia oberthuri* Allard.
154. *Metopoceras canteneri canteneri* (Dup.).
155. *Metopoceras canteneri pallidior* Rothsch.
156. *Metopoceras felicina* (Lonz.).
157. *Metopoceras khalildja* Oberth.
158. *Metopoceras omar* (Oberth.).
159. *Metopoceras morosa* Rothsch.
160. *Ammetopa codeti* Hmps.
161. *Brachygalea albolineata* (Blach.).
162. *Calophasia stigmatica* Rothsch.
163. *Calophasia kraussi* Rebel.
164. *Calophasia almoravida* Grasl.
165. *Calophasia platyptera* (Esp.).
166. *Leucochlaena olitis* (Hübner.).
167. *Leucochlaena scillae* (Chrét.).
168. *Leucochlaena orana* (Lucas).
169. *Ulochlaena hirta* (Hübner.).
170. *Bombycia chrétieni* (Rothsch.).
171. *Bombycia angularis* (Chrét.).
172. *Derthisa trimacula* (Schiff. & Den.).
173. *Aporophyla chioleuca* (Herr.-Sch.).
174. *Aporophyla nigra* (Haw.).

175. *Lithophane semibrunnea* (Haw.).
176. *Graptolitha lapidea ochreomacula* Rothsch.
177. *Axylia exsoleta* (Linn.).
178. *Dichonia areola mustapha* (Oberth.).
179. *Dryobota furva* (Esp.).
180. *Meganephria oxyacanthae* (Linn.).
181. *Agriopsis aprilina bouveti* (D. Lucas).
182. *Eumichtis lichenea* (Hübner.).
183. *Eumichtis solieri* (Boisd.).
184. *Eumichtis accipitrina* (Esp.).
185. *Eumichtis protea* (Schiff. & Den.).
186. *Eumichtis monochroma* (Esp.).
187. *Eumichtis roboris cerris* (Boisd.).
188. *Valeria oleagina* (Schiff. & Den.).
189. *Antitype rosea* Rothsch.
190. *Antitype hagar* Rothsch.
191. *Antitype sahariensis* Rothsch.
192. *Antitype flavicincta* (Schiff. & Den.).
193. *Antitype nigrocincta* (Treit.).
194. *Antitype dubia* (Dup.).
195. *Antitype discalis* Rothsch.
196. *Antitype germana* Rothsch.
197. *Antitype argillaceago deliciosa* (Oberth.).
198. *Antitype subvenusta* Pungl.
199. *Rhizotype flammea* (Esp.).
200. *Rhizotype crassicornis obscura* (Oberth.).
201. *Bryomima codeti codeti* (Oberth.).
202. *Bryomima codeti nisseni* (Rothsch.).
- 202a. *Dasy sternum faroulti* Rothsch.
203. *Dasy thorax rottroui* Rothsch.
204. *Conistra vacinii sebdenensis* (Aust.).
205. *Conistra silene* (Schiff. & Den.).
206. *Conistra veronicae* (Hübner.).
207. *Conistra erythrocephala* (Schiff. & Den.).
208. *Grammoscelis magnifica* (Rothsch.).
209. *Omphaloscelis polybela* (de Joan.).
210. *Omphaloscelis lunosa* (Haw.).
211. *Amathes witzemanni* (Standf.).
212. *Amathes ruticilla* (Esp.).
213. *Amathes lychnidis* (Schiff. & Den.).
214. *Amathes haematidea* (Dup.).
215. *Amathes lota* (Linn.).
216. *Amathes macilenta* (Haw.).
217. *Amathes helvola* (Linn.).
218. *Amathes litura* (Linn.).
219. *Amathes lucida* (Hufn.).
220. *Cymatophora algerica* (Culot).
221. *Xantholeuca croceago* (Schiff. & Den.) (before *Conistra*).
222. *Cosmia austauti* (Oberth.).



**Zenobiinae (Acronyctinae).**

223. *Pyrois effusa* (Boisd.).
224. *Amphipyra pyramidea* (Linn.).
225. *Amphipyra tetra* (Fabr.).
226. *Amphipyra tragopoginis distincta* Rothsch.
227. *Anthracia ephialtes* (Hübner.).
228. *Mania maura* (Linn.).
229. *Parastichtis arabs arabs* (Oberth.).
230. *Parastichtis arabs standfussi* (Turati).
231. *Parastichtis arabs biskrae* (Oberth.).
232. *Parastichtis monoglypha* (Hufn.).
233. *Parastichtis spinosa* (Chrét.).
234. *Trachea secalis* (Linn.).
235. *Euplexia lucipara leonhardi* Rebel.
236. *Procus faroulti* (Rothsch.).
237. *Procus furuncula* (Schiff. & Den.).
238. *Eremobia alpigena* (Boisd.).
239. *Sidemia aflouensis* Rothsch.
240. *Sidemia fulva* (Rothsch.).
241. *Pseudomecia lithoxylea* (B.-H.) (correct place after *Stilbina*).
242. *Margelana irritaria* (B.-H.).
243. *Centropodia inquinata* Mab.
244. *Pseudamathes volloni* (D. Lucas).
245. *Pseudopseustis tellieri* (D. Lucas).
246. *Pseudohadena chenopodiphaga* (Ramb.).
247. *Pseudohadena roseonitens* (Oberth.).
248. *Palluperina powelli* (Culot).
249. *Palluperina nickerlii graslini*.
250. *Palluperina dayensis* (Oberth.).
251. *Palluperina dumerilii* (Dup.).
252. *Trigonophora meticulosa* (Linn.).
253. *Eriopus latreillei* (Dup.).
254. *Eriopus juvenina* (Cram.).
255. *Oedibrya subplumbeola* (Culot).
256. *Oederemia precisa* (Warr.).
257. *Bryophila muralis* (Forst.).
258. *Bryophila pseudoperla* Rothsch.
259. *Bryophila aerumna* Culot.
260. *Bryophila bilineata* Rothsch.
261. *Bryophila albimaculata albimaculata* Rothsch.
262. *Bryophila albimaculata grisescens* Rothsch.
263. *Bryophila algae* (Fabr.).
264. *Bryophila receptricula pallida* B. Baker.
265. *Bryophila ravula* (Hübner.).
266. *Bryophila maeonis* Led.
267. *Bryophila divisa oxybiensis* Mill.
268. *Bryophila simulatricula* Guen.
269. *Bryophila antias* Culot.

270. *Bryophila anaemica* Hmps. n.
271. *Bryophila petraea* Guen.
272. *Iambiodes incerta* Rothsch.
273. *Polyphaenis xanthochloris graslini* Culot.
274. *Thalpophila vitalba* (Frr.).
275. *Sidemia fissipuncta oberthuri* Rothsch. (correct place after 238).
276. *Craniophora pontica* (Stdgr.).
277. *Acronycta tridens* (Schiff. & Den.).
278. *Acronycta psi* (Linn.).
279. *Acronycta rumicis pallida* Rothsch.
280. *Stilbina numida* (Oberth.).
281. *Prodenia litura* (Fabr.).
282. *Spodoptera abyssinia* Guen.
283. *Laphygma exigua* (Hüb. n.).
284. *Rabinopteryx subtilis* (Mab.).
285. *Rabinopteryx nelvai* Rothsch.
286. *Stilbia anomala calberlae* (Faill.).
287. *Stilbia algerica* (Culot).
288. *Stilbia turatii* (D. Lucas).
289. *Athetis atriluna* Guen.
290. *Athetis ambigua* (Schiff. & Den.).
291. *Athetis kadenii rufostigmata* Rothsch.
292. *Athetis flava* (Oberth.).
293. *Athetis approximans* Rothsch.
294. *Athetis clavipalpis* (Scop.).
295. *Athetis jacobsi* Rothsch.
296. *Athetis germaini* (Dup.).
297. *Athetis pertinax inumbrata* Rothsch.
298. *Athetis oberthuri* Rothsch.
299. *Athetis aspersa* (Ramb.).
300. *Athetis alsines* (Brahm.).
301. *Athetis blanda* (Schiff. & Den.).
302. *Athetis casearia* (Stdgr.).
303. *Athetis astigmata* Rothsch.
304. *Athetis hispanica* (Mab.).
305. *Athetis ingrata* (Stdgr.).
306. *Athetis flavirena* (Guen.).
307. *Athetis scotoptera* (Püngl.).
308. *Athetis euxoides* Rothsch.
309. *Athetis persimilis* Rothsch.
310. *Athetis distigma* (Chrét.).
311. *Athetis halimi* (Chrét.).
312. *Hydrilla caliginosa* (Hüb. n.).
313. *Proxenus bicolor* (Chrét.).
314. *Hadjina viscosa* (Frr.).
315. *Catamecia mauretanica* Stdgr.
316. *Catamecia jordana balestrei* (D. Lucas).
317. *Namangana chimaera* Rothsch.
318. *Hydroecia xanthenes orientalis* (Oberth.).

- 319. *Enargia ulicis* (Stdgr.).
- 320. *Enargia regina* (Stdgr.).
- 321. *Enargia algerica* (Culot.).
- 322. *Enargia jordani* Rothsch.
- 323. *Arenostola deserticola* Stdgr.
- 324. *Arenostola mabillei* (D. Lucas).
- 325. *Oria fulva africana* Oberth.
- 326. *Archanara neurica* (Hübner.).
- 327. *Archanara dissoluta* (Hübner.).
- 328. *Archanara affinis* Rothsch.
- 329. *Sesamia vuteria* (Stoll.).
- 330. *Sesamia cretica* Lcd.
- 331. *Sesamia striata* Stdgr.
- 332. *Sesamia calamistis* Hmps.
- 333. *Simyra autumnata* Chrét. (correct place after *Stilbina*).
- 334. *Argyrospila musculosa* (Hübner.).
- 335. *Argyrospila dulcis* Oberth.
- 336. *Argyrospila striata* Stdgr.
- 337. *Protomeceras mimicaria* (Oberth.).
- 338. *Synthymia fixa australis* (Oberth.).
- 339. *Azenia sabulosa* (Rothsch.).
- 340. *Aegle vespertalis* (Hübner.).

#### Erastrinae.

- 341. *Catablemma geyri* (Rothsch.).
- 342. *Catablemma cremorna* Rothsch.
- 343. *Eublemma velox griseomargo* (Warr.).
- 344. *Eublemma lacernaria* (Hübner.).
- 345. *Eublemma suava blandula* (Ramb.).
- 346. *Eublemma jucunda* (Hübner.).
- 347. *Eublemma syrtensis* Hmps.
- 348. *Eublemma ostrina* (Hübner.).
- 349. *Eublemma pseudostrina* Rothsch.
- 350. *Eublemma grata* (Guen.).
- 351. *Eublemma cochylioides* (Guen.).
- 352. *Eublemma parva* (Hübner.).
- 353. *Eublemma candidana* Fabr.
- 354. *Eublemma scitula* (Ramb.).
- 355. *Eublemma permixta* (Stdgr.).
- 356. *Eublemma albida* (Dup.).
- 357. *Eublemma deserti* Rothsch.
- 358. *Eublemma purpurina* (Schiff. & Den.).
- 359. *Eublemma polygramma* (Dup.).
- 360. *Eublemma arida* Rothsch.
- 361. *Eublemma subvenata* (Stdgr.).
- 362. *Eublemma albidior* Rothsch.
- 363. *Eublemma albicans* (Guen.).
- 364. *Eublemma virginalis* (Oberth.).

- 365. *Eublemma emir* (Culot).
- 366. *Eublemma deserta* (Stdgr.).
- 367. *Eublemma ernesti* Rothsch.
- 368. *Eublemma albivestalis* Hmps.
- 369. *Eublemma wollastoni* N. C. Rothsch.
- 370. *Eublemma lacteola* Rothsch.
- 371. *Eublemma pernivea* Rothsch.
- 372. *Eublemma croceus* Rothsch.
- 373. *Eublemma confusa* Rothsch.
- 374. *Eublemma nelvai* Rothsch.
- 375. *Phyllophila numerica disjecta* Warr.
- 376. *Eulocastra diaphora* (Stdgr.).
- 377. *Nereisana oranaria* (Lucas).
- 378. *Crosia hachem* Dupont.
- 379. *Erastria trabealis deleta* (Stdgr.).
- 380. *Tarache lucida* (Hufn.).
- 381. *Tarache biskrensis* (Oberth.).

**Phlogophorinae (Euteliinae).**

- 382. *Phlogophora adulatrix* (Hüb.).

**Odontoninae (Stictopterinae).**

- 383. *Nycteola falsalis* (Herr.-Sch.).

**Sarrothripinae.**

- 384. *Sarrothripus revayana* (Scop.).

**Westermanniinae.**

- 385. *Earias insulana* (Boisd.).
- 386. *Earias chlorion* Ramb.
- 387. *Earias albovenosana* Oberth.
- 388. *Earias chlorophyllana* Stdgr.
- 389. *Hylophila africana* Warr.
- 390. *Xanthodes malvae* (Esp.).

**Catocalinae.**

- 391. *Mormonia dilecta powelli* (Oberth.).
- 392. *Mormonia sponsa laeta* (Oberth.).
- 393. *Catocala promissa hilaris* Oberth.
- 394. *Catocala optata sultana* B.-H.
- 395. *Catocala optata intermedia* Hmps.
- 396. *Catocala puerpera rosea* (Aust.).
- 397. *Catocala elocata* (Esp.).
- 398. *Catocala oberthuri* Aust.
- 399. *Catocala conjuncta vivida* Warr.
- 400. *Catocala conversa* (Esp.).

401. *Catocala nymphagoga vallantini* Oberth.
402. *Ephesia nymphaea* (Esp.).
403. *Ephesia eutychea* (Treit.).
404. *Minucia lunaris maura* Oberth.
405. *Anua tyrhaca* (Cram.).
406. *Parallelia algira* (Linn.).
407. *Grammodes stolidia* (Fabr.).
408. *Grammodes boisdeffrei* (Oberth.).
409. *Grammodes geometrica* (Fabr.).
410. *Anydrophila sabourodi* (D. Lucas).
411. *Callistege (Ceroicala) algiriae* (Oberth.).
412. *Callistege (Ceroicala) sana* (Stdgr.).
413. *Leucanitis kabylaria* B.-H.
414. *Hyperglauцитis benenotata moses* Stdgr.
415. *Clytie sancta* (Stdgr.).
416. *Clytie luteonigra* Warr.
417. *Clytie arenosa* Rothsch.
418. *Clytie syrdaja* Hmps.
419. *Cortyta acrosticta* (Püngl.).
420. *Cortyta rosacea* (Rebel).
421. *Cortyta leucoptera* (Hmps.).

#### Phytometrinae.

422. *Phytometra ni* (Hüb.).
423. *Phytometra daubei* (Boisd.).
424. *Phytometra chalcytes* (Esp.).
425. *Phytometra accentifera* (Lef.).  
(*Phytometra festucae* (Linn.)).
426. *Phytometra gamma* (Linn.).  
(*Phytometra chrysitis* (Linn.)).
427. *Phytometra orichalcea* (Fabr.).
428. *Abrostola tripartita* (Hüb.).  
(*Abrostola triplasia* (Linn.)).

#### Noctuinae.

429. *Anumeta atosignata harterti* Rothsch.
430. *Anumeta sabulosa* Rothsch.
431. *Anumeta major* Rothsch.
432. *Anumeta cestis parvinacula* Rothsch.
433. *Anumeta hilgerti* Rothsch.
434. *Anumeta spatzi* Rothsch.
435. *Anumeta straminea* (B.-H.).
436. *Drasteria oranensis* Rothsch.
437. *Syneda caileno caileno* (Lef.).
438. *Syneda caileno philippina* (Aust.).
439. *Catephia leucomelas* (Linn.).
440. *Mageutica alchymista alchymista* (Schiff. & Den.).



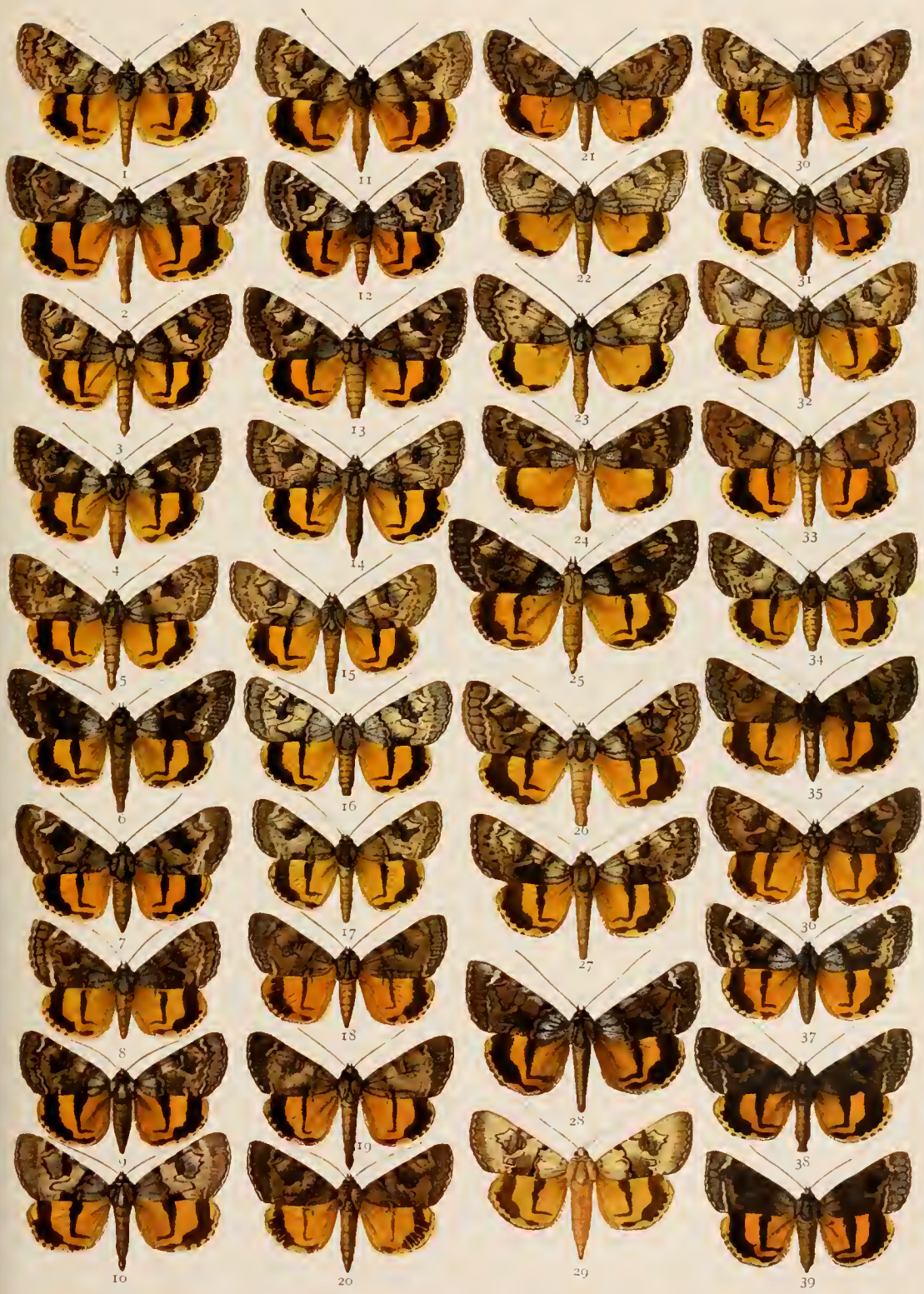


## EXPLANATION OF PLATE XIV.

(Pages 102—104.)

Nos.

1. *Catocala nymphagoga vallantini* (Oberth.), ♂ Aïn Tellout, 6.7.1917.
- 2-9 & 11. *Catocala nymphagoga vallantini* (Oberth.), 6 ♂♂, 2 ♀♀ Aïn Draham, July 1911.
12. *Catocala nymphagoga vallantini* (Oberth.), 1 ♀ Sebdu, 17.7.1918.
- 13-15 & 17-24. *Catocala nymphagoga vallantini* (Oberth.), series of 6 ♂♂, 5 ♀♀ Aïn Draham, July 1911, showing all intergradations from typical *C. n. vallantini* to form with central band on hindwing and sharp pattern on forewing.
- 10 & 16. *C. nymphagoga vallantini* ab. *griseola* Warr., ♂♀ Aïn Draham, July 1911.
25. *C. nymphagoga nymphagoga* Esp., ♂ Lorgono, Sardinia, July 1911.
26. *C. nymphagoga nymphagoga* Esp., ♂ Dalmatia.
- 27-28. *C. nymphagoga nymphagoga* Esp., ♂♀ Herculesfürdő, July 1907.
29. *C. n. nymphagoga* ab. *alternata* Warr., ♂ Guttery, France.
- 30-39. *C. n. vallantini* Oberth., 3 ♂♂, 6 ♀♀ Aïn Draham, showing variation, July 1911.









# EXPLANATION OF PLATE XV.

Nos.

1. *Eublemma permixta* ab. *mozabitica* Rothsch., ♀ (type) Ghardaïa, April 1911 . . . . . p. 78
2. *E. permixta* ab. *intermedia* Rothsch., ♀ Oued Nça, April 1914 - - - p. 78
3. *E. permixta* ab. *arenosa* Rothsch., ♀ Oued Nça, April 1912 . . . p. 78
4. *E. permixta* ab. *nivescens* Rothsch., ♂ Sandana, S. of Ghardaïa, May 1912 - - - - - p. 79
5. *E. permixta* (Stdgr.), ♂ Aïn Sefra, June 1915 . . . . . p. 78
6. *Cleophana affinis* Rothsch., ♀ Guelt-es-Stel, April 1913 - - - p. 68
- 7-8. *Cleophana versicolor* Stdgr., ♂ ♀ Bou Saada, May 1911 . . . p. 70
9. *Cleophana marocana* Stdgr., Sebdu, Morocco - - - - - p. 70
10. *Cleophana diffluens diffluens* Stdgr., ♂ Chiclana, for comparison . p. 69
11. *Cleophana diffluens mauretaniae* Rothsch., Hammam-Meskoutine, May 1914 . . . . . p. 69
12. *Cleophana diffluens lusitanica* Culot, Caldas de Monchique, for comparison . . . . . p. 70
- 13-15. *Cleophana fatima* B.-H., 1 ♂, 2 ♀♀ Gafsa (co-type, Tilghemt April 1912, Ghardaïa 1911) - - - - - p. 68
16. *Cleophana boetica diluta* Rothsch., ♂ Bou Saada, May 1910 . . . p. 66
17. *Cleophana boetica diluta* Rothsch., ♀ Sebdu, May 1918 - - - p. 66
18. *Cleophana boetica boetica* Rmbr., ♂ Caldas de Monchique, for comparison. . . . . p. 66
19. *Amephana varionis* (Oberth.) × *Cleophana boetica diluta* Rothsch., Guelt-es-Stel, April 1913 - - - - - p. 66
20. *Metopoceras morosa* Rothsch., ♂ (type) Guelt-es-Stel, May 1913 . p. 51
21. *Ammetopa codeti* Hmps., ♂ Oued Amra, N. of Idelès, May 1914 - p. 50
- 22-23. *Bryomima codeti codeti* (Oberth.), 2 ♂♂ Aïn Sefra May 1913, Sebdu May 1918 . . . . . p. 50
- 24-25. *Bryomima codeti nisseni* (Rothsch.), ♂ ♀ Guelt-es-Stel, April 1912, May 1913 - - - - - p. 50
26. *Calophasia stigmatica* Rothsch., ♂ between Ouargla and El Golea, March 1912 . . . . . p. 71
- 27-28. *Leucochlaena orana* (Lucas), ♂ ♀ Oudjda November 1914, Perrégaux November 1915 - - - - - p. 23
29. *Euxoa noctambulatrix* (Chrét.), ♂ Sidi Ferruch, Algeria . . . p. 23



1



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11





# EXPLANATION OF PLATE XVI.

Nos.

1.	<i>Iambiodes incerta</i> (Rothsch.), 1 ♀ Oued Nça, April 1914	p. 76
2-3.	<i>Metapistis picturata</i> (Rothsch.), ♂♀ Arefidji, March 1912, Oued Nça, April 1914	p. 71
4.	<i>Rabinopteryx nelvai</i> Rothsch., ♀ Batna, 1913—1914	p. 64
5.	<i>Cucullia auceps</i> Stdgr., ♂ Ganden Aschabad, for comparison	p. 62
6.	<i>Cucullia oberthuri</i> Rothsch., ♀ El Kantara, May 1911	p. 62
7.	<i>Cucullia beata</i> Rothsch., ♂ (type) Sebdu; 1918	p. 62
8.	<i>Athetis euxoides</i> Rothsch., ♀ Batna	p. 111
9.	<i>Athetis persimilis</i> Rothsch., ♂ Souk-Ahras, April 1914	p. 111
10.	<i>Antarchaea erubescens</i> (B.-H.), ♀ Djebel Mekter, May 1913	p. 109
11-12.	<i>Anumeta spatzi</i> Rothsch., ♂♀ Amgid, April 1914	p. 95
13-14.	<i>Anumeta major</i> Rothsch., ♂♀ Aïn Taïba May 1914, N. of El Golea May 1912	p. 95
15.	<i>Anumeta sabulosa</i> Rothsch., ♂ Amgid, February 1914	p. 95
16.	<i>Drasteria oranensis</i> Rothsch., ♂ Aïn Sefra, May 1913	p. 97
17.	<i>Cortyia rosacea</i> (Rebel), ♂ Oued Dehin, March 1914	p. 93
18.	<i>Eublemma arida</i> Rothsch., ♂ (type) El Golea, May 1912	p. 83
19.	<i>Eublemma crocea</i> Rothsch., ♀ Aïn Tahart, April 1914	p. 84
20.	<i>Eublemma pernivea</i> Rothsch., ♀ Aïn Sefra, August 1915	p. 84
21-22.	<i>Eublemma scitula</i> (Ramb.), ♂♀ Sidi-bel-Abbès, August 1916	p. 76
23.	<i>Catablemma geyri</i> Rothsch., ♀ Tahihout, April 1914	p. 77
24.	<i>Eublemma nelvai</i> Rothsch., ♂ (type) Batna, 1913—1914	p. 112
25.	<i>Eublemma pseudostrina</i> Rothsch., ♂ Guelt-es-Stel, August 1913	p. 80
26.	<i>Eublemma deserti</i> (Rothsch.), ♂ Aïn Taïba, May 1914	p. 79









# EXPLANATION OF PLATE XVII.

Nos.

1.	<i>Antitype hagar</i> Rothsch., ♂ (type) Bou Saada, April 1911	p. 53
2 & 3.	<i>Cardepi deserticola</i> Hmps., ♂ Bou Saada May 1910, ♂ Colomb Bechar April 1912	p. 57
4.	<i>Cardepi irrisor</i> (Ersch.), ♂ Uralsk, May 1906, for comparison	p. 57
5.	<i>Cardepi irrisor mauretanica</i> Rothsch., ♂ El Mesrane, June 1913	p. 58
6.	<i>Scotogramma chimaera</i> Rothsch., ♂ (type) Ain Sefra, March 1915	p. 57
7.	<i>Miselia softa luteocinnamomea</i> Rothsch., ♂ El Kantara, April 1911	p. 110
8.	<i>Miselia antitypina</i> (Rothsch.), ♂ (type) Guelt-es-Stel, April 1913	p. 48
9.	<i>Agrotis praecipuina</i> (Rothsch.), ♂ Sidi-bel-Abbès, September 1917	p. 37
10.	<i>Epipsilia straminea</i> (Rothsch.), ♂ (type) Guelt-es-Stel, October 1912	p. 42
11.	<i>Euxoa rotroui</i> Rothsch., 1 ♂ (type) Sidi-bel-Abbès, May 1918	p. 29
12, 13, 14.	<i>Euxoa hoggari</i> Rothsch., 1 ♂, 2 ♀♀ Oued Abou, S. Sahara, January 1914	p. 27
15, 16.	<i>Euxoa spinifera hodnae</i> (Oberth.), ♂♀, for comparison	p. 26
17.	<i>Agrotis auguroides</i> Rothsch., ♂ Guelt-es-Stel, April 1912	p. 36
18.	<i>Agrotis nisseni</i> Rothsch., ♀ Guelt-es-Stel, October 1913	p. 36
19.	<i>Lycophotia kermesina</i> ab. <i>flavida</i> Culot, ♂ Guelt-es-Stel, October 1912	p. 16
20, 21.	<i>Sidemia fulva</i> (Rothsch.), ♂♀ El Mesrane, November 1913	p. 44
22.	<i>Dasyternum faroulti</i> Rothsch., ♀ (type) El Mesrane, November 1915	p. 45
23.	<i>Dasythorax rotroui</i> Rothsch., ♀ (type) Messer, September 1917	p. 45
24.	<i>Namaugana chimaera</i> Rothsch., ♂ (type) Environs Taourirt, July 1918	p. 45
25.	<i>Sidemia aflouensis</i> Rothsch., ♂ (type) Aflou, October 1916	p. 45
26.	<i>Athetis oberthuri</i> Rothsch., ♂ (type) S. Oued Mya, April 1912.	p. 18
27.	<i>Euargia jordani</i> Rothsch., ♀ (type) South Ahras, April 1914	p. 41
28, 29.	<i>Epipsilia lycophotioides</i> (Rothsch.), 2 ♂♂ (types of <i>inconspicua</i> Rothsch. and <i>lycophotioides</i> Rothsch.), Guelt-es-Stel, October 1912	p. 37







- 441. *Mageutica alchymista uniformis* (B.-H.).
- 442. *Acrobyla panacearum distincta* Rothsch.
- 443. *Metapistis picturata* (Rothsch.).
- 444. *Lipatephia eremophila* (Reb.).
- 445. *Acontia luctuosa* (Schiff. & Den.).
- 446. *Pandesma anysa distincta* Rothsch.
- 447. *Pandesma anysa sennarensis* (Feld. & Rog.).
- 448. *Raphia hybris* (Hübner.).
- 449. *Tathorhynchus exsiccata* (Led.).
- 450. *Apopestes spectrum maura* Warr.
- 451. *Autophila maura* (Stdgr.).
- 452. *Autophila ligaminosa* (Evers.).
- 453. *Autophila dilucida libanotica* (Stdgr.).
- 454. *Autophila cerealis rosea* (Stdgr.).
- 455. *Rivula sericealis distincta* Rothsch.
- 456. *Scoliopteryx libatrix* (Linn.).
- 457. *Zethes insularis* Ramb.
- 458. *Parascotia nissenii* Turati.
- 459. *Antarchaea viridaria* (Clerck).
- 460. *Antarchaea sanctiflorentis aurantiacus* Rothsch.
- 461. *Antarchaea erubescens* (B.-H.).

**Polypogoninae (Hypeninae).**

- 462. *Nodaria cornicalis* (Fabr.).
- 463. *Hypena obsitalis* (Hübner.).
- 464. *Pechipago* (*Zanclognatha* auct.) *crinalis* (Treit.).
- 465. *Pechipago* (*Zanclognatha* auct.) *flavicrinalis* Rothsch.
- 466. *Ophiuche lividalis* (Hübner.).

The 4 species without numbers and in brackets are the 4 whose record is dubious.

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## THE BIRDS OF THE COMMANDER ISLANDS.

BY ERNST HARTERT, PH.D.

THE Commander or Kommandorski Islands consist of two islands, Bering Island, the larger, and Copper (Mednij) Island, the smaller of the two. They are of special interest, as being the easternmost islands of the "Old World" in the north. It is natural that, considering how closely Tschuktschenland and Alaska on the one, the Commander and Aleutian Islands on the other hand, approach each other, a number of birds, even some land-birds, are common to both easternmost Asia and westernmost America, *i.e.* Alaska and the islands in Bering Sea. Nevertheless there is a very marked difference between their ornithofauna, the bulk being distinctly palaearctic or nearctic.

The literature on the birds of the Commander Islands is not large, but Stejneger's "Results of Ornithological Explorations in the Commander Islands and in Kamtschatka" (*Bull. U.S. Nat. Mus.* No. 29, 1885), with its valuable "Conclusions" and excellent plates, together with his Revised Catalogue of the Birds inhabiting the Commander Islands (*Proc. U.S. Nat. Mus.* 1887) are far better than a host of articles; they may almost be called classical ornithological literature, and nearly exhaust the subject. Besides these writings there is the "Liste des oiseaux du Kamtschatka et des îles Commandores," by Dybowski and Taezanowski, in the *Bull. de la Soc. Zool. de France* for 1884, pp. 145-61, a mere "Liste" with localities.

Then there is a recent article based on Mr. Sokolnikoff's collections made on the two islands 1907-1909, in Russian (!) in the *Annuaire du Mus. Zool. Acad. Imp. Sciences de St. Pétersbourg*, xiv. ("1909"), *Mémoires*, pp. 48-76, entitled (in translation), "Short Outline of the Avifauna of the Commander Islands." It adds seven species to Stejneger's list—but *Rhodostethia rosea* had already afterwards been added by the latter.

The most recent article known to me is, however, S. Buturlin's "Les oiseaux de l'île Médnij, de la groupe Comander" (sic!) in *Ornithol. et Aviculture*, Moscow, iv. livr. 2, No. 41, 1913. It contains a list of 59 species, one of which had not before been recorded from the group, and several others not from Copper Isle. It appears to be a careful, up-to-date work, but is written in Russian!

Besides these articles dealing with the birds of Bering and Copper Islands, they are mentioned in other writings, chiefly in Taczanowski's great work, *Faune Ornithologique de la Sibérie Orientale*, and, indeed, already a few by Pallas (1827)! Pallas's statements were taken from the MS. of Steller, who was wrecked on Bering Island in 1741. From his notes Pallas described the now extinct *Phalacrocorax perspicillatus*. At that time they were abundant, and to a great extent Steller's party lived on their flesh; they were preferred to other Cormorants on account of their size, as one was an ample meal for three hungry sailors. Steller's men, however, did not exterminate the species, as a hundred years after, the Governor of Sitka, Kuprianoff, did not find it rare, and collected the few specimens known in the Museums of Petrograd, Leiden, and London.

As this Cormorant is described as very stupid and was much persecuted, it is generally supposed that it has been exterminated by men. This may be, but it is perhaps as likely that it was finally wiped out by an epidemic disease, such as took place in the winter of 1876—1877, when many thousands of *Phalacrocorax pelagicus* were destroyed and masses of the dead birds covered the beach all round the islands. The inhabitants of the islands, however, asserted that it had last been seen about 1852 or so.

The almost complete collection made by Stejneger (about 2,000 specimens) is in the Museum of the Smithsonian Institution in Washington, U.S.A.

About the same time as Stejneger the Polish explorer Dybowski made a collection on the islands, and his skins are in the Warsaw Museum, and the Governor, N. Grebnitski, collected birds which he sent to Stejneger and other ornithologists.

Mr. N. Sokolnikoff, having held an official position on the Islands for a number of years, collected for the Petrograd Museum. His first collection is the one on which Bianchi based his article in 1909. The second collection, the one on which the following article is written, consisting of over 860 skins, was also intended for the Museum at Petrograd, but delivery being impossible, and the collection slowly deteriorating in the climate and under the conditions it was kept, Sokolnikoff offered it to the British Museum, who did not accept, and passed the offer on to Lord Rothschild, who bought the birdskins.

As the above list shows, we have received 152 forms of birds from Mr. Sokolnikoff.

21 forms known to have occurred we did not receive.

23 were obtained for the first time on the islands.

Stejneger's list (1887) had 143 species and subspecies.

Bianchi's of 1909 contained 153, of which 5 were quite doubtful.

Sokolnikoff's last collections confirmed 2 of Bianchi's doubtful ones and added 21 others to the list, which thus consists of—

171 forms.

### 1. *Podiceps griseigena holboellii* Reinh.

♂ ad., Bering Island, 21.v.1916.

♂ in winter plumage, Bering Island, 16.xi.1909.

♀ juv. in moult, 4.x.11 (year ?), 31.x.1912, 30.ix.1911, Copper Island.

Stejneger says it "does not appear at the islands except as a straggler."

This is confirmed by the present collection, though the date of 21.v suggests a breeding-place not far away.

### 2. *Podiceps auritus* (L.).

2 winter birds, evidently in their first year. Rare straggler, according to Stejneger.

### 3. *Colymbus adamsii* Gray.

♂ ad., Bering Island, 11.v.1912.

♂ juv., Copper Island, 11.xi.1910.

Stejneger calls the White-billed Diver a winter visitor of rather rare occurrence, and he obtained one and saw another.

4. *Colymbus stellatus* Pontopp.

Fine adult specimens were obtained on Bering and Copper Islands in spring and summer, and 1 juv. in November on Copper Island. It breeds frequently on the islands and appears, according to Stejneger, about the first of May.

5. *Colymbus arcticus viridigularis* (Dwight).

*Gavia viridigularis* Dwight, *Auk* 1918, p. 198 (N.E. Siberia and western Alaska. Type N.E. Siberia)

♂ ad., Bering Island, 22.v.1914.

♀ juv., Bering Island, 26.x.1911.

♂ ad., Copper Island, 12.vi.1911.

♂ in winter plumage, Copper Island, 20.xi.1910.

This species, judging from the dates, might possibly be breeding, but if so it must be very rare.

(Bianchi enumerates *Colymbus immer* Brünn as an exceptional visitor.)

6. *Uria lomvia arra* (Pall.).

Several adult spring and summer specimens.

An adult winter bird and a number of young ones in various stages. Also some eggs, but without indication of parents.

*Uria lomvia arra* breeds in great numbers on the islands, but among them *Uria troille californica* occurs sparingly!

*U. l. arra* is very similar to *U. l. lomvia*, but generally a little larger (not smaller as stated in the *Cat. B. Brit. Mus.*), the bill often stronger, thicker, but shorter, sometimes, however, very long.

(Mr. Sokolnikoff did not send any *U. troille californica*.)

7. *Uria columba columba* (Pall.).

A number of adult and young from April to October. If the dates are correct the spring moult is rather irregular, as a female from April 26th is in full black summer garb, another from the same date has still a good many white feathers left, while yet another (all females) from May 11th is chiefly white underneath, though the black feathers are appearing everywhere. The change to the winter plumage takes place in October.

The wings of the Bering Isle specimens are only 174 to 177 mm., but one from Copper Island has wings of 182 mm.

Abundantly breeding.

(*Uria carbo* (Pall.) was observed in two pairs by Stejneger.)

8. *Brachyrhamphus marmoratus perdix* (Pall.).

A single male was obtained on May 11th on Copper Island. Since this form breeds on Kamtehatka and the Kuril Islands its occurrence on the Commander Islands, though not previously recorded, is not strange.



9. *Synthliborhamphus antiquus* (Gm.).

A series from both islands, the latest date being September 27th. Breeds on both islands.

10. *Aethia pygmaea* (Gm.).

(*Simorhynchus pygmaeus* auct.)

Both islands, mostly from the autumn and winter months, but one from May, and a few summer specimens. Breeding on both islands.

11. *Aethia cristatella* (Pall.).

(*Simorhynchus cristatellus* auct.)

Though regularly breeding (at least during Stejneger's stay there) on both islands, Sokolnikoff only sent three adult winter birds and one young shot October 28th, 1912.

12. *Aethia pusilla* (Pall.)

(*Simorhynchus pusillus* auct.)

A number of specimens from Bering Island from the winter months, in the spring as late as May 10th, 1912. A female was also obtained on Copper Island on April 17th, 1911.—No proof of the breeding of this Auklet on the Commander Isles has yet been obtained.

13. *Phaleris psittacula* (Pall.).

Obtained on both islands in June and July. A young in down on Bering Island, 20.vii.1912. The down of the upperside, sides of head, neck, and body and throat sooty, lighter at base, breast and abdomen greyish white.

(*Cerorhinca monocerata* was obtained by Grebnitzki, but neither Stejneger nor Sokolnikoff came across it.)

14. *Lunda cirrhata* (Pall.).

Several fine adults and young from the autumn months. None in winter plumage. According to Stejneger "occasionally, after severe gales, a few specimens are found cast up on the beaches."

15. *Fratercula corniculata* (Naum.).

Several summer and autumn examples. In a female shot 24.x.1910 the basal plates have already fallen off.

16. *Sterna paradisaea* Brünn.

(*Sterna macrura* or *arctica* auct.)

♂♀ ad., Bering Island, 24.vi.1915.

♀ juv., Bering Island, 24.v.1914.

Breeds on the islands (Stejneger, p. 85).

The adult ♂ has quite an extended black tip to the upper mandible! This is very rare in *paradisaea*, but it does exist sometimes.

17. *Sterna longipennis* Nordm.

♀ ad., Bering Island, 21.v.1911.

♂♂ ad., Bering Island, 9.vi.1912, 29.v.1914.

Stejneger (p. 85) says that formerly he was wrong in giving it as breeding on Bering Island. The dates of Sokolnikoff's specimens, however, suggest the possibility, nay probability, of this species nesting on Bering Island.

The name *camtschatica* Pall. is doubtful and cannot be accepted for this species.

18. *Sterna aleutica* Baird.

♂, Copper Island, 7.ix.1911.

This bird, though known to have occurred on the Siberian coast, and said to have been found in Japan, is a new record to the Islands.

19. *Larus glaucescens* Naum.

A magnificent series collected in the spring and summer months, and an adult female shot December 26th, 1911.

This species is commonly breeding on both islands, and occurs in small numbers throughout the year. In the *Bull. Soc. Zool. France*, 1884, p. 147, Dybowski and Taczanowski mention this Gull as *Larus glaucus* (cf. Taczanowski, *Faune Orn. Sibérie orient.* ii. 1019), while their "*Larus borealis*" was, according to Taczanowski, *t.c.* i. p. 1030, "*Larus cachinnans*," but I consider all the eastern Herring-Gulls east of the Taimyr Peninsula to be *vegae*.

20. *Larus argentatus vegae* Palmén.

A fine adult ♀ was shot on Copper Island, 9.vi.1914, and four young birds were obtained in May and June of various years, both on Bering and Copper Islands.

21. *Larus hyperboreus* Gunn. 1767.

(*Larus glaucus* Brünn. 1764, nec Pontopp. 1763.)

Two adult, male and female, and two juvenile specimens were shot on Bering Isle in April, and another young in November. The adult male has the upperside darker, more bluish, the female lighter, almost whitish.

This species had not yet been found on the Commander Islands, but as it breeds in the high north and migrates down south to Japan, its occurrence there was to be expected.

22. *Larus schistisagus* Stejn.

♀ ad., Bering Island, 1.i.1911.

♂♀ ad., Bering Island, 13.iv., 17.iv., 16.v.1912.

♀ ad., Copper Island, 12.vi.1911.

♂♀ juv., Bering and Copper Islands, October.

From these dates it appears as if the species might possibly breed on the islands, though Stejneger said it did not.

23. *Larus canus major* Midd.

*Larus canus* L. var. *major* Middendorff, *Sibirische Reise*, Zool. ii. 2. p. 243, Taf. xxiv. fig. 4 (1853—Stanowóy Mountains to Sea of Ochotsk).

♂ ad., Copper Island, 26.v.1912.

♀ ad., Copper Island, 4.vi.1911.

♂ juv., Copper Island, 23.v.1911.

4 ♂♀ med. act., Bering and Copper Islands, May and June.

2 juv., Bering and Copper Isles, September 1911.

All these birds belong undoubtedly to the large eastern form of the Common Gull. The May and June dates of perfectly adult birds suggest the possibility of their breeding on Copper Island, though during Stejneger's visit they seem not to have done so.

24. *Larus canus brachyrhynchus* Rich.

Two young birds shot on Bering Island, 25.i.1911, and Copper Island, 9.ix.1911, are so much smaller than all *L. c. major* that they must belong to *brachyrhynchus*, which might very well occasionally visit the islands from North-western America. Also Stejneger got one small specimen, which he called *canus*, but if *brachyrhynchus* is separated from *canus*, these specimens must belong to the former.

25. *Larus ridibundus sibiricus* But.

*Larus ridibundus sibiricus* Buturlin, *Mess. Orn.* ii. p. 66 (1911—Kolyma Delta and Ussuri Land. In Russian!).

3 adult summer birds without dates.

♂ ad., Bering Island, 19.v.1915.

♀ ad., Copper Island, 11.v.1910.

♂ ad., Bering Island, 12.v.1912.

♂ nearly ad., Bering Island, 5.v.1916.

♂ juv., Bering Island, 9.xi.1912.

♀ nearly ad., Bering Island, 19.v.1916.

These specimens differ from most European birds shot about the same time of the year by somewhat darker, less coffee-brown heads of the adult ones, longer bills, and generally longer wings. The bill is 37–40 mm. long (from end of feathering on culmen), the wing is about 315 to 321 mm., while the bill in European specimens measures generally 29–36, the wing 302–310, very seldom to 315 and 317 mm. The brown of the head in a specimen from Lombardia, Italy, is just as dark, and the same may be said of one from Mogador, Marocco, shot in March, by Riegenbach. The bill of the Lombardian bird is also very long, *i.e.* 39 mm.

When Buturlin described his *sibiricus* he mentioned that it had a darker grey upperside, that the outer web of the fifth primary was always grey, and the dimensions larger, especially those of the tarsus. The strikingly longer bill is, however, not mentioned. The back of our Commander Islands birds is not at all darker, nor is the constantly grey colour of the outer web of the fifth primary a character, as it is mostly grey—though not rarely partially white—in European specimens. Japanese skins without date have the elongated bill, but their wings are rather short.

Lena River specimens have the short bills of European examples and the

wings as a rule no longer than the latter, but their heads are very light, though summer birds in Europe have them very often equally pale. They would belong to "*Chroicocephalus ridibundus lavrovi*" Zarudny, *Mess. Orn.* iii. pp. 29, 30 (1912), from Chirchik, Syr-Darya and Semiretchye, separated because they had lighter heads, and, if I had a correct translation of the Russian description, are found among darker-headed specimens. I do not consider this form separable, and treat "*lavrovi*" as a synonym of *Larus ridibundus ridibundus*. The easternmost form is apparently separable, but its distribution as yet very uncertain.

Stejneger did not meet with this bird on the islands, though he found it nesting in Kamtchatka. The dates of Sokolnikoff's specimens suggest the possibility of its breeding nowadays on the islands. Bianchi added *ridibundus* to the list of Bering Island birds, as *not* breeding.

#### 26. *Larus gelastes* Keys. & Blas.

An adult male, with the greyish black spots of the winter plumage behind the eyes and ear-coverts, was shot on Copper Island, 7.x.1912. The inner web of the first primary has a wide slate-coloured inner margin. This is probably a remainder of the juvenile plumage, but very unusual.

No *Larus gelastes* has ever been found so far east; in fact, I do not know of a record further east than Issik-Kul and Karachi.

#### 27. *Xema sabinii* (Sabine).

♂ ad., Bering Island, 16.v.1913.

Stejneger did not come across this species, nor was it obtained before by Sokolnikoff.

#### 28. *Rhodostethia rosea* (Macg.).

♂ ad., Bering Island, 5.xii.1911.

♀ juv., Bering Island, 13.iii.1914.

♂ juv., Bering Island, 9.xii.1915.

Stejneger in 1887 had no evidence of the occurrence on the islands, but in the *Auk*, 1898, p. 183, he recorded a specimen collected by Grebnitski on Bering Island, 10.xii.1895.

#### 29. *Rissa tridactyla pollicaris* Stejn.

This common breeding bird of the two islands, where opportunity for nesting exists, was obtained in summer and winter.

In the young of all forms of *Rissa* the shorter secondaries are nearly quite white, only with a grey patch towards the base of the outer web, a striking peculiarity not mentioned in the *Cat. B. Brit. Mus.*

#### 30. *Rissa brevirostris* Bruch.

♂ ♀ ad., Bering Island, 7.v.1912.

♀ juv., Copper Island, 24.vi.1911.

Breeding on both islands.

31. *Stercorarius pomarinus* (Temm.).

♀ ad., Bering Island, 3.vi.1912.

♀ semi ad., Copper Island, 11.vii.1913.

Mentioned by Dybowski as occurring on Bering Island, but Stejneger did not come across it.

32. *Stercorarius longicaudus* Vieill.

♂♀ ad., Bering Island, 4.vi.1911, 3.vi.1913.

According to Stejneger, "an occasional, though by no means uncommon" visitor to the islands during migrations. The occurrence in June suggests the idea of a breeding-place not far away.

33. *Stercorarius parasiticus* (L.).

(*Stercorarius crepidatus* in the *Cat. B. Brit. Mus.* xxv. p. 327, where the nomenclature is arbitrary.)

4 adults with white underside, 3 with dark, from Bering and Copper Islands in spring and summer. Stejneger called the light phase comparatively rare. Also a young bird from Bering Island, 4.viii.1911.

34. *Fulmarus glacialis rogersii* Cass.

(*Fulmarus glacialis glupisha* Stejn.)

This bird breeds in large colonies on both islands. Sokolnikoff sent a fine series. Six belong to the dark form, 6 to the white one with more or less grey mantle. One from Bering Island, date unreadable, has whitish grey, very faded feathers on the back, while fresh feathers of a slaty grey colour come in; most feathers of the underside are grey with whitish tips, some fresh ones, however, are quite grey. Another example, a bird of the year, Copper Island, 1.x.1912, is pure white all over.

35. *Puffinus tenuirostris tenuirostris* (Temm.).

Six specimens from both islands, collected from April to June 18th. There can, judging by these dates, be hardly any doubt that this Petrel nests on the islands, and it is a pity that the habits have not been recorded, nor any eggs sent. Bianchi recorded it as nesting on both islands!

36. *Oceanodroma furcata* (Gm.).

Specimens from Bering Island in spring and winter, and from Copper Island, where it breeds, in spring and winter.

37. *Oceanodroma leucorhoa leucorhoa* (Vieill.).

One male, Copper Island, 6.vii.1911. Stejneger found it breeding at Tchornij Mys., Copper Island.

(*Diomedea albatrus* occurs not rarely in the sea surrounding the islands, but we did not receive specimens.)

(*Haematopus ostralegus osculans* Swinh. is an occasional visitor, but we did not receive specimens.)



38. *Arenaria interpres interpres* (L.).

Several adult males from Bering Island, May and June 3rd, and young in September.

It has not been proved to nest on the islands.

39. *Squatarola squatarola hypomelaena* (Pall.).

Two juvenile, September and October, Bering Island.

Though there is some overlapping, the larger bill and generally longer wing of the eastern race cannot be denied, and therefore this subspecies should be recognized.

40. *Charadrius dominicus fulvus* Gm.

A large series from both islands in May and autumn, the latest spring date being May 30th.

41. *Charadrius mongolus mongolus* Pall.

A fine series of adult birds, both islands, from May and June, a pullus (Copper Island), July 27th, unfortunately already covered with many feathers.

The black line separating the rufous chest from the white throat is often entirely absent, or only indicated.

One juv. in first autumn plumage, September.

42. *Charadrius alexandrinus alexandrinus* L.

♀, Bering Island, 21.xi.1911.

The occurrence on Bering Island is extraordinary, as the species is not a northern one, though it extends eastwards to Corea.

43. *Gallinago gallinago raddei* But.

*Scolopax (Gallinago) gallinago raddei* Buturlin, *Kuliki Rossijskoi Imperie-Premiya-k-Journal*, in *Psosvaia i Ruzheinaia Okhota*, 1912, p. 54 of the separate copy. (Breeding in E. Siberia. Russian !)

Taezanowski said that the majority but not all Snipes in East Asia differed by having wider pale stripes and more rusty spotting on the upperside, less spotted jugulum, and wider sincipital line, also less spotted, more white axillaries and under wing-coverts. Buturlin named this form as above. Comparing eastern and European Snipes, it is obvious that no colour differences are of any constancy or found in the majority of specimens, but entirely individual, except the less spotted jugulum which is observable in the great majority of eastern Snipes, while such specimens, with almost uniform, less spotted jugulum are rare in Europe. Moreover, there is a tendency in eastern birds to have smaller dimensions. European Snipes have wings of 129-140, females generally larger, 135-140, males 129-136, exceptionally 127-128 only. Eastern Snipes have wings of 125-137, usually about 132, quite exceptionally to 140 mm. The wings of 12 snipes from Bering and Copper Islands measure 126-133, once 136; those of as many from the Tring Reservoirs 132 to 138 mm.

It is therefore advisable to tentatively recognize *Gallinago gallinago raddei*, though its characters are unstable and its distribution not yet certain.

The Snipe is a common breeding-bird on Bering Island. Sokolnikoff collected specimens throughout the month of May.

#### 44. *Gallinago solitaria* Hodgs.

*Gallinago solitaria* Hodgson, *Gleanings in Science*, iii. p. 238 (1831—Nepal).

♀, Copper Island, 10.x.1910.

♂, Bering Island, 27.xii.1911.

This species has not previously been recorded from the Commander Islands, but as it breeds from the Altai and Turkestan to Kamtchatka, its occurrence is not unexpected, only the December date is extraordinary.

#### 45. *Erolia maritima quarta* subsp. nov.

5 ♂♀ ad., May, Bering and Copper Islands.

♀ ad., Copper Island, 2.ix.1911, changing from summer to winter plumage.

9 ♂♀ in winter plumage from both islands, collected in November, December, and March.

The Purple Sandpiper of the Commander Islands differs from *E. m. couesi* from Alaska and the Aleutian Islands as follows:

In the winter plumage the foreneck and jugulum are darker slate-colour and less mixed with white. In the full summer plumage the edges to the feathers of the upperside are much wider and of a brighter ferruginous, so that the upperside looks quite rust-red, with mostly concealed black centres to the feathers. The wings measure 121–127, in one ♀ even 130 mm.

Type: ♂, Bering Island, 11.v.1912. N. Sokolnikoff leg.

We know from Stejneger that this species is resident on Bering Island, but he says that some retire to more hospitable shores during the winter months.

#### 46. *Erolia acuminata* (Horsf.).

5 autumn birds, September and October, both islands, where they are autumn migrants.

#### 47. *Erolia maculata* (Vieill.).

*Tringa maculata* Vieillot, *Nouv. Dict. d'Hist. Nat.* xxxiv. p. 465 (1819—West Indian Islands or southern U.S.).

(*Erolia maculata* is the correct name for the "Pectoral Sandpiper," often called "*Tringa pectoralis*.")

♂♀, Bering Island, 6, 10, 18.ix.1911.

Though only once recorded from the Commander Islands, by Buturlin, 1913, it is not unexpected that this species passes through on migration. Where these birds winter is not yet known; American examples migrate as far south as Peru, Chile, and Argentina.

48. *Erolia temminckii* (Leisl.).

2 ♀ ad., Bering Island, 26, 29.v.1912.

Somewhat rare on passage.

49. *Erolia subminuta* (Midd.).

4 adult specimens, Bering Island, March, May, July; Copper Island, 25.v.1912.

According to Stejneger mainly on passage, but a few stay over the summer, probably breeding.

Bianchi, in fact, gives it as breeding, probably from notes by Sokolnikoff.

50. *Erolia ruficollis* (Pall.).

3 ♀ ad., Bering Island, 25.v.1914, 25.v.1915, 25.vi.1914.

According to Stejneger only on migration, but the late date in June suggests the possibility of its nesting.

51. *Erolia alpina sakhalina* (Vieill.).

♂♀ ad., Copper Island, 13.v.1912; Bering Island, 2.vi.1914, 24.vi.1914, 25.vi.1914.

According to Stejneger only on passage. The late dates of these birds suggest the possibility, but do of course *not* prove their breeding on the islands.

52. *Erolia ferruginea* (Brünn.).

♂ ad., Bering Island, 2.vi.1916.

♀ ad., Copper Island, 12.x.1910.

This species has not yet been recorded from these islands.

(*Erolia tenuirostris* = *crassirostris*, mentioned by Bianchi as doubtfully nesting, was not sent by Sokolnikoff to us.)

53. *Eurynorhynchus pygmeus* (L.).

*Platalea pygmea* Linnaeus, *Syst. Nat.* ed. x. i. p. 140 (1758—"Surinam"! *Errore*!).

♀ ad., Bering Island, 5.ix.1911.

Not previously recorded from the islands.

("Calidris arenaria," now to be called *Crocethia alba* (Pall.), was met with by Stejneger—one out of a flock shot.)

54. *Limosa lapponica baueri* Naum.

17 specimens throughout May and as late as June 26th, mostly with cinnamon underside, but some from the same days still white and barred.

Though, Stejneger says, some individuals stay over summer, they were not nesting.

55. *Limosa limosa melanuroides* Gould.

5 ♂♀ in fine nuptial plumage, obtained May 20th to 26th (mostly 1913), on Bering Island; one (not sexed) with very little rufous colour, Copper Island, 7. vi. 1911.

According to Stejneger a very rare visitor, as only one specimen was known to him.

56. *Tringa nebularia* (Gunn.).

(*Totanus nebularius*, *Glottis nebularius*, *Totanus glottis* auct. antiqu.).

A fine series in breeding plumage from May 7th to the end of the month, on both islands.

"Common during the spring migration" (Stejneger, p. 132).

(*Tringa guttifer* was not obtained. Stejneger mentions one specimen.)

57. *Tringa erythropus* (Pall.).

3 adults in fine black nuptial plumage from Bering Island, 23. v. 1913, 16. v. 1914, 18. v. 1914.

Rare spring migrant.

58. *Tringa incana incana* (Gm.).

11 fine adult males and females. Bering Island, 29. v to 12. vi, all in full nuptial plumage.

Comes to the islands during the latter part of May, and may possibly breed, Stejneger thinks.

59. *Tringa incana brevipes* (Vieill.).

♂♀, Bering Island, 25. v. 1914, 2. vi. 1913.

♀ in worn summer plumage, Bering Island, 24. x. 1911.

7 juv., both islands, 31. viii to 1. x.

This is obviously the rarer form of *incana*, and Stejneger had obtained a single specimen only. Buturlin, however, recorded a male shot in 1912. As this is the Siberian form, which breeds in Kamtchatka, one would rather expect it to nest on the islands, than the American *T. i. incana*—probably neither of the two does nest, though both pass through on migration.

60. *Tringa glareola* L.

17 specimens from the latter third of May and June, both islands, but only a few from Copper Island.

Breeds, according to Stejneger, on Bering Island.

There are no subspecies of *T. glareola*.

61. *Tringa hypoleuca* L.

♂♀, Bering Island, 22. v. 1912, 30. v. 1914, 29. v. 1913.

Rather rare migrant (Stejneger).

There is no eastern subspecies.

(" *Terekia cinerea* " recorded from one specimen by Stejneger.)

62. *Philomachus pugnax* (L.).

♂ ad., Bering Island, 18.v.1911.

Evidently rare. Stejneger had only two specimens.

Ridgway rejects the name *Philomachus* because the author was anonymous. This, however, is an arbitrary proceeding. It does not matter who described a bird, or who created a genus, as long as this was formally done and the names are acceptable under the Rules of Nomenclature. The names in the "Adumbratiuncula" to Vroey's catalogue were also published without an author's name, and it was only found out incidentally that Pallas was the author. Leach's name *Pavoncella* is unacceptable, as Leach's work was not published at the time. Iredale called my attention to the fact that it was only printed as a list of labels for the use of the British Museum's officials, that only one or two copies exist, and that it was never for sale. The publication by the Willughby Society was a rather unnecessary act, but at that time British ornithologists were more reckless in the resurrection of forgotten old names than they are nowadays.

63. *Numenius cyanopus* Vieill.

♀ ad., Copper Island, 14.vi.1911.

A rare visitor.

64. *Numenius phaeopus variegatus* (Scop.).

8 ♂♀ ad., both islands, 25.v to 26.vi. and 3 juv. 31.viii to 8.ix.

Stejneger secured only two specimens on Bering Island.

65. *Phalaropus fulicarius* (L.).

5 ♂♀, Bering Island, 25.v to 16.vi.

1 ad. Bering Island, 8 ad. and juv. Copper Island, September.

Stejneger only once observed a flock in autumn, but could not secure specimens.

The late dates of Sokolnikoff's specimens suggest the possibility of breeding on the island.

66. *Phalaropus lobatus* (L.).

4 ♂♀ ad., Bering Island, May 26th and June 2nd to 26th. Also 6 September birds from both islands.

Breeds numerously on Bering Island, teste Stejneger.

67. *Megalornis canadensis canadensis* (L.).

*Ardea canadensis* Linnaeus, *Syst. Nat.* i. p. 234 (1766—"Habitat in America septentrionali." Ex Edwards, pl. 133, restricted terra typica therefore: Hudson Bay).

♂♀ ad., Bering Island, 18 and 20.v.1914.

Has occurred several times in Tschuktschen Land and Anadyr, therefore the occurrence on Bering Island is not very extraordinary. It probably visits the island from time to time, as a long, long-legged, long-necked grey bird, according to the natives, is observed occasionally (Stejneger, pp. 147, 135).



68. *Anser fabalis serrirostris* Swinh.

*Anser segetum* var. *serrirostris* Swinhoe, *Proc. Zool. Soc. London* 1871, p. 417 (China, in winter near Amoy).

Half a dozen adult males and females from Bering Island, May and June, also a juvenile male, Bering Island, 9.x.1911.

All the adult birds show very clearly the large, wide beaks with curved under mandible of *serrirostris*, and even in the young one it is clearly indicated. This again speaks very much for the distinctness of the two eastern forms, *serrirostris* and *sibiricus* of Alphéraky, though their breeding-homes are not properly known, and both together as well as intermediate specimens occur in China on migration.

(Bianchi mentions both *serrirostris* and "*mentalis*," but the latter name is a synonym of *serrirostris*!)

69. *Anser albifrons* (Scop.).

Two ♀ juv., Bering Island, 16 and 18.xi.1911.

These appear to be typical *albifrons*. The so-called "*A. albifrons gambelli*" cannot be upheld in the sense of certain ornithologists. American and East-Asiatic White-fronted Geese are *not* as a rule larger or in any way different, but it is true that extraordinarily large specimens occur in North America, though their breeding range is unknown. It is therefore still *possible* that a large race exists somewhere, but very doubtful. No North-east Asiatic example seen by me is larger than some European ones. The conclusions of Swarth & Bryant, *Univers. California Publ. in Zool.* xvii. no. 11, pp. 209-222, that both forms are found in North America in winter quarters, are correct, but their supposed differences do not exist. Neither is the number of rectrices constantly different, nor the general colouration or size; nor, as far as I can make out, the colour of the eyelid! Final judgment about the two forms cannot be passed, unless a series from the various breeding-places be examined!

70. *Anser caerulescens caerulescens* (L.).

(*Anser hyperboreus hyperboreus*.)

A white female with partially brown secondaries and a few brownish feathers on the mantle, Bering Island, 30.v.1911.

If, as it seems to be the case, the grey-brown goose with blue-grey upper wing-coverts and the white ones are one and the same (cf. among others Hesse, *Journ. f. Orn.* 1915, pp. 159, 160, and Blaauw's breeding experiments!), the species must be called *caerulescens* (*Anas caerulescens* Linnaeus, *Syst. Nat.*, ed. x. 1, p. 124, 1758), and not *hyperboreus* (Pallas, *Spicilegia Zool.* fasc. vi. p. 25).

71. *Branta canadensis hutchinsii* (Rich.) (?).

♀ ad., Bering Island, 22.vii.1914.

This specimen has 18 rectrices and a wing of a little over 400 mm. (400, but worn!). American authors describe *hutchinsii* as having 14 to 16 rectrices, "*occidentalis*" with 18 to 20; wings of the latter 411-458, while that of *hutchinsii* appears to vary from 375 to 451! It seems to me that *hutchinsii* and *occidentalis* are not separable!

72. *Branta canadensis minima* Ridgw.

♂♀ ad., Bering Island, 28.v.1912.

These two specimens seem to be actual *minima*! Rectrices 16! Wings about 380 mm.

73. *Branta bernicla nigricans* (Lawr.).

♂ juv., Bering Island, 9.x.1910.

Stejneger (pp. 149, 135) also obtained only a single specimen, in November 1882.

74. *Anser canagicus* (Sewastianoff).

Adult males and females were obtained in October, November, January, February, and April 14th, young of the year in December, all on Bering Island.

75. *Cygnus cygnus* (L.).

♂♀, first winter plumage, 1 and 4 October, Bering Island.

Stejneger mentioned the species as observed but not positively identified, but Bianchi seems to have received it.

(Stejneger obtained a young *C. columbianus* on Bering Island!)

76. *Anas platyrhynchos platyrhynchos* L.

(*Anas boschas*.)

♂♂♀♀, Bering Island, April and May.

1 ♂ ad., Copper Island, 28.iv.1911.

There is quite a series from Bering, but only one male from Copper Island. This seems to bear out what Stejneger wrote long ago: "Breeding numerously in Bering Island, comparatively rare on Copper Island."

77. *Anas strepera* L.

The head of a ♀ shot on Copper Island on May 13th, 1911 is sent. It is only a rare straggler, reported by Dybowski, but not observed by Stejneger.

78. *Anas acuta acuta* L.

May, July, and October, Copper and Bering Islands. Breeds numerously on Bering, sparingly on Copper Island, teste Stejneger.

79. *Anas crecca crecca* L.

The teal breeds also on the islands, and was obtained by Sokolnikoff on both, end of April, May and September.

80. *Anas querquedula* L.

Stejneger did not come across the Garganey, but Dybowski stated that it had occurred on Bering Island. Sokolnikoff sent two adult males and a female, obtained on Bering Island in summer.

81. *Anas formosa* Georgi.

♂ ad., Bering Island, 16.v.1911, 23.v.1911.

♂ juv., Bering Island, 6.ix.1911.

♀ ad., Bering Island, 10.ix.1911.

♂ ad., Copper Island, 9.vi.1911.

Neither Stejneger nor Dybowski seem to have observed this species on the Commander Islands, but Bianchi recorded it from Copper Island. From the dates when birds were obtained it seems probable that it now breeds on the islands, which is not strange, as it nests in Kamtchatka.

82. *Anas falcata* Georgi.

(*Eunetta falcata*.)

♂♂ ad., Bering Island, 17.iv.1910, 17.v.1914, 31.v.1912.

♂ ad., Copper Island, 14.v.1911.

Stejneger says: "Occasionally straggling to Bering Island during the spring migration."

83. *Anas penelope* L.

Obtained on both islands in May, on Copper Island as late as May 14th, 1911. Stejneger says: "Visits the islands during the migration season."

(*Anas americana* Gm. was picked up dead—one specimen—by Stejneger on Bering Island.)

84. *Spatula clypeata* (L.).

10 skins of both sexes, all collected on Bering Island from May 11th to June 4th, 1915, one female, 11.x.1910. The June date suggests the possibility of its nesting on the islands.

Stejneger calls it a summer visitor to Bering Island, and adds "possibly breeding." Bianchi gives it as nesting.

85. *Nyroca fuligula* (L.).

Adult examples from both islands, from Bering Isle as late as 21.v, from Copper even 5.vi, and one October specimen. The late dates suggest the probability of breeding. Stejneger considered it rare, but admitted that it "may breed occasionally."

85. *Nyroca marila mariloides* (Vig.).

Adult males and females from Bering and Copper Islands, shot in May and June, one October.

Stejneger found the Scaup commonly breeding on Bering Island. He considered the specimens to belong to *N. marila marila*, while he distinguished *N. marila marila*: "Palearctic Region."

*N. marila nearctica* (Stejn.): "Nearctic Region."

*N. affinis*: "Nearctic Region."

*N. affinis mariloides*: "Pacific coast of Asia, from Japan southward."

I am sorry to say I cannot follow this arrangement. I find that all specimens from the Far East—*i.e.* from Japan and China *and* from Bering Island—are (with few exceptions) smaller than European *N. m. marila*, the wings of 16 adult male examples measure 207–220 mm., in the European form 220–233 mm. Moreover, in nearly all cases the black barring of the upperside is coarser, thus giving the latter a darker appearance, which is particularly noticeable on the scapulars. In many cases, but not always, the head and nape are more purplish, less greenish. We must therefore, unless we suppress this form altogether, recognize a Far-East form breeding on Bering Island, and probably in Kamtchatka, wintering in China and Japan.

The North American form has been suppressed even by the splitting American ornithologists, but I do not think that this is quite correct. I find that American males have the back barred as in *mariloides*, or even darker, the scapulars and wing-coverts very dark. Stejneger said, when describing them as *Nyroca (Aythya) marila nearctica* (*Bull. U.S. Nat. Mus.*, no. 29, p. 161, 1885), that “the primaries from the fourth quill were without whitish on the inner web.” I cannot help thinking that he meant to say *outer* web, as I find no differences on the inner web, while it is true that in most cases the outer webs of the inner primaries are dark in American, with a white patch in European, *Seaupe*.

This, however, is not constant, as specimens without the white area occur in Europe, others with white—though very rarely—in America. The size of the American birds is as in *N. m. marila*, not as in *N. m. mariloides*. Under the circumstances, we should, at least provisionally, distinguish between the following forms:

*Nyroca marila marila*: Europe, N. Asia, but not known how far east replaced by *mariloides*.

*Nyroca marila mariloides*: Bering Island, and probably Kamtchatka and elsewhere. In winter China and Japan.

*Nyroca marila nearctica*: N. America.

*Nyroca affinis*: N. America.

It is undoubtedly quite wrong to treat *N. m. mariloides* as a subspecies of *affinis*! *N. m. marila*, *mariloides*, and *nearctica* are, in fact, very closely allied, while *affinis* is as a rule quite distinct and inhabits similar areas to that of *nearctica*. It must, however, be admitted that some specimens of *affinis* are not so typical as most of them.

#### 86. *Nyroca ferina ferina* (L.).

An adult male, Bering Island, 13.v.1911.

This species is new to the islands and not known to extend so far eastwards. Stejneger says: “Very doubtful. Not reported from Kamtchatka.”

#### 87. *Bucephala clangula* (L.).

♂ ad. in full nuptial plumage, Copper Island, 30.iv.1912 (wing, 228).

♂ juv. (born in 1910), beginning to moult into adult plumage, Copper Island, 18.v.1911 (wing, 211).

♂ in very similar plumage, Copper Island, 11.x.1911 (wing, 225).

2 ♀ ad., Bering Island, 6.x.1911, 16.ii.1914 (wings, 203, 212).

♀ ad., Bering Island, 29.xi.1911 (wing, 216 mm.).

♀ ad., Bering Island, 1.xii.1911 (wing, 197 mm.).

It seems to me that the females shot on Bering Island, 6.x.1911, 16.ii.1914, and 29.xi.1911, with wings of 203, 212, and 216 mm., must belong to the somewhat larger *B. clangula americana* (Bp.), while the other specimens are *B. clangula clangula* (L.). From their plumage I do not think that the larger specimens can be young males. The two subspecies are indistinguishable, except that in a series the American race runs larger: wings, 228–240 (but seldom so large), while European birds (adult males in both cases) have wings of 216–227 mm. As many specimens overlap, single specimens are often indistinguishable.

Stejneger said of "*Glaucionetta clangula*" that it was "a not very common winter visitor to the islands," but Sokolnikoff's specimens show that it also occurs during the spring migration.

#### 88. *Bucephala albeola* (L.).

♂ juv. (sexed "♀," but must be a young male), Bering Island, 19.xi.1911.

♀, Bering Island, 13.i.1911.

"An accidental visitor during the winter 1882–83" (Stejneger).

#### 89. *Clangula hyemalis* (L.).

A series of winter birds, Bering Island, November to April, and one young male, Copper Island, 31.x.1910.

According to Stejneger one of the commonest ducks on Bering Island, where it is resident throughout the year and breeds numerously. Yet Sokolnikoff has not sent any specimens in summer plumage, nor young in down! The wings of adult males measure from 224–235 mm., while sometimes eastern specimens are larger, wing up to 240, but by no means constantly.

#### 90. *Histrionicus histrionicus pacificus* Brooks.

*Histrionicus histrionicus pacificus* Brooks, *Bull. Mus. Comp. Zool. Harvard College*, lix. p. 393 (1915—North Pacific Ocean. Type Kamtchatka).

Fully plumaged adult males, Bering Island, 12.xi.1910 to end of December; two males in eclipse, Copper Island, 15.viii.1911; young male quite like females, but larger, Copper Island, 9.x.1910; males moulting into first winter garb from both islands, December and January; two females, Bering and Copper Islands, October and December.

Stejneger says it occurs round the islands all the year round, "but apparently without breeding."

Differs from *H. h. histrionicus* only in the larger bill. The chestnut-red stripe on the sides of the crown is not always paler and no character at all to distinguish the two races.

#### 91. *Polysticta stelleri* (Pall.).

A number of both sexes throughout the winter. The earliest specimen is a specimen from Copper Island, September 5th, and there is one from October. The latest is a female from Bering Island, 9.v.1913.



According to Stejneger, on the shores of the islands in winter in countless numbers, arriving at the beginning of November and staying until after the middle of May.

92. *Somateria mollissima v-nigrum* Gray.

♂ ♀ ad., Copper Island, 15 and 18.vi.1911.

"Breed in very limited number in a few places on Copper Island, only occasionally flying over to Bering Island, round the shores of which it may be seen in winter" (Stejneger).

93. *Somateria spectabilis* (L.).

♀, Bering Island, 4.i.1912.

Rare winter visitor.

94. *Oidemia fusca stejnegeri* Ridgw.

2 ♂ ad., Bering Island, 24.iv.1913, 3.v.1912.

3 ♂ juv., moulting into the black plumage, Bering Island, 17 and 12.v.1912, and Copper Island, 23.iv.1911.

6 ♀, both islands, October, November, and May.

Stejneger says: "Rare in autumn and spring."

96. *Oidemia fusca deglandi* Bp.

2 adult males, Copper Island, 14.iv.1911, and Bering Island, 24.v.1912, and a female, Bering Island, 10.xi.1913, are not *O. f. stejnegeri* but *deglandi*. One of the males has the underside black, but the sides of the body brown in clear contrast, while the other has the whole underside brown, from the jugulum backwards. Both have the knob above the nostrils much less high than usual in *stejnegeri* and convex, not concave, in front; neither of them have the black line in front of the knob, which is obvious in males of *stejnegeri*. The female has the frontal feathers continued along the culmen right over the commencement of the nostrils, a character which I have not seen in a female of *stejnegeri*, and which seems to be peculiar to those of *deglandi*.

Brooks (*Bull. Mus. Comp. Zool. Harvard Coll.* lix, p. 393, 1915) described *Oidemia fusca dixonii* from Arctic Alaska, said to have the bill shorter in comparison to its length and wider, blunter at the tip. I am afraid I cannot appreciate these supposed differences, which seem to me to be individual, not racial, otherwise the Commander Islands specimens should more likely belong to the Alaskan subspecies.

97. *Oidemia perspicillata* (L.).

♂ ad., Bering Island, 3.vi.1912.

♂ juv., Bering Island, 6.xi.1911.

The young male has a triangular patch on the hindneck, formed by white tips to the feathers.

This species had not been observed on the Commander Islands by Stejneger, but Bianchi records it from Bering Island; as, according to Palmén, it nests in the Tschuktschen Peninsula, the occurrence is not strange.

98. *Oidemia nigra americana* Swains.

In winter on both islands, adult male as late as 18.iv.1913, and a young male, beginning to moult into the black garb, even May 18th, 1912.

99. *Mergus merganser merganser* L.

♂ ad., Bering Island, 1.v.1913, 13.v.1911.

♂ ad., apparently already in eclipse, Bering Island, 13.v.1911.

♂ juv., Bering Island, 10.xii.1910.

♀, Bering Island, 2.vi.1912.

One male has a rather distinct black alar bar, but not as wide as in *M. m. americanus*. The difference in the feathering on the bill is so very little different from that of *M. m. merganser*, that not much value can be attached to that!

100. *Mergus serrator* L.

Adult males in full winter plumage were shot on both islands from May 15th to June 5th, a young male on Copper Isle, 10.ix.1910, a female on 9.x.1910. Evidently both *M. merganser* and *serrator* breed on Bering Island. Two young in down were sent, but whether they belong to *serrator* or *merganser* is doubtful.

101. *Mergus squamatus* Gould.

A male was shot at Copper Island, 9.vi.1911.

This is a very interesting specimen, evidently a juvenile male apparently in partial eclipse plumage, the hind-neck and back being mixed with obviously fresh ashy grey feathers, while the blackish feathers on these parts are more or less old—though a few black feathers are also growing! The upper head and neck are covered with brown, worn feathers, while deep black-green ones are putting in an appearance. I thus presume that this bird, though juvenile, and moulting the brown neck into the black-green of the adult, is assuming a partial eclipse garb on the back, which had already become black.

Moreover, the locality of this specimen is of the greatest interest. While hitherto this species was only known from China, where La Touche collected specimens in winter and Zappey, among others, a series in Sechuan in November and December, Buturlin recorded an adult male on August 13th on the Lower Amur, and now Sokolnikoff got it in June on Copper Island! We must therefore suppose that *M. squamatus* nests in East Siberia and winters in China, chiefly Sechuan, Fokien (La Touche), and Hunan.

102. *Mergus albellus* L.

This species does not breed on the islands. An adult male in full plumage, Bering Island, 7.v.1911; ♀ ad., Copper Island, 9.v.1911; ♂ juv., Bering Isle, 3.x.1911.

103. *Phalacrocorax pelagicus pelagicus* Pall.

This species, which, notwithstanding the enormous mortality by apparently an epidemic disease in 1876-77, is very numerous on both islands, was collected in autumn, winter, May and June.

104. *Phalacrocorax urile* (Gm.).

Only three juvenile birds were obtained on Bering Island. This species is much rarer and more difficult to shoot than *P. p. pelagicus*, according to Stejneger. The name *urile* of 1789 is based solely on Pennant's "Red-faced Cormorant," it must therefore be adopted instead of that of *Ph. bicristatus*, which is used in the *Cat. B. Brit. Mus.*

105. *Phalacrocorax perspicillatus* Pall.

Now extinct. (Cf. Stejneger and Taczanowski.)

Sokolnikoff collected some sterna. Though very much persecuted for food and said to have been much more stupid than other species, I fancy that not the persecution by men *alone*, but an epidemic like the one of 1876-77 (when *perspicillatus* is said to have been already extinct !) settled its fate.

106. *Lagopus mutus ridgwayi* Stejn.

*Lagopus ridgwayi* Stejneger, *Proc. Biol. Soc. Washington*, i. p. 98 (1884—Bering Island); *id.* Orn.-Expl. Commander Islands and Kamtschatka (*Bull.* 29, *U.S. Nat. Mus.*), p. 194.  
*Lagopus rupestris* Gm. *subsp. insularis* Bogdanow, *Consp. Av. Imp. Ross.* i. p. 34 (1884—Bering Island).

A very fine series in full winter and summer plumage, juv. and pull., mostly from Bering Island.

This subspecies has the ♂ in nuptial plumage darker, more rufous, somewhat of the colour of a Red Grouse, the pullus is brighter, more yellowish. Wings of adult males 195-201, ♀ 185-197 mm.

107. *Falco rusticolus candicans* Gm.

*Falco candicans* Gmelin, *Syst. Nat.* i. 1. p. 275 (1788—*Terra typica substituta*, Hartert, *Vög. pal. Fauna*, p. 1064: Greenland !).  
*Falco rusticolus uralensis* Sewertzoff & Menzbier, *Menzbier's Orn. Geogr. Europ. Russl.* p. 228. pl. iii. (1882—Ural Mountains. Russian !).  
*Hierofalco Grebnitzkii* Sewertzoff, *Nouv. Mém. Soc. Imp. Nat. Moscou*, xv. livr. 3. p. 69. plate (1885—Bering Island).

4 white juv., 4 dark young, 1 white ad., 3 dark adults from both islands (mostly Bering), all shot in the winter months.

These birds are indistinguishable from Greenland specimens. It is true that 5 of these 12 show the 4th primary as long as the 1st, but (though I did not find this character in 50 Iceland and Greenland ones) it occurs also in Greenland, from where I have examined two with the 4th primary as long as the 1st; in 3 Tobolsk ones it is also obvious, in a fourth, however, not at all. I can, therefore, no longer accept *uralensis* and *grebnitzkii*, and consider *F. r. candicans* to be a circumpolar form, inhabiting Greenland and the arctic regions of America to Baffin-Land, northern Siberia to the Commander Islands. It is represented by two somewhat disputable southern subspecies, *F. r. obsoletus* in Labrador, and *F. r. islandus* in Iceland (cf. *Vög. d. pal. Fauna*, pp. 1064-1068), and a well separable one in Scandinavia, the true *Falco rusticolus rusticolus*, which of course never occurs in North America, though American ornithologists, not

having grasped the fact that these birds in the arctic regions occur in dark and white varieties, admit it as a "species."

Two of the dark-backed young birds show fresh grey-barred feathers, proving again that they moult into the dark adult variety only, while white birds remain white.

Stejneger did not separate the white Bering Island Falcons from *candicans*, and distinctly said already that the alleged plastic differences of the so-called *grebnitzkii* were of no value whatever. He found a few pairs of the white Falcon breeding on Bering Island, and he believed that the dark birds were only winter visitors.

#### 108. *Falco peregrinus pealei* Ridgw.

♂ ad., Bering Island, 29. iv. 1913.

12 ♂♀ juv., Bering and Copper Islands, September to January.

♀ juv. of last year (1913), Bering Island, 4. vi. 1914.

♂ juv., evidently just flown, Copper Island, 29. vi. 1911.

The old bird, apparently nesting on the island, agrees well with descriptions and a male from Vulcan Island (cf. *Vög. pal. Fauna*, p. 1049). The 14 young birds are remarkably constant, all being very dark on the underside, and the upperside having no rusty buff edges to the feathers or only very narrow ones, so that they look quite black from a distance.

Nesting on both islands, breeding on high and inaccessible cliffs, according to Stejneger (p. 206).

#### 109. *Falco peregrinus calidus* Lath.

4 ♂♀ juv., Bering Island, October 1910 and 1913.

Easily distinguishable from the young of *F. p. pealei*. The upperside is less black and has wide pale rust-coloured edges to the feathers; there is more white on the sides of the head, and the underside is much more white and buff. The feathers of the breast and abdomen may be described as buff with a dark brown shaft-stripe, those of the young of *F. p. pealei* as black-brown with pale buff edges, and sometimes similar roundish spots—which are also present on the browner flanks of *F. p. pealei*.

#### 110. *Falco columbarius insignis* (Clark).

[*Falco columbarius* Linnaeus, *Syst. Nat.* ed. x. i. p. 90 (1758—"America").]

*Aesalon regulus insignis* Clark, *Proc. U.S. Nat. Mus.* xxxii. p. 470 (1907—Fusan, Corea).

♀, Bering Island, 10. vi. 1915.

Not hitherto recorded.

#### 111. *Buteo lagopus pallidus* (Menzb.).

4 ♂♀ ad., Bering Island, 15. v. to 8. vi.

These birds are very typical *pallidus*. The upperside shows much more white than European specimens, sharply contrasted with brown, but without any grey. Also the underside is not cream-colour but white, with the usual brown markings, as a rule, more restricted. Wings, ♂ 43.5–44.5, "♀" (?) only 42.5 mm.

112. *Haliaeetus pelagicus* (Pall.).

♂ jun., approaching adult dress, Bering Island, 18.iii.

Only an occasional visitor, according to Stejneger.

(" *H. hypoleucus*," still mentioned as a species in Bianchi's list, is a variety of *H. albicilla*. Neither the latter nor *leucocephalos* was obtained by Sokolnikoff.)

113. *Pandion haliaëtus haliaëtus* (L.).

♂ ad., Bering Island, 28.vii.1913.

♀ ad., Copper Island, 23.vi.1913.

These specimens have only an indicated brown breast band, like *P. h. carolinensis*, but similar specimens occur in Europe. The short wings (about 460, but worn, and 470 mm.) prove them to belong to the European—Asiatic form. Stejneger quotes this Osprey as an occasional visitor to Bering Island only. He obtained specimens on Kamchatka only.

114. *Nyctea nyctea* (L.).

♂ ad., Bering Island, 31.vii.1914.

Upperside white, with the exception of a few small spots on scapulars and primaries, and a few bars on the secondaries; in moult, growing secondaries with black bar.

♀ ad., Bering Island, 6.v.1912.

Above and below with brown-black bars.

12 ♂♀, Bering Island, September 2nd to April 2nd, but mostly December and January, varying from the darkest form with broad blackish bars to white with a few scattered spots and bars.

It is a popular idea that these (and other) birds become whiter with age, but there is apparently no foundation for it.

(No specimen of *Asio flammeus* (Pontopp.) (*accipitrinus* auct.) was sent by Sokolnikoff, though Stejneger found it resident on both islands.)

115. *Aegolius funereus magnus* (But.).

[*Strix funerea* Linn., *Syst. Nat.* i. 1. p. 93 (1758—"Habitat in Europa").]

*Nyctala magna* Buturlin, *Orn. Monatsber.* 1907, p. 80 ("Kamtschatka und das Gebiet von Kolymsk").

♂ ad., Bering Island, 31.i.1911.

I suppose this must be *Ae. f. magnus*, of which I saw the type twelve years ago, but I have no specimens of either *magnus* or *jakutorum*, if the latter is different. The Bering Island specimen has more white on the upperside and is larger than *Ae. f. funereus*. Its wings measure 179 to 180 mm.

The species is new to the islands.

116. *Cuculus canorus telephonus* Heine.

♂ ad., Bering Island, 25.vi.1914. Wing 221.

♀ ad., Bering Island, 19.vi.1915. Wing 204 only.



♀ ad., Bering Island, 26.v.1914. Wing 207 only.

“♂” (?), apparently a last year's bird, Bering Island, 11.vi.1915.

The females are of the usual grey colour.

#### 117. *Cuculus optatus* Gould.

♂ ad., Copper Island, 5.vi.1911.

♀ ad., Bering Island, 15.vi.1912. Grey variety.

♀ ad., Bering Island, September. Red-barred variety.

In *C. optatus* the latter is very common.

#### 118. *Dryobates major kamtschaticus* (Dyb.).

(Stejneger rejected the name *kamtschaticus* because of the former existence of a “*kamtschatkensis*”; both names are, however, easily distinguished and cannot be considered to be synonyms. Stejneger's “*purus*” is therefore a synonym of *kamtschaticus*. In practice both names are also widely different, the one being a subspecies of *major*, the other of *minor*!)

♂♂ ad., Bering Island, 17.v.1913 and 17.x.1912; ♀ ad., 19.x.1912.

These are very typical; wings 134, 140, and 135.5 mm. Two of these are smaller than those measured when I wrote my account in *Vög. pal. Fauna*, p. 907.

*D. m. tscherskii* (p. 908) is exceedingly close to *kamtschaticus*, only the wings are generally (not always) shorter, and the bills less powerful and often shorter. The lateral tail-feathers of *tscherskii* have also, as a rule, more black than in *kamtschaticus*, but sometimes appear not to be different in this respect.

Woodpeckers are, of course, only occasional visitors on Bering Island, where there are no forests, so that it cannot be a real Woodpecker home.

#### 119. *Alauda arvensis pekinensis* Swinh.

*Alauda pekinensis* Swinhoe, *Proc. Zool. Soc. London* 1863, p. 69 (Peking).

*Alauda blakistoni* Stejneger 1884, 1892.

♂♀♀, Bering Island, 9.v.1912, 29.v.1913.

According to Stejneger, “apparently a regular summer visitor to Bering Island, where a few pairs probably breed.”

#### 120. *Anthus gustavi* Swinh.

*Anthus gustavi* Swinhoe, *Proc. Zool. Soc. London*, 1863, p. 90 (Amoy).

*Anthus stejnegeri* Ridgway, *Proc. U.S. Nat. Mus.* 1883, p. 95 (Bering Island).

6 ♂♀ ad., both islands, all shot in June.

A common breeder on the islands, not arriving before the end of May (Stejneger).

#### 121. *Anthus cervinus* (Pall.).

3 ♂♀ ad., Bering Island, 20.v.1913, 29.v.1912, 29.v.1913.

Stejneger did not come across the Red-throated Pipit and knew only of one occurrence. *Anthus anadyrensis* Allen 1905 is a synonym of *cervinus*.

122. *Anthus spinoletta japonicus* Temm. & Schleg.

*Anthus pratensis japonicus* Temminck & Schlegel, Siebold's *Fauna Japon.*, Aves, p. 59. pl. 24 (1847—Japan).

♂ ad., Bering Island, 13.v.1911.

♀ ad., Bering Island, 31.v.1914.

♀ ad., Copper Island, 15.v.1911.

According to Stejneger, not observed on the islands.

123. *Anthus (trivialis) maculatus* Jerd.

*Anthus maculatus* Jerdon, *B. India*, iii. p. 873 (1864—India. Ex Hodgson, nomen nudum!).

♂ ad., Bering Island, 27.v.1913.

♂ ad., Copper Island, 18.v.1911.

Also new to the islands.

124. *Motacilla flava simillima* Hart.

*Motacilla flava leucostriatus* Stejneger, nec Homeyer!

*Motacilla flava simillima* Hartert, *Vög. pal. Fauna*, p. 289 (1905—Breeding Kamtschatka. Type Sulu Islands).

8 ♂ ad., Bering Island, 15.v to 9.vi.

1 ♂ ad., Copper Island, 16.v.

This form is of particular interest, because it so closely resembles *M. flava flava* of northern Europe, though nearly the whole of Siberia is inhabited by *M. f. thunbergi* and the Baikal and Amur districts by *M. f. taivana*. In fact, one cannot say that *simillima* differs constantly in colour at all from *flava*, though generally the yellow underside is perhaps paler, and this has to be confirmed by specimens in fresh plumage. The only other differences are a somewhat larger bill and foot, especially larger hind-claw. The length of the wing is supposed to be greater, but the Commander Islands specimens do not bear this out; their wings measure from 77.5 (worn, perhaps really 78) to 85.6 (worn, perhaps really 86) mm. The jugulum is, as a rule, much spotted with dusky, but this occurs also in other forms, and is, therefore, not much of a distinguishing character.

125. *Motacilla cinerea melanope* Pall.

[*Motacilla cinerea* Tunstall, *Orn. Brit.* p. 2 (1771—Name for the "Grey Water Wagtail" of the *Zoologia Britannica* and the "Hoche-queue ou Bergeronette jaune" of Brisson).]

*Motacilla Melanope* Pallas, *Reise Russ. Reichs.* iii. p. 696 (1776—Dauria).

3 ♂ ad., Bering Island, 28.v.1911, 29.v.1912, 30.v.1914.

2 ♀ ad., Copper Island, 6.v.1911, 4.x.1910.

"One of the rarer spring migration visitors to Bering Island" (Stejneger).

126. *Motacilla alba ocularis* Swinh.

5 adults, Bering Island, 9.v to 1.vii.

"♀" ad., Copper Island, 31.v.1911.

Probably a more or less regular spring visitor to the islands. Stejneger obtained a single specimen.

127. *Motacilla alba lugens* Kittl.

6 adults, Bering Island, 26. iv. to 16. vi, and two September specimens.

According to Stejneger, a regular spring migration visitor only, which does not remain to breed.

128. *Muscicapa (Siphia) parva albicilla* Pall.

♂ ad., Copper Island, 7. vi. 1911.

♀ ad., Bering Island, 5. vi. 1914.

The male has more red on the throat than usual, there is even a red patch on the chest.

129. *Muscicapa griseisticta* (Swinh.).

*Butalis pallens* Stejneger (p. 144) is doubtless a synonym. The species is only a very exceptional visitor to the islands. Stejneger had one single example.

Sokolnikoff sent 1 "♀" in worn plumage and dirty, obtained on Bering Island 5. vi. 1912.

Parrot described a *Muscicapa griseisticta habereri* from Iturup, Kurile Islands, because it had—a single specimen!—a wing of 90 mm. That is indeed an exceptional measurement, but our Bering Island bird has a wing of fully 88! It is of course possible that a larger form exists, but that could only be proved by a series from its nesting-place.

(No specimen of *Muscicapa sibirica* is in the collection of which Stejneger said it was "exceedingly numerous." Probably that is the case in certain years, but not always.)

130. *Bombycilla garrulus* (L.).

♂ ad., Bering Island, 16. v. 1911.

♀ ad., Copper Island, 21. v. 1911.

A rare visitor. Stejneger mentions only two specimens.

131. *Troglodytes troglodytes pallescens* (Ridgw.).

♂ ad., Bering Island, 5. x. 1911.

1 ♂ ad., 1 juv., Copper Island, 18. x., 19. viii. 1911.

Resident on both islands, but commoner on Copper Island, according to Stejneger.

132. *Locustella ochotensis* (Midd.).

*Acrocephalus ochotensis* apud Stejneger.

♂♀ ad., Copper Island, 12, 14. vi. 1911.

♀ ad., Bering Island, 2. vii. 1913.

♂ juv., Bering Island, 2. x. 1911.

The young bird has the underside yellowish, and evidently no white tips to the rectrices, though very dirty.

133. *Phylloscopus borealis borealis* (Blas.).

2 ad., Bering and Copper Islands, 6.vi.1914, 16.x.1911.

Visits the islands regularly in spring, and Stejneger thinks it is possible that some may remain to breed. (The treeless islands seem to me a most unlikely place for a *Phylloscopus* to nest.)

134. *Turdus fuscatus* Pall.

*Turdus fuscatus* Pallas, *Zoogr. Rosso-Asiat.* i. p. 451 (1827—Dauria).

♀ ad., Bering Island, 20.v.1911.

♂ ad., Copper Island, 19.v.1911.

Stejneger quoted the occurrence of a single specimen, under the name of *Turdus eunomus*.

135. *Turdus obscurus* Gm.

♂ ♀ ad., Bering Island, 26, 27.v.1914.

♂ ad., Copper Island, 18.v.1911.

“Visits Bering Island occasionally during the spring migration” (Stejneger).

136. *Tarsiger cyanurus* (Pall.).

6 ♂ ♀ ad., Bering Island, 28.v to 4.vi.1912, 1914, 1916.

♀ ad., Copper Island, 31.v.1911.

Stejneger obtained a single straggler, 21.v.1883.

137. *Luscinia calliope* (Pall.).

5 ♂ ♀, Bering Island, 27.v. to 16.vi.

3 ♂, Copper Island, 3.vi. to 21.vi.

Sokolnikoff evidently found these “occasional visitors” more numerous than Stejneger, and probably they pass over the islands fairly regularly in spring.

138. *Oenanthe oenanthe oenanthe* (L.).

*Motacilla Oenanthe* Linnaeus, *Syst. Nat.* ed. x. i. p. 186 (1758—Europa, terra typica: Sweden).

♀ juv., Bering Island, 23.ix.1915.

♂ juv., Copper Island, 2.ix.1912.

Not in Stejneger's and Bianchi's lists. Apparently a rare passage migrant.

139. *Riparia riparia ijimae* (Lönnb.).

*Clivicola riparia ijimae* Lönnberg, *Journ. Coll. Science Tokyo*, xxiii. art. 14. p. 33 (1908—Sachalin); Hartert, *Vög. pal. Fauna*, p. 813.

1 ad., sex doubtful, Copper Island, 20.vi.1911.

Bianchi had it from Bering and Buturlin from Copper Island.

(*Hirundo rustica tytleri* is an occasional straggler, but was not obtained by Sokolnikoff.)

140. *Emberiza aureola* Pall.

2 ♂, 1 ♀, Bering Island, 2, 4. vi. 1914.

Occasional visitor during spring migration, according to Stejneger.

141. *Emberiza rustica* Pall.

1 ♂, 2 ♀, Bering Island, 12. v to 27. v.

2 ♂, 2 ♀, Copper Island, 16. v to 21. v.

Occasional visitor during spring migration, according to Stejneger.

(*Emberiza variabilis* Temm. & Schleg. has occasionally occurred, but we did not receive specimens.)

142. *Calcarius lapponicus coloratus* Ridgw.

*Calcarius lapponicus coloratus* Ridgway, *Auk*, xv. p. 320 (1898—Type: Copper Island).

2 ♂ ad., 2 ♀ ad., 1 juv. in first plumage, Copper Island, May and June, the young bird 16. v. 1911.

1 ♂ ad., 2 ♀ ad., Copper Island, May and June.

The date of the young bird, just out of nest, is, if correct, very early. Stejneger did not notice the species earlier than April 21st, and found eggs from May 23rd to June 11th. The commonest breeding bird on both islands.

*C. l. coloratus* differs from *C. l. lapponicus* in being larger, bill larger, wings longer, 95.5–104.5 mm., and the secondaries and upper wing-coverts of the males have wider rust-brown edges; the ♀ has the neck-band, as a rule, more marked and less thickly spotted.

143. *Plectrophenax nivalis townsendi* Ridgw.

*Plectrophenax nivalis townsendi* Ridgway, *Manual N. Amer. B.* p. 403 ("Pribilof Islands, Alaska, and Commander Islands, Kamtschatka." Type: Otter Island in the Pribilof group).

6 ♂, 5 ♀, autumn, winter, May and June, both islands. Wings, ♂ 115.5 (once), 117–118, 120 (once), ♀ 112–112.5 mm.

According to Ridgway (*B. North and Middle Amer.* i. p. 152), a male from Bering Island measures 120, but according to Stejneger (p. 250), others measured only 110 and 113, though I doubt this is strictly correct. If adult males *with unworn wings* have wing-measurements of 110 and 113, they are not bigger than European *P. n. nivalis*, while 120 is unknown in western specimens. Ridgway says that birds from "Aleutian Islands, including Commander Islands," Pribilof and Shumagin Islands have larger dimensions, "with relatively longer bill." Now this is perfectly true with regard to the Commander Islands birds, which have larger bills and longer wings; but the Pribilof and Aleutian examples have not longer wings, specimens in the British Museum (measured by Thomas Wells) having wings of (♂ ad.) 105, 111, 116 mm.

Possibly the Commander Islands birds will have to be separated again from the Pribilof and Aleutian ones. Ridgway measures an adult male from Plover Bay, Siberia, with a wing of 113.3 mm., and says that "the largest specimens are those from the more western Aleutian Islands, including the Commander Islands, Kamtehatka; the smallest are from Unalashka and the Shumagin Islands, at the opposite end of the chain. These latter are in reality intermediate



between the island form and true *P. nivalis*, but seem nearer the former and, therefore, best referred to it." He then gives "average" measurements, but unfortunately no individual ones, except where only one is measured. Average measurements are, in my opinion, misleading unless taken from a large series.

#### 144. *Carduelis linaria linaria* (L.).

14 ♂♀, both islands, 1 January, 3 May, 1 June, 1 July 8th, 4 October. 1 November, the rest with doubtful dates, apparently labels interchanged.

There is a good deal of variation in this series, both in the bills and in the length of wings, but not one of these specimens has a bill as large as the specimen of *holboelli*. The wings do not exceed 78, except in one specimen with a very small bill and a wing of 79, while most of them have wings of 75 to 76, females less in most cases.

Stejneger did not think that this form was breeding on the islands, as he did not come across it between the end of May and November. Sokolnikoff, however, sent 1 June and 1 July bird.

#### 145. *Carduelis linaria holboelli* (Brehm).

A ♂, Bering Island, 18.v.1914, has a wing of 82.5 mm. and a strikingly higher and longer bill than all the above *linaria*, 12.5 mm. long. Stejneger obtained specimens of this form as late as June 13th, and says that it breeds on the islands. Sokolnikoff also sent a male, said to have been shot Bering Island 22.vi.1912, but its plumage is too fresh for that date, and I consider it to be an autumn bird. This bird has a bill larger than what I consider typical *linaria*, i.e. nearly 12 mm. long, but the wing only 78 mm. Is it a hybrid or what?

There is still some doubt about "*holboelli*." Is it a subspecies, a species or individual variety? It nests together with *C. l. linaria* in its northern habitats but—I believe—not in its southern area. Is there any country where it alone nests?

(No form of *C. hornemannii* has been sent by Sokolnikoff, but Stejneger obtained seven specimens of *C. hornem. exilipes* in winter, between November and March.)

#### 146. *Montifringilla tephrocotis maxima* (Brooks).

*Leucosticte griseonucha maxima* Brooks, *Bull. Mus. Comp. Harvard Coll.* lix. p. 405 (1915—Type: Copper Island).

18 ♂♀ ad., from various winter and spring months, both islands; 1 juv., Copper Island, 15.ix.1911.

Wings, ♂ 118–123, ♀ 113–119 mm. The pink spots on the upper tail-coverts are, as a rule, less bright in the females, otherwise the sexes do not differ in coloration.

Resident on the islands. Larger than the Unalashka form, *M. t. griseonucha*. Adult specimens from St. Paul, Kodiak, and St. George's Islands in the British Museum (measured by Thomas Wells) have wings of 109–114, twice 121 mm., while Ridgway gives *average* measurements of 112.78–117.86 and 119.13–121.92 for the Commander birds.

147. *Fringilla montifringilla* L.

5 ♂, 2 ♀ ad., Bering and Copper Islands, 14.v to 24.v.

♂ ad. (wrongly sexed ♀ !), Bering Island, 8.x.1913.

Regular visitor, but not nesting, according to Stejneger.

It seems to me impossible to recognize an eastern subspecies (*F. m. subcuneolata* Kleinschm.). There is the same variation in the outer tail-feathers, the same extent of white. *Sometimes* specimens are very dark brown, but others are not, and also in Europe similarly dark brown individuals occur.

148. *Carpodacus erythrinus erythrinus* (Pall.).

♂ (red), Copper Island, 11.vi.1911.

♂ (brown), Copper Island, 8.vi.1911 ; Bering Island, 2.vi.1914.

♀ ad., Bering Island, 5.vi.1913.

I cannot distinguish these birds from *C. e. erythrinus* of Russia and the Baltic Provinces, and East Prussia. I cannot help doubting the difference of *C. e. grebnitskii* Stejn., from Kamtchatka, which is said to have a brighter red male.

The species was unknown to Stejneger and Bianchi as occurring on the islands, where it is probably only a straggler.

149. *Pinicola enucleator kamtschatkensis* (Dyb.).

*Corythus enucleator kamtschatkensis* Dybowski, *Bull. Soc. Zool. France*, viii. p. 367 (1883).

A female, unfortunately with left leg and attached label wanting, but probably from Bering or Copper Island. Differs from females of *P. e. enucleator* in being paler throughout, the back without orange-yellow, almost pure grey ; bill thicker.

This species had not been obtained before.

(A Crossbill—" *Loxia curvirostra*," according to Bianchi—has occurred on Bering Island, but we did not receive specimens.)

150. *Coccothraustes coccothraustes japonicus* T. & S.

*Coccothraustes vulgaris japonicus* Temminck & Schlegel, Siebold's *Fauna Japon.*, Aves, pl. 51 (1850—Japan).

♂ ad., Bering Island, 24.v.1912.

New to the islands.

151. *Pyrrhula pyrrhula kamtschatica* Tacz.

*Pyrrhula kamtschatica* Taczanowski, *Bull. Soc. Zool. France*, 1882, p. 395 (Kamtchatka).

♂ ad., Bering Island, 27.vi.1914.

♀ ad., Copper Island, 1.vii.1913.

This rare Kamtchatkan Bullfinch had not previously been obtained on the islands.

The ♂ has the upperside of a clearer grey than *P. p. pyrrhula*, the outer tail-feather has *always* a white wedge on the outer web. The female has the back less brownish and the underside lighter brownish.

(*Parus atricapillus kamtschatkensis* is supposed to have been seen by a Cossack on Bering Island, but has not been obtained. Cf. Stejneger.)

(" *Corvus corone levaillanti* " is mentioned by Stejneger as a rare straggler. These birds can, of course, not be *levaillanti*—a tropical form—but must be *C. c. orientalis*, which is found in Kamtchatka.)

#### 152. *Corvus corax* subsp.

There is a remarkable series of not less than 20 Ravens from both islands, from January, February, April, June (1 juv.), July, September, October, and November (11).

At present I am unable to say with absolute certainty to which race these Ravens belong. Their wings measure 405 (♀ ad.) to very nearly 445 mm. Their wings are thus not longer, on an average even a little shorter, than those of European *C. c. corax*, but the feet and tarsi are very much stronger, heavier, and the bill larger, wider. One specimen from Anadyr appears to be indistinguishable. Two specimens (*said* to be males) from Yesso have the bills narrower, not so powerful, also the feet a little less strong than the *males* from the Commander Islands.

In the *Vög. d. pal. Fauna*, pp. 4, 5 (1903), I kept doubtfully separate *C. c. sibiricus*, *ussurianus*, *kamtschaticus*, and *behringianus*, merely stating the differences as given by Taczanowski and Dybowski.

Buturlin (*Mess. Orn.* 1915, p. 107, 114, Russian with short English extract) united *kamtschaticus*, *ussurianus*, and *sibiricus*, and so did Poljakov (*l.c.* p. 17). They correctly stated that all Siberian Ravens have the first primary shorter than the seventh, and it seems that Taczanowski's contradictory statements were not correct, or based on exceptional varieties.

Buturlin, however, had apparently no Ravens from the Commander Islands, and Sokolnikoff paid, by special instructions from St. Petersburg, special attention to Ravens, and brought together the present series, that it should be compared with Siberian and Kamtchatkan Ravens. Unfortunately, I am not able to do this, but I have been promised Kamtchatkan Ravens, and when they arrive, will go into the question again. Either the Bering and Copper Island Ravens are *sibiricus* or they form a separate subspecies: *behringianus*.

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## NOTES ON AND DESCRIPTIONS OF SPHINGIDAE.

BY DR. KARL JORDAN.

(With six text-figs.)

1. *Polyptychus paupercula senniger* subsp. nov. (text-fig. 1).

♂. *A. P. p. paupercula* Holl. (1889), armatura genitali distinguendus : harpa leviter trilobata.

*Hab.* Bingerville, Ivory Coast, June, August, and September—October, 1915, 4 ♂♂ (Gaston Melou), type ; Takwa, Gold Coast, 1 ♂ (R. E. James).

There are no differences in colour and pattern between the specimens from the districts Senegal—Niger and Niger—Congo. All 5 ♂♂ we have from the former district, though differing slightly *inter se* in the shape of the harpe, are distinguished from the more southern subspecies in the apical margin of the harpe being bisinuate ; the lower sinus is narrow and fairly deep, while the upper sinus is shallow (text-fig. 1).

2. *Polyptychus molitor* R. & J. (1912) (text-figs. 2, 3).

We described this species from some ♀♀ in the collection of the British Museum obtained by H. A. Foy at Ibi on the River Benue, Nigeria ; cf. NOVITATES ZOOLOGICAE, xix. p. 132, no. 4 (1912). The Tring Museum has since received 2 ♂♂ and 1 ♀ from Sédhiou, Sénégal, collected by R. Castell, the ♂♂ being caught in October 1917 and the ♀ dated simply 1917.

The ♂ is smaller than the ♀ ; the forewing is narrower, its distal margin more oblique ; with the apex more produced. Antenna stouter than in ♀, seriated cilia longer, otherwise similar to that of the ♀. Palpi larger than in the ♀, joint closed, third segment small in both sexes (not two-thirds of second as stated in the original description), second segment a little longer than wide measured to the base of the third (*i.e.* exclusive of the apical scaling).

Tenth tergite (text-fig. 2) very hairy, broad, divided by a rounded sinus into two sharply pointed processes ; tenth sternite represented by a low membranous ridge. Clasper without friction-scales, deeply concave on the inner side, the ventral margin elevate ; above this ridge, in the cavity, a second ridge, the two ridges uniting distally and forming a large, pointed, conical process placed about halfway between dorsal and ventral margins and being almost vertical upon the plane of the clasper, leaning a little proximad (text-fig. 3). Apical portion of clasper weakly chitinated, nearly membranous, clothed with long scales. Penis-funnel cylindrical, longer than broad ; penis-sheath also cylindrical, slightly widened at the apex, without armature.

3. *Polyptychus orthographus* R. & J. (1903).

We have now a specimen of the ♀, from Luluaburg, Kassai, Congo. It agrees in markings with the ♂, but is much darker both above and beneath. The distal margin of the forewing is convex, with the apex projecting, the marginal area being wider than in the ♂. The antenna bears prolonged seriated cilia, but the lateral grooves are indistinct, and the segments have a straight ventral outline (lateral aspect).

4. *Polyptychus reussi* Strand (1911).

Our statement in NOVITATES ZOOLOGICAE, xxiii. p. 260, no. 23 (1916), that in Strand's description the costal margin of the forewing below is said to be

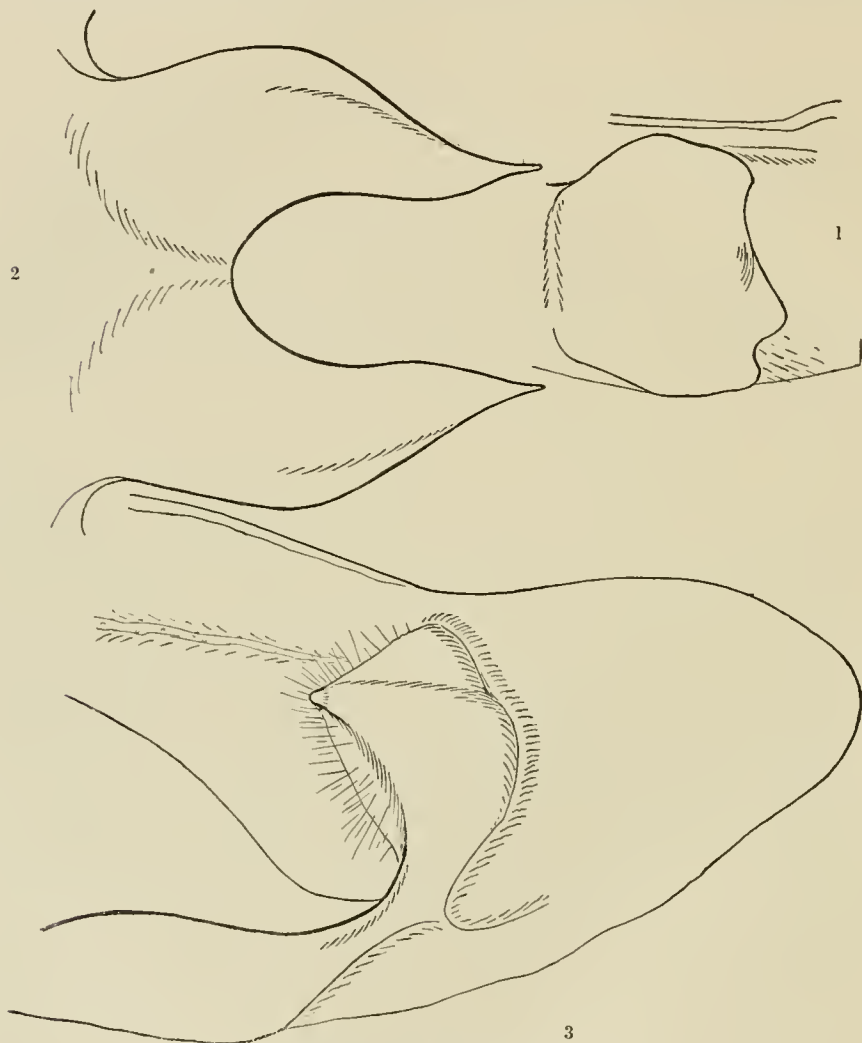


FIG. 1.—*Polyptychus paupercula senniger*, ♂; harpe.

FIG. 2.—*Polyptychus molitor*, ♂; anal tergite.

FIG. 3.—*Polyptychus molitor*, ♂; clasper.

dark red is erroneous. I misread the description, which agrees with the ♀ of *P. coryndoni* R. & J. (1903). Strand's name, therefore, is a synonym.

5. *Temnora nitida* spec. nov. (text-figs. 4, 5, 6).

♂. Cervina; alis anticis fascia olivacea fere recta oblique a costa ad marginem exteriorem extensa extus luteo marginata ornatis atque lineis trans-



versis e lunulis olivaceis compositis signatis; posticis aurantiaco-rufis, fascia marginali brunnescente. Infra rufo-avellina, lineis e lunulis et angulis parvis compositis olivaceis notata.

Long. al. ant. 26 mm., lat. 11.5 mm.

*Hab.* Diégo Suarez, N.E. Madagascar, December 1916 (G. Melou); 3 ♂♂. In the bright rufous hindwing this new *Temnora* resembles *T. elegans* Roths. (1894), but the oblique band of the forewing distinguishes *nitida* at once from that species.

Body fawn-colour, abdomen more rufescent; the scales on the thorax above

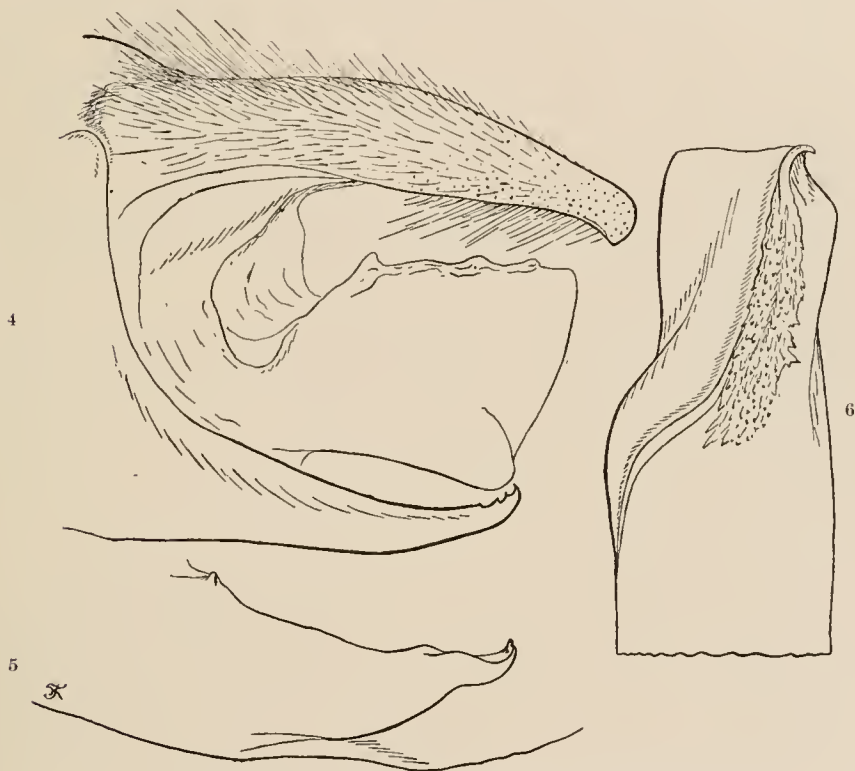


FIG. 4.—*Temnora nitida*, ♂; anal segment, lateral view.

FIG. 5.—*Temnora nitida*, ♂; harpe.

FIG. 6.—*Temnora nitida*, ♂; penis-sheath.

and beneath and on the upperside of the head pale-tipped; underside rufescent, somewhat paler than upper. An ill-defined line above eye, another on second palpal segment likewise diffuse and inconspicuous, and scales at joint between first and second palpal segment creamy; abdomen beneath with two rows of olive-black dots; foretibia externally deep fawn-colour.

Wings, *above*.—Forewing fawn-colour, outer margin evenly rounded-convex in middle, concave anteriorly and posteriorly, not crenulate; a well-defined olive band runs from the middle of the costal margin to below middle of outer margin, about 1.5 mm. broad anteriorly, widening distally and here shading off to anal angle, on the distal side the band bounded by a pale line, which varies

in distinctness ; in basal half two pairs of transverse excurved lines, olivaceous, somewhat scalloped and more or less interrupted at the veins, the proximal pair rather indistinct, the second pair about 7.5 mm. from base at costa and 6 mm. at hindmargin ; on disc a third pair, crenulate, extending from costa beyond band to hindmargin 11 mm. from base, excurved anteriorly and somewhat incurved posteriorly, *i.e.* slightly S-shaped ; further distally another pair, more or less indistinct ; the costal portions of the discal lines form a darkish triangular patch distally to the band, the base of the patch at the costa being about as long as the distance from the apex of the wing ; below apex a marginal luniform pale olive spot bounded proximally by purplish fawn scaling ; such scaling, which is slightly glossy, is found all over the forewing excepting the dark markings and the subapical, sepia-brown, area.—Hindwing orange-rufous ; a darker, hazel, marginal band about 2.5 mm. wide below apex at its widest point, not strongly contrasting, bearing small black dashes on the veins, before anal angle a fawn-coloured diffuse patch.

*Underside* duller than upper, rufous-hazel, forewing cinnamon-rufous from base to beyond middle ; outer half of both wings with four transverse lines, blackish above, dentate or crenulate, varying in distinctness, accentuated on the veins ; below tip of forewing a blackish marginal cloud ; abdominal area of hindwing paler than rest of wing.

*Genitalia* : both the tenth tergite and sternite long and slender (text-fig. 4), the former with the tip convex and entire ; the sternite more acuminate with the apex dentate on the upperside. Clasper with five large friction-scales. Harpe (text-fig. 5) lying flat on the surface of the clasper, tapering, with the apex slightly turned upwards. Sheath of ejaculatory duct with an elongate patch of teeth ending apically with a small hook ; a swelling along the side of the patch continues proximad half around the sheath (text-fig. 6).

#### 6. Some Individual varieties of *Xylophanes turbata* Edw. (1887).

A series of 1 ♂ and 8 ♀♀ of this species from Orange Walk, British Honduras, caught in May and June 1917, recalls the Eastern *Hippotion velox* F. (1793) by the variation in the pattern of the forewing. Two of the ♀♀ are normal, having a conspicuous double line extending from the apex of the wing to the basal third of the hindwing, and five thin and inconspicuous lines between the double line and the outer margin, of which the most distal one is barely indicated. In the ♂ and one ♀ of the above series the double line is represented by a single thin line (corresponding to the outer line of the pair) and the following line is scarcely traceable. In the remaining 5 ♀♀ the double line has more or less completely disappeared, excepting a dash at the wing-apex, which the other lines join. The brown cloud distally to the apex of the cell is distinct in all the specimens.

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THE STATUS OF *PLATYSPHINX BOURKEI* TRIMEN (1910).

BY DR. KARL JORDAN.

THE four species of Hawkmoths which we united in the new genus *Platysphinx* in the Revision of the Sphingidae (1903) are very similar to each other in colour and pattern. Therefore, when Dr. Trimen sent us a coloured sketch of a specimen very unlike those four species, we agreed with him that the sketch represented a new species, which Trimen then described as *Pl. bourkei*, in *Ent. Mo. Mag.* (2), xxi, p. 209 (1910) (Zululand).

In 1918 we received an example of this *Pl. bourkei*, together with some specimens of what appeared to be *Platysphinx piabilis* Distant (1897), all bred by E. E. Platt at Eshowe, Zululand. Mr. Platt, in a letter to us, pointed out that *bourkei* and *piabilis* were obtained from apparently identical larvae, and as, moreover, some of the imagines were somewhat intermediate, he asked us to investigate the structure of *bourkei* in order to ascertain whether *bourkei* was different from *piabilis* apart from colour. We compared the specimens early in 1919, and the result was as expected by Mr. Platt. *Pl. bourkei* agrees with *piabilis* in structure. Considering the great colour-similarity of the other species and their equally great dissimilarity in structure, that result was rather startling, and induced us to study all the material of *Platysphinx* we now have in the collection.

1. *Platysphinx constrictigilis*.

When writing the Revision we had only a ♀ from Sierra Leone and a much-damaged ♂ from the "Niger Coast Protectorate." Our series consists now of 19 ♂♂ and 2 ♀♀. There is a good deal of individual variability in the detail of the colouring and pattern, but all specimens agree in the hindwing beneath and the costal area of the forewing above and below being more or less suffused with white in between the transverse markings, and in the forewing having a strongly crenate submarginal line on both surfaces.

The tenth tergite of the ♂ is broad, with the lateral margin uneven, the apex bent down, narrowed and truncate-emarginate. The tenth sternite is geographically and individually variable, being long and either spiniform or more or less club-shaped. The clasper has at the base a long spiniform process projecting distad. This process, which lies on the ventral side of the ventral margin of the clasper and well separated from that margin, also varies geographically. The penis-funnel has a small conical projection on each side (not a ventral process as stated in the Revision, our figure on plate xxx of that work giving a lateral, not a ventral, view), and the apex of the large penis-sheath is produced downward into a pointed process, which is concave on the upperside and resembles the spout of a jug. This process is much more curved in some specimens than in others.

In the ♀ the vaginal aperture is flanked on each side by a pointed process curved mesad.

We cannot find any reliable distinctions in colour and pattern between the

two geographical races into which the species has developed, as evidenced by the structure of the genitalia.

*a. Pl. constrigilis vicaria* subsp. nov.

*Platysphinx constrigilis* R. & J., *Revis. Sphingidae*, p. 224. no. 185. tab. xvii. fig. 3, xxiv. fig. 9, xxx. fig. 23, xxxiii. fig. 1 (1903) (partim.; Sierra Leone and Niger Coast Protectorate, *nee* Cameroons and Congo).

♂. Tenth abdominal sternite slender, slightly or not at all dilated before apex; ventral spiniform process of clasper long, slender, straight or very little curved inward in ventral aspect.

♀. Process at side of vaginal orifice broad at base, almost gradually narrowed to near apex, here its outer margin rounded, apex pointed and directed mesad, the tip slightly twisted and therefore appearing, under a low power, rather shorter than it is in reality.

*Hab.* Sierra Leone, type, 1 ♂ (Bainbridge) and 1 ♀ (Clements); Wassaw district 45 miles, Akjah-bippo 46 miles, and Prestea 75 miles inland from Sekondi, Gold Coast, 5 ♂♂; Bibianaha, 70 miles north-west of Dimkwa, 700 ft., 7. xi. 1910 (Spurrell), 1 ♂; Obouassi, Gold Coast, September and November 1909, 2 ♂♂; Bingerville, Ivory Coast, March and April 1915 (Melou), 2 ♂♂; Nigeria and "Niger Coast Protectorate," 2 ♂♂.

*b. Pl. constrigilis constrigilis* Walk. (1869).

Originally described from the Congo.

♂. Tenth abdominal sternite strongly widened-rounded before apex; ventral process of clasper less slender than in the north-western subspecies, curved inward in a ventral view.

♀. Process at side of vaginal aperture slenderer than in the previous case, more gradually narrowing, the apical half particularly narrower.

*Hab.* Niger to Congo.—In the Tring Museum from: Ilesha, Nigeria (Humfrey), 1 ♂; Cross R., Nigeria (Martell), 1 ♂; Bopoto, Upper Congo (Kenred Smith), 3 ♂♂, 1 ♀; Upper Congo, 1 ♂.

It would be of interest to know whether the two subspecies occur anywhere near one another in Nigeria.

The remaining specimens of *Platysphinx* in our collection (and in that of the British Museum) represent three modifications of one type. The three forms strictly replace each other geographically according to the specimens inspected and differ constantly in the structure of the tail-ends only. The form designated by us in the Revision as *Pl. phyllis* is found from the Senegal to the Niger; the second, *stigmatica* Mab. (1878), inhabits the countries from the Niger to the Congo basin; and the third, *piabilis* Dist. (1897), is known to us from the countries further to the south-east: Rhodesia, South Nyasaland, Portuguese East Africa, and Zululand. The distribution given in the Revision must be corrected accordingly.

The South-Eastern insect is, in structure, the most strongly modified of the three. The antenna of the ♂ are rather longer and stouter, and the distal margin of the forewing is somewhat less incurved posteriorly than in the West



African forms. I consider the differences to indicate that *piabilis* has attained to that degree of physiological aversion towards the allied forms which we now consider a true criterion of specific distinctness.

The West African forms are more similar to one another. We have only one ♂ among the North-Western specimens, and this ♂ agrees in structure much more closely with the Niger-Congo ♂♂ than is the case in the ♀♀, while *piabilis*-♂ is very different in the tail-end. For that reason I am inclined to regard the two West Coast forms as geographical races of one species. But there is just a possibility that our North-Western ♂ is not the true ♂ of *phyllis*; I should like to compare a second ♂ from the North-Western district before altering the status of *phyllis* and *stigmatica* we have assigned to them in the Revision.

## 2. *Platysphinx phyllis* R. & J. (1903).

There is, apparently, no difference in colour and pattern between this and the following species. The type-specimen of *phyllis* is a ♀ with comparatively few spots on the hindwing; the four examples we have received since 1903 do not share this peculiarity.

♂. The tenth abdominal tergite broader than in the next subspecies, the apical sinus wider, and the apical process of the clasper much shorter.

♀. Vaginal plate posteriorly to orifice on each side with a finger-like curved process.

*Hab.* Senegal to Niger.—In the Tring Museum from : Sédhiou, Casamance, (native collector), 1 ♀; Konakry Island, Sierra Leone, 1 ♀, type; Wassaw district, 45 miles inland from Sekondi, Gold Coast, 1 ♂; Sekondi, Gold Coast (Hamlyn), 1 ♀; Zunguru, Nigeria, 1 ♀.

## 3. *Platysphinx stigmatica* Mab. (1878).

We have specimens only from the Congo and Angola. The species, however, occurs doubtless also northward to the Niger. The specimen recorded in the Revision from Portuguese East Africa belongs to *Pl. piabilis*.

*Hab.* (Niger to) Northern Angola.—In the Tring Museum: Bopoto, Upper Congo (Kenred Smith; Oram), 5 ♂♂, 1 ♀; south of Congo (Bentley), 1 ♀; Dondo, Northern Angola (v. Homeyer).

## 4. *Platysphinx piabilis* Dist. (1897).

*Platysphinx stigmatica* R. & J., *Revis. Sping.* p. 225. no. 186 (1903) (partim; Port. E. Afr.).

*Platysphinx bourkei* Trimen, *Ent. Mo. Mag.* (2). xxi. p. 209 (1910) (Etshowe, Zululand).

The ♂♂ from Rhodesia southward agree with the type from the Transvaal in the distinctive structure of the tail-end, as illustrated in the Revision, pl. xxiv. fig. 10, xxx. fig. 22, xxxiii. fig. 2. The specimen of *bourkei* received from Mr. Platt shows the same structure. This is convincing evidence that *bourkei* is a colour-aberration of *piabilis*, if we consider the structural differences found in the other forms of this genus. However, it is a most interesting aberration, which I am inclined to look upon as the ancestral colour-type of *Platysphinx*.

The sexual armature of the ♀ recalls that *Pl. stigmatica*-♀. The walls of the aperture are produced as a cylinder, more or less regular, with a deep sinus on



the anterior side; this cylinder is not supported as in *stigmatica* by a lateral wing, and the postvaginal plate is much less chitinised and smaller than in that species.

The specimen labelled Portuguese East Africa and received from Messrs. Staudinger and Bang-Haas is larger than the others and has a deeper sinus to the genital cylinder. An East African subspecies?

*Hab.* Rhodesia to Zululand.—In the Tring Museum from: Solwezi, Rhodesia (Dollman), 2 ♀♀; Ruo Valley, South Nyasa (Neave), 1 ♂, 1 ♀; Portuguese East Africa, 1 ♀; Eshowe, Zululand (Platt), 1 ♂, 1 ♀ and 1 ♂ ab. *bourkei*.

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## SOME NEW AFRICAN SPHINGIDAE.

BY DR. KARL JORDAN.

(With two text-figs.)

THE specimens described in this paper are all in the collection of A. J. T. Janse, of Pretoria, who kindly sent them to us for study and description.

1. *Polyptychus molitor lautus* subsp. nov.

♀. Magnus, colore cremoris lutescentis, thorace linea mediana et ala antica quatuor lineis transversis olivaceo-fulvis, alis tenuissime ochraceo marginatis, linea tertia alae anticae lata.

Al. ant. long. 59 mm., lat. 26 mm.

*Hab.* Barberton, Transvaal (L. de Beer); 1 ♀.

A very large form. Entirely cream-colour slightly washed with buff, much paler than *P. m. molitor*, which is more or less pinkish buff. Upperside of tibiae and tarsi ochraceous, foretibia and first foretarsal segment with a chocolate stripe on outer side. Middle line of thorax and four lines on forewing olivaceous tawny, the lines placed as in *P. m. molitor* R. & J. (1912) from the north-west of tropical Africa, but the inner line of the discal pair much broader and shading off outwardly; hindmargin edged with orange-buff except base; from apex to vein  $M^2$  a large marginal drab area, half-moon-shaped, sharply defined at apex of wing, elsewhere diffuse, nearly reaching outer line, the veins in this patch remaining pale except towards distal margin.—*Hindwing* rather paler than forewing, especially at base, with vestiges of two darker lines, of which the inner one touches the cell.

On *underside*: the ground-colour nearly as above, palest towards base; forewing with a slight diffuse yellowish tint around lower cell-angle; both wings crossed in outer half by two nearly parallel brown lines, of which the inner one is slightly the broader and, on the hindwing, is about 1 mm. distant from the lower cell-angle; as in *P. m. molitor* the forewing beneath has no dark marginal area; the inner line on both wings costally less curved than in the N.W. African race.

2. *Libyoclanis metria* spec. nov. (text-fig. 7).

♂. *L. vicinae* affinis; alis anticis sine linea apicali obliqua, apice non productis; posticis rufis margine abdominali pallide luteo; segmento anali ventrali bilobato.

Al. ant. long. 36 mm., lat. 12.5 mm.

*Hab.* Emangeni, Rhodesia, 18. i. 1918 (A. J. T. Janse); 1 ♂.

The upperside of the head, thorax, and base of abdomen cinnamon with a tint of isabella colour, rest of abdomen creamy buff, breast pale clay colour. Upperside of femora and underside of tibiae creamy buff washed with pink; tibiae and tarsi olive-gray, the tibiae pinkish towards apex.

Wings, *upperside*.—Forewing pale clay-colour; apex pointed but not

produced, the distal margin not incurved below apex, more evenly convex than in *L. vicina* R. & J. (1915); the basal tuft of hindmargin more or less pink proximally and cinnamon distally; between base of wing and vein  $M^2$  a few blackish scattered scales which indicate a transverse line proximally to base of  $M^2$ ; about halfway between cell and distal margin a transverse line faintly curved in S-shape, commencing at costal margin 9 mm. from apex and crossing  $M^2$  4 mm. from distal margin, the four posterior internervular sections of the line more or less luniform; on the proximal side of this line faint indications of another line parallel to the former; a fuscous patch extends from hind angle to beyond  $R^2$ , bounded by the discal line, occupying the whole space between line

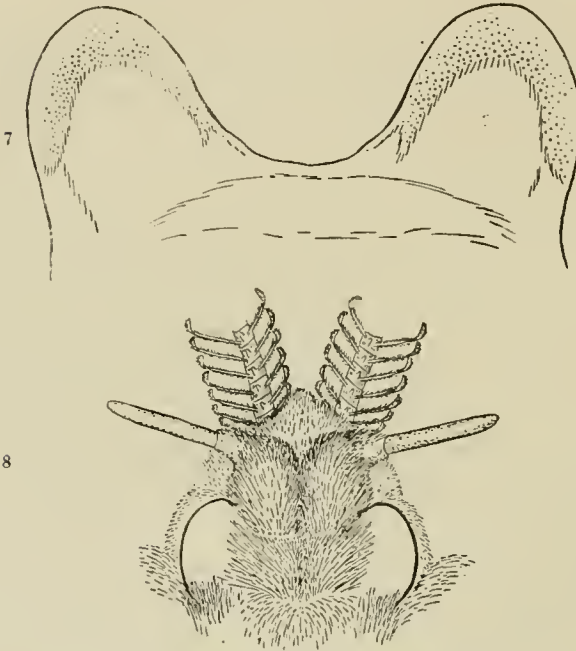


FIG. 7.—*Libyoclanis metria*, ♂; anal sternite.

FIG. 8.—*Xenosphingia jansei*, ♂; head from below.

and fringe from hindmargin to  $M^1$ , then narrowing; 5 mm. from apex between  $SC^4$  and  $SC^5$  an ill-defined fuscous spot composed of black dispersed scales; cilia ochraceous-buff.—Hindwing carmine-pink, costal margin paler, extreme base and the abdominal edge whitish cream, abdominal marginal border cream-buff, widening considerably at anal angle, and extending along distal margin but soon fading away, distal margin dusted with black scales; wing shaped as in *L. vicina*, but distal margin a little less incurved.

*Underside* of the colour of the abdomen.—Forewing with

the cell (except base) and the area behind cell carmine-pink, this colour extending to hindangle and distally fading away; the outer discal line anteriorly quite distinct, posteriorly barely indicated, not reaching hindmargin, proximally to a faint blackish bar behind point of bifurcation  $SC^{4,5}$ ; marginal area rather worn, without trace of the straight line which in the allied species runs from the apex obliquely to the disc.—Hindwing with a few black scales in the outer half, these scales more numerous at and near the costal margin, forming a minute, ill-defined costal spot 5 mm. from apex.

Antenna as in *L. vicina*, but slightly thicker. Anal tergite also as in that species, except that the two lobes are slightly shorter. Anal sternite different, being divided into two rounded lobes (text-fig. 7). Penis-funnel without dorsal lip, ventral lip carinate below. Above the funnel on each side a rounded lobe about as large as the lobes of the anal sternite, with scalloped edges, each tooth

denticulate and bearing a hair on the ventral side ; the corresponding lobes of *L. vicina* small, with the teeth vestigial. Harpe as in *L. vicina*, but slightly broader at the apex.

### *Xenosphingia* gen. nov.

Generi *Ceridia* R. & J. (1903) dieto affinis ; antennis fortissime pectinatis, palporum articulo tertio longissimo tenui subcylindrico ad latus versus proiecto ; rostro nullo ; tibiis anticis et mediis spinosis, antica brevi, sine calcaro, postica duobus calcaribus apicalibus armata.

Genotypus : *X. jansei* spec. nov.

A very strange genus, which shares with *Ceridia* the long-pectinated antenna, reduced foretibia, aborted proboscis, etc., but differs remarkably in the absence of the foretibial spur and in the length of the third segment of the labial palpus.

Antenna (♂) reaching beyond apex of cell of forewing, bipectinate from base to tip, the branches of the central segments 1.5 mm. long, all sealed to the apex, shaft setiform in dorsal aspect, ventrally each segment dilated into a slightly claviform process which projects downward and is longer than a segment, with the exception of the processes of the proximal segments, of which the processes are short.

Palpus : first segment short, rough with long hair-scales ; second long, flattened laterally, and here as well as at apex smooth-scaled, apex curved sideways ; third as long as second, smooth, slender, rod-like, nearly cylindrical, directed laterad ; joint between first and second open ventrally (text-fig. 8).

Abdomen without spines.

Foretibia about one-third shorter than first tarsal segment, broad, without epiphysis, spinose on upperside, four apical spines long, the two central ones of them the longest. Midtibia spinose, a little longer than the first tarsal segment. Hindtibia without spines, half as long again as the first hindtarsal segment, with one pair of spurs, longer spur twice as long as the tibia is broad before apex. All the tibiae and tarsi smooth. Pulvillus and paronychium present, the latter with one fringed lobe on each side.

Wings entire ; frenulum and retinaculum present. Forewing : SC<sup>2</sup> nearer to SC<sup>1</sup> than to apex of cell ; stalk of subcostal fork short. Hindwing : SC<sup>2</sup> and R<sup>1</sup> together from upper angle of cell, D<sup>1</sup> distinctly curved, not quite twice the length of D<sup>2</sup> = D<sup>4</sup>, lower cell-angle about 90°, not produced.

### 3. *Xenosphingia jansei* spec. nov. (text-fig. 8).

♂. Viridis, antennis albis ramis anticis purpureo-squamosis, pedibus ex parte purpureis, alis anticis margine costali albato, posticis pallidioribus.

Al. ant. long. 18 mm., lat. 9 mm.

Hab. Sawmills, Rhodesia, 2. ii. 1918 (A. J. T. Janse) ; 1 ♂.

Upperside of body and forewing a soft chromium-green. Shaft of antenna and branches of posterior (= outer) side creamy white, anterior branches purple, underside of both shaft and branches ochreous. Palpi and forecoxae washed with purplish tawny ; upperside of forefemur, a lateral stripe on mid- and hind-tibiae, the whole foretibia and tarsus, and the upperside of the mid- and hindtarsi purple.

Wings, above.—Forewing : costal edge creamy, shaded with fuscous

in outer third, cilia of hindmargin, a posterior basal tuft, the longer scales of the fringes and a minute stigma creamy white ; parallel with distal margin and about 3 mm. distant from it a faint darker green line ; apex acuminate but not produced, distal margin straight below apex, then convex, hindangle rounded, projecting neither backward nor outward.—Hindwing : paler than forewing, whitish green, base and hair of abdominal margin almost white ; distal margin as in forewing even, neither dentate nor undulate, anal angle faintly indicated.

*Underside* pale green, costal edge of forewing creamy buff ; longest scales of fringes and the abdominal area of the hindwing whitish.

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THE BIRDS OF BUCKINGHAMSHIRE AND THE TRING  
RESERVOIRS.

BY ERNST HARTERT AND FRANCIS C. R. JOURDAIN.

(Plates XII, XIII.)

BUCKINGHAMSHIRE, being a purely inland county, is naturally less rich in records of migrating species than many others with extensive coast lines. It is therefore not surprising that comparatively few of the rarer and more accidental visitors have been recorded, but, on the other hand, it compares favourably with other inland counties. It has the advantage of varied scenery, for, with the exception of the south-east corner, most of the county north of the Thames valley is decidedly hilly, especially along the main ridge of the Chiltern Hills, which, however, lies for the most part within the Oxfordshire boundary, and attains in places a height of over 800 ft. Both the Chiltern slopes and the Chiltern Hundreds may be described as more or less dry chalk hills, wooded in places, chiefly with beech, and bare and open in other parts. Perhaps the two most interesting ornithological features of this district are the presence of the Cirl-Bunting, which is not rare near Wendover and Tring, and does not range much farther north in England, and the Stone-Curlew, which was formerly common, and still preserves a precarious existence in spite of agricultural operations which often result in the destruction of its eggs. The north of the county is to a great extent composed of grass land, with here and there beautifully-wooded parks, watered by little streams; while the group of large reservoirs in the Tring district naturally attracts all the aquatic species in the district, and has a special interest as being the first definitely known breeding-place of the Black-necked Grebe in England for over forty years. Though lying chiefly in Hertfordshire, they touch the border-line of Bucks, while the Halton Reservoir is entirely within our county boundary. It is therefore impossible to exclude them from a survey of the Birds of Buckinghamshire.

The Tring Reservoirs are now four in number. Three of these (Marsworth, Startop's End, and Tringford or Little Tring) form a group with a water-area of about 87 acres; while the fourth and largest, Wilstone Reservoir, formerly divided into three, covers no less than 120 acres. In dry seasons the water-surface is much diminished, and the great expanse of mud and sand then exposed proves a great attraction to the Waders. Unfortunately at the beginning of the present century, when the water-level was low, Mr. Oldham had not begun to make regular observations in the district, and Hartert's time was too fully occupied to allow of much field work, while of late years the water has been continuously high and the number of visiting Waders has been in consequence much restricted.

We must not omit to mention the presence of the one great river which forms our southern limit, shut in by high ground on the west, and opening out lower down more and more widely till the great level from Eton to Staines and West Drayton is reached, much of which is only 50 or 60 feet above sea-level. This

part of the county has quite a character of its own, and differs widely from the swelling uplands crowned with woods of the north of the county.

Although, as will be seen from the Bibliography, a good many scattered notes on Birds have appeared from time to time, only two attempts have been made up to the present to compile an account of the Birds of the County.

In 1868, Alexander W. M. Clark Kennedy, then, as he describes himself "an Eton Boy," published a neat little volume of 232 pages on *The Birds of Berkshire and Buckinghamshire*. Considering that the author was only sixteen years of age at the time, the book is a most praiseworthy effort. After so promising a beginning to an ornithological career, one might well have expected that the author would achieve great distinction in this branch of science with more matured experience, yet with the exception of a few letters and short notes published in the *Ibis*, *Zoologist* and *Field*, this was his first and last work on birds. Retiring from the army, he led a country life at Knoekgray, and died at the early age of forty-two in 1894.

In 1902 the senior author of this treatise compiled, with the help of the present Lord (then the Hon. Walter) Rothschild, a list of the Birds of the County, which appeared in 1905 in the first volume of the *Victoria History of the County of Buckingham*. In this work 208 species were enumerated, and the principal sources of information were Clark Kennedy's book referred to above, notes in an old manuscript preserved at Dinton Hall, the records relating to the Tring Reservoirs published in the *Transactions of the Hertfordshire Natural History Society*, information kindly supplied by the Rev. H. D. Astley (formerly resident at Chequers Court), Mr. A. Heneage Cocks, Mr. Alan F. Crossman, Mr. Heatley Noble, Mr. Charles J. Wilson, and others, as well as personal observations in many parts of the county.

Many, in fact most, of the records of birds from the Tring Reservoirs mentioned in this work are confirmed by the presence of the specimens in question in the Tring Museum. The present Lord Rothschild has shot over the Reservoirs for thirty-five years past, and Hartert with him since 1892, while the keeper, James Street, has a good knowledge of birds and is always on the look-out for rare visitors. Unfortunately the list of Birds occurring at the Tring Reservoirs by the then Hon. W. Rothschild, published in the *Transactions of the Hertfordshire Natural History Society*, v. pp. 76-84, was not actually compiled from the specimens in the Museum, but was written from memory. At that time few of the birds obtained were labelled with exact localities and dates, and some errors were therefore unavoidable. Moreover, some specimens were accidentally burnt by the caretaker prior to 1892, so that in one or two cases the evidence is not conclusive.

For the last twelve years Mr. Charles Oldham has visited the Reservoirs practically every Sunday, and has placed his valuable observations at our disposal. We must also acknowledge the help received from Mr. Oliver Pike, who resided for some time near Marsworth Reservoir, and took many excellent photographs of bird-life there. The old manuscript at Dinton Hall, in which many of the birds obtained in that neighbourhood are well figured in water-colours and described, was commenced by Sir John van Hatten in 1772, and the observations were continued by the Rev. W. Goodall into the beginning of the nineteenth century. Both Lord Rothschild and Dr. Hartert have examined this interesting MS. and verified the accuracy of the quotations, which were made by Sir John van Hatten's great-grandson, the late Colonel Goodall, who died a few years ago.

In addition to the Tring Museum, there is also a local collection of birds in the Bucks County Museum at Aylesbury, which contains some specimens of great interest. This collection has been visited by Hartert on several occasions, and the curator, Mr. Edwin Hollis, has also kindly supplied us with valuable details.

There is also a collection of mounted birds in the Museum of Eton College, bequeathed to the College by the late Dr. Thackeray, Provost of King's College, Cambridge. According to the *Guide to the Museum of Eton College* of 1899, p. 1 (appendix), this collection contains mostly specimens from Berks. and Bucks., including some hitherto unrecorded ones, and those marked (*u*) are from Bucks. only. Unfortunately this is not correct. Mr. W. D. Hill kindly informs us that the specimens in question have no exact localities and dates, and that nothing is known about their history. They are, therefore, probably the species mentioned in Kennedy's book, but not necessarily obtained in Berks. or Bucks. Thus the *Great Black Woodpecker*, *Scops-Owl*, *Stilt*, *Red-footed Falcon*, *Gadwall*, *Night-Heron*, and *White Stork* mentioned in the *Guide* cannot be taken as records of occurrences in Bucks.

In supplying notes from the southern part of the county, and more especially from the Thames Valley, we have had the assistance of Mr. E. E. Pettitt, who has made a special study of the bird-life of the river. Mr. A. Heneage Cocks has also kindly furnished a series of ornithological extracts from his diaries, and Mr. W. D. Mackenzie contributes some interesting notes from the Fawley district. The Bibliography was originally compiled for the *Geographical Bibliography of British Ornithology*, by Messrs. W. H. Mullens, H. Kirke Swann, and the Rev. F. C. R. Jourdain, where it was published in a somewhat condensed form in 1919. It is mainly the work of the last-named writer, who desires to thank his collaborators for permission to reproduce this section with fuller references and some additional matter, including records relating to the Tring Reservoirs. Finally, we must acknowledge our great indebtedness to Lord Rothschild for much assistance freely rendered, and for the great interest he has taken in the work.

The numbers in brackets are those of the *Hand-list of British Birds*, 1912.

# 1 (1). RAVEN. *Corvus corax corax* L.

*B. of Berks. and Bucks.* p. 39. *Vict. Hist. of Bucks.* vol. i. p. 133.

*Now rare straggler, formerly resident.*

We have only a few notes on the occurrence of the Raven in Buckinghamshire, but it was probably a regular breeding species in olden times. In the manuscript at Dinton Hall are figures and notes of Ravens shot on March 25, 1828, and December 16, 1829. In 1868 Clark Kennedy wrote (p. 39) that "a few pairs have bred in Windsor Park from time immemorial," and Windsor Park is close to the borders of Bucks. Mr. Crossman (*in litt.*) states that on August 14, 1887, he saw one of these birds at Farnham, near Slough, which he distinctly recognized by its hoarse note.

# 2 (2). HOODED CROW. *Corvus cornix cornix* L.

*B. of Berks. and Bucks.* p. 112. *Vict. Hist. of Bucks.* vol. i. p. 133.

*Winter visitor.*

Generally more or less scarce, but sometimes occurs in fair numbers. Although seldom met within the hilly districts, it becomes more common along

the Thames Valley and on the plains near Cheddington, Mentmore, and Leighton Buzzard. Locally known as "Royston Crow." A male shot near Aylesbury, February 25, 1907, is in the County Museum.

3 (3). **CARRION-CROW.** *Corvus corone corone* L.

*B. of Berks. and Bucks.* p. 39. *Vict. Hist. of Bucks.* vol. i. p. 138.

*Resident generally.*

Although greatly reduced in numbers in those districts where much game preservation is carried on, this species manages to maintain a precarious existence almost everywhere. Where game is scarce and the birds are not shot when nesting, it is not uncommon, and is one of the species which have shown a perceptible increase since the war.

C. M. Prior (*Zool.* 1876, p. 5005), writing from Old Wolverton, mentions a case where after four eggs had been taken from a Crow's nest, a second laying of four eggs was discovered in the same nest twelve days later. He adds that three birds were always to be seen in company at the nest.

4 (4). **ROOK.** *Corvus frugilegus frugilegus* L.

*B. of Berks. and Bucks.* p. 40. *Vict. Hist. of Bucks.* vol. i. p. 138.

*Very numerous resident.*

There is hardly a park in the county without a rookery; some are even placed in gardens in the middle of towns and villages.

5 (5). **JACKDAW.** *Coloeus monedula spermologus* (Vieill.).

*B. of Berks. and Bucks.* p. 40. *Vict. Hist. of Bucks.* vol. i. p. 138.

*Numerous resident.*

In spite of much persecution by keepers, common in many places, especially where there is much old timber. Nesting in hollow trees, old buildings, chimneys, and Rooks' nests.

6 (6). **MAGPIE.** *Pica pica pica* (L.).

*B. of Berks. and Bucks.* p. 42. *Vict. Hist. of Bucks.* vol. i. p. 138.

*Resident.*

Generally distributed, but everywhere more or less scarce, on account of the strict game-preservation during the past decades. Apparently increased since 1914.

7 (8). **SLENDER-BILLED NUTCRACKER.** *Nucifraga caryocatactes macrorhynchus* Brehm.

*Once recorded.*

A specimen was killed near Whitchurch, October 7, 1911, and is now in the County Museum at Aylesbury (Edwin Hollis, *in litt.*, also examined by E. Hartert. The specimen was received in the flesh).



8 (10). **BRITISH JAY.** *Garrulus glandarius rufitergum* Hart.

*B. of Berks. and Bucks.* p. 42. *Vict. Hist. of Bucks.* vol. i. p. 138.

*Common resident.*

More or less common in all wooded districts. This species has increased in numbers considerably since 1914.

9 (9). **CONTINENTAL JAY.** *Garrulus glandarius glandarius* (L.).

*Rare winter visitor.*

There is no doubt that the Continental Jay visits England in small numbers in winter, but not many seem to reach the Midland counties. Altogether only a few cases have been recorded, but this is probably due to the small number which have been critically examined. Nearly all the Jays killed in winter which the senior author has examined are typical *rufitergum*, but at least one, shot by Lord Rothschild near Tring, on the boundary of Bucks. and Herts., is an equally typical *G. g. glandarius*.

10 (13). **STARLING.** *Sturnus vulgaris vulgaris* L.

*B. of Berks. and Bucks.* p. 38. *Vict. Hist. of Bucks.* vol. i. p. 138.

*Numerous resident.*

Though a great many Starlings remain throughout the winter, their number diminishes somewhat after October, so it would seem that some move southwards. The flocks of Continental Starlings which arrive in autumn on the east coast appear not to reach this county. Starlings are now often a great pest to fruit-growers. There has undoubtedly been an enormous increase in their numbers during the last half-century, probably owing in a great measure to the diminution in the numbers of birds of prey. Mr. A. H. Cocks says that he has visited a covert in the county, used as a roosting-place by large flocks of these birds, which was entirely swamped in dung, so that nothing could grow in it.

11 (14). **ROSE-COLOURED STARLING.** *Pastor roseus* (L.).

Gould, *B. Europe*, vol. iii. text to pl. 212. *B. of Berks. and Bucks.* p. 178. *Vict. Hist. of Bucks.* vol. i. p. 138.

*Rare straggler.*

Only one instance is known to us for Bucks. Gould, *l.c.*, states that a specimen was shot by John Newman, at Iver Court, near Langley, in Bucks.

12 (15). **GOLDEN ORIOLE.** *Oriolus oriolus oriolus* (L.).

*B. of Berks. and Bucks.* p. 170. *Vict. Hist. of Bucks.* vol. i. p. 134.

*Rare summer migrant : no proof of breeding.*

Mr. Charles Wolley, writing to the *Field*, May 25, 1861, p. 451, under the initials "C. W.," states that a nest of this species with four eggs was taken near Stoke, Bucks., "a few days ago," and that the eggs were still in the possession of Fisher, the naturalist of Eton. Clark Kennedy adds that the eggs were purchased by Mr. Wolley, and proved to be the rare variety of the Song-Thrush's egg, with black markings on a white ground. He also adds that a nest is said to have been found near Burnham, but gives no details. On May 19, 1879 (not



1897 as stated in the *Vict. Hist. Bucks*), a male was shot at Stoke Mandeville, and was recorded by H. White in the *Field* (May 31, 1879, p. 625). Probably it is to this occurrence that Mr. T. Marshall refers in a note to the *Field* (May 16, 1891), in which it is stated that this species was recorded from near Aylesbury in May 1880.

Finally Mr. A. H. Cocks (*in litt.* to the authors of the *Vict. Hist.* list) says, "This bird has been reported to have nested about three miles north from here in 1901, the nest and eggs having been taken; but I cannot answer for it personally."

13 (16). **HAWFINCH.** *Coccothraustes coccothraustes coccothraustes* (L.).

*B. of Berks. and Bucks.* p. 35. *Vict. Hist. of Bucks.* vol. i. p. 136.

*Resident, fairly common in places, though local.*

Apparently the numbers of this bird fluctuate, but this may possibly be due to persecution by gardeners, etc. Nesting near Windsor was recorded by Yarrell as far back as 1827; and Clark Kennedy mentions it as breeding in Windsor Park (Berks.), at Latimer near Chesham, near Aylesbury, Langley and Stowe Park. Mr. Heneage Cocks observed its nesting at and near Great Marlow, and Crossman at Burnham Beeches. It has also been observed at Chequers Court, Weston Turville, Halton, Newbury, High Wycombe, Cholesbury, Chesham, Drayton, and St. Leonards (near Tring). Mr. E. E. Pettitt meets with it occasionally in winter in the Thames Valley, but has not hitherto found it breeding there, though it is not uncommon as a breeding species in the Maidenhead district, where Major F. W. Proctor found several nests.

14 (17). **GREENFINCH.** *Chloris chloris chloris* (L.).

*B. of Berks. and Bucks.* p. 34. *Vict. Hist. of Bucks.* p. 136.

*Common resident throughout the year.*

Frequents orchards, gardens and hedges, associating in flocks in the winter.

15 (18). **BRITISH GOLDFINCH.** *Carduelis carduelis britannica* (Hart.).

*B. of Berks. and Bucks.* p. 36. *Vict. Hist. of Bucks.* p. 136.

*Resident.*

The Goldfinch had become scarce, especially in the neighbourhood of Aylesbury, Wendover and Tring, about twenty years ago, and the blame for this was generally put on the bird-catchers, and probably not without reason, as the Goldfinch is very easily caught in nets and with birdlime. During the last ten years or so, however, it has increased again in numbers considerably, and may be frequently seen near the Tring and Halton Reservoirs, near Chesham, Beaconsfield, Cholesbury, Aylesbury, Wendover and Halton, Cheddington and Aston Abbots.

16 (19). **SISKIN.** *Carduelis spinus* (L.).

*B. of Berks. and Bucks.* p. 109. *Vict. Hist. of Bucks.* p. 136.

*Irregular and rare winter visitor; said to have bred on one occasion. Few recent records.*

Kennedy tells us that in his time many were caught by the professional

bird-catchers near Eton and Windsor "every season."\* He was informed by Burgess that it occurred near Chesham and Slapton, and by H. H. Crewe that a bird-catcher at Drayton Beauchamp "not unfrequently captures the Siskin in his clap-nets during the winter months, in that neighbourhood."

According to Gould (*B. of Great Britain*, iii. text to pl. 37, 1873), Siskins were frequently met with by him in large troops in the woods of Taplow and Cliefden, especially in the neighbourhood of the lower road by the Thames side. The winters of 1857 and 1866-67 were noted for the occurrence of this species in great numbers.

J. Steele-Elliott (*Vict. Hist. of Bedfords.* i. p. 112 note) points out that the reported nesting of the Siskin "in Bedfordshire" (*Zool.* 1880, p. 259) is an error, and should have been recorded as "in Buckinghamshire." The Rev. H. Burney (*loc. cit.*) states that two nests of the Siskin were found on his property in May 1879, and several young reared. The note is headed, "Siskin Nesting in Bedfordshire," but Mr. Burney wrote from Wavendon Rectory, Woburn, which is situated in Bucks. In answer to an appeal for further details, Mr. R. H. Mitford writes (*t.c.* p. 364) that Mr. Burney saw a Siskin in a cage in a cottage in his parish. It was stated to be one of five taken from a nest by a boy, who said that he found two nests with young in June 1879, one in the fork of a maple, and the other in a hornbeam. One young bird passed into Mr. Burney's possession, and his description satisfied Mr. Mitford, who was somewhat sceptical on the subject, that it was a hen Siskin. The nesting-sites, however, would be quite abnormal for this species, and more like those adopted by the Lesser Redpoll, so that possibly the two species were confused. Still more recently, Mr. E. E. Pettitt records the occurrence of this species near Colnbrook, on March 14, 1897.

#### 17 (20). TWITE. *Carduelis flavirostris flavirostris* (L.).

*B. of Berks. and Bucks.* p. 111 (under the name of "*Mountain Linnet*, *Linola montium*"). *Vict. Hist. of Bucks.* p. 137.

*Rare winter visitor.*

Kennedy, who describes this species as a winter visitor, but less abundant than the Lesser Redpoll, gave no dates whatever. We have specimens caught near Aston Clinton by a bird-catcher, 21 . xi . 1893, 5 . xii . 1893, and 11 . xi . 1898. Mr. Alfred Hencage Cocks wrote in 1902 that three Twites were caught near Skirmett in a Pheasant-trap in February 1902.

#### [HOLBÖLL'S REDPOLL. *Carduelis linaria holboelli* (Brehm).

*Vict. Hist. of Bucks.* p. 137.

An adult male of this form, with wing 80, tail 62 mm. long, and a very pale crown, was caught by a bird-catcher near Aston Clinton, December 14, 1895, and is in the Tring Museum.

It is, however, doubtful if *holboelli* is a distinct form, as it appears to breed within the same area as *C. l. linaria*. (Cf. *Pract. Handb.* vol. i. p. 60, 1919, also *Nov. Zool.* 1920.)]

\* It is, however, worth notice that, writing in the *Zool.* 1867, p. 705, of the occurrence of Siskins in a bird-fancier's shop at Eton, he states, "I fancy these birds are not common about here, not having noticed any before."

18 (22). **MEALY REDPOLL.** *Carduelis linaria linaria* (L.).

*Vict. Hist. of Bucks.* p. 137.

*Must occur as irregular and rare winter visitor.*

As the Mealy Redpoll is known to visit the Thames Valley, and one has been taken near Ivinghoe, in Herts., close to the Bucks. boundary, there is no doubt that it occasionally visits our county.

19 (23). **LESSER REDPOLL.** *Carduelis linaria cabaret* (P. L. S. Müll.).

*B. of Berks. and Bucks.* p. 110. *Vict. Hist. of Bucks.* p. 137.

*Winter visitor, but also breeds locally in small numbers.*

Kennedy only records this species as a winter visitor from about the end of November onwards, and never very common. Hartert on several occasions has noted small flocks in autumn and winter, and there are several specimens in the Tring Museum from Aston Clinton, near Tring, caught in October and November.

Twenty-eight years ago Lord Rothschild observed it several times on the "flats" near Champneys Park in summer, and Crossman has recorded breeding on Berkhamsted Common, close to the Bucks. boundary. C. Oldham (*in litt.*) states that he has seen a few pairs every summer about the Herts.-Bucks. boundary near Berkhamsted, and adds that he also saw one at Mentmore on June 15, 1913, "uttering its trilling song in flight."

The only part of the county where breeding is known with certainty to have taken place is the Thames Valley between Shiplake and Wraysbury. Many scattered pairs used to haunt the various "rod beds" by the river, nesting in most cases on the Berks. side, and sometimes several nests might be found within quite a small area. The late Major F. W. Proctor found many nests in this district between 1905 and 1914; not only in willows, but also in thorns, furze bushes, and small trees at some little distance from the river. Mr. E. E. Pettitt gives details (*in litt.*) of half a dozen Bucks. nests found by him in the same district between 1909 and 1916, but adds that after the severe winter of 1916-17 none were met with.

20 (27). **LINNET.** *Carduelis cannabina cannabina* (L.).

*B. of Berks. and Bucks.* p. 37. *Vict. Hist. of Bucks.* p. 137.

*Common resident.*

Common apparently everywhere. Very fond of nesting in gorse bushes, in which the nests may sometimes be found close to each other.

21 (30). **BRITISH BULLFINCH.** *Pyrrhula pyrrhula pileata* (MacGill.).

*B. of Berks. and Bucks.* p. 37. *Vict. Hist. of Bucks.* p. 137.

*Resident.*

The Bullfinch is common, though persecuted by gardeners on account of the damage caused by it to fruit-buds.

22 (33). **COMMON CROSSBILL.** *Loxia curvirostra curvirostra* L.

*B. of Berks. and Bucks.* p. 111. *Vict. Hist. of Bucks.* p. 137.

*Irregular summer and winter visitor, which apparently nests occasionally.*

Immigrations take place from time to time, often in great numbers, and birds may then stop for a year or so and possibly nest. In the old manuscript at Dinton Hall is an excellent figure of "ye Crossbill or Shellapple" which was shot there in 1782, with the following notes: "Is an inconstant visitor of this island and breeds in ye pine-forests of Germany and Switzerland; it feeds on ye cones of those trees. It is a fact that it changes ye shades of its colour in different seasons of ye year from deep red to yellow and ye females which are greenish alter to different varieties of the same colour. Ten of these birds were shot and several others seen by ye Rev<sup>nd</sup>. W. Goodall in ye Wilderness of Dinton Hall August 8<sup>th</sup>. 1791. They had been observed by the servants some weeks, tho' they mistook them for bull finches. Q<sup>ry</sup> had they bred there? As some of ye males had not then gained their full plumage and one of ye females had not as yet a single yellow feather." It is, of course, well known now that the red plumage is that of the adult male, though peculiar ideas about the plumages of Crossbills prevail occasionally even now.

Kennedy records occurrences at Drayton (about 1847), and also at Fulmer, Risborough, and Burnham Beeches, and mentions a hen bird seen near Eton in November 1867.

More recently T. Marshall recorded this species in the Wycombe district in 1898 (*Field*, December 3, 1898, p. 897); while in December 1909 a flock of about thirty was seen at Fawley Court (H. Noble, *Brit. Birds* (mag.), vol. iii. p. 303). In March 1910 six were seen at Drayton Beauchamp (C. Oldham, *l.c.* p. 409), and several at Langley about the same time (H. Noble). A pair killed at Dinton, January 15, 1910, is in the County Museum (Edw. Hollis).

The only definite record of breeding is that by Mr. R. Bulstrode (*Brit. Birds* (mag.), vol. vi. p. 60), who saw a flock of four or five birds near Gerrards Cross on March 27, 1910, and was shown a nest on April 1 which then contained four eggs. The young were still in the nest on April 23.

23 (37). **CHAFFINCH.** *Fringilla coelebs coelebs* L.

*B. of Berks. and Bucks.* p. 31. *Vict. Hist. of Bucks.* p. 136.

*Resident, but numbers apparently augmented by immigrants in winter.*

Very common in all wooded parts of the county.

Mr. A. Mayall found eight eggs in a nest near Burnham, from which six young were reared, in May 1919 (*Brit. Birds*, vol. xiii. p. 80).

24 (38). **BRAMBLING.** *Fringilla montifringilla* L.

*B. of Berks. and Bucks.* p. 106. *Vict. Hist. of Bucks.* p. 136.

*Winter visitor, sometimes in great numbers.*

The Brambling appears every winter, and has been observed from October to April, but generally between November and March. Numbers vary greatly, sometimes not many are observed, while in other years they are very numerous; Hartert does not think that this depends on the severity of the winter—at least not in this country—but more on the amount of beech mast. From time to time



enormous flights are observed. An influx of this kind took place in the winter of 1905-6, when the beech woods of the Chilterns swarmed with these birds, flocks of several hundreds being repeatedly seen. Considerable numbers were also present during the mild winter of 1919-20.

25 (40). **HOUSE-SPARROW.** *Passer domesticus domesticus* (L.).

*B. of Berks. and Bucks.* p. 33. *Vict. Hist. of Bucks.* p. 136.

*Common resident.*

By far the most numerous of all birds in the county. One of the most obnoxious habits of this species is that of dispossessing the House-Martins of their homes. Mr. A. H. Cocks adduces some evidence that the Martins occasionally retaliate by killing the nestling Sparrows, but further evidence on the point is desirable (cf. *Zool.* 1916, p. 358).

26 (41). **TREE-SPARROW.** *Passer montanus montanus* (L.).

*B. of Berks. and Bucks.* p. 32. *Vict. Hist. of Bucks.* p. 136.

*"A resident species, but nowhere numerous and very local."*

The above words of Kennedy are still correct and well describe the status of this bird in Bucks. Kennedy reports a nest near Buckingham in a Sand-Martin's hole. He also mentions specimens killed near Datchet and Slough. From autumn to spring, however, Tree-Sparrows are common in the neighbourhood of Wendover, Aston Clinton, Ivinghoe, where Oldham regularly observes them, usually feeding with House-Sparrows and Finches in farm-yards and stack-yards, and near Cheddington, but they are seldom seen in the summer. Mr. Oldham observed one near Cheddington May 10, 1908. Hartert has seen it near Aylesbury and Ovington.

In the Thames Valley there are scattered colonies, which nest in the pollarded willows by the river-side, especially in the Maidenhead and Bray districts. Mr. Pettitt mentions a small colony at Horton.

27 (42). **CORN-BUNTING.** *Emberiza calandra calandra* L.

*B. of Berks. and Bucks.* p. 29. *Vict. Hist. of Bucks.* p. 137.

*Resident.*

Not actually rare in the arable districts, but nowhere numerous, and not often noticed in winter. Kennedy (*l.c.*) says "it congregates in large numbers late in the autumn and is gregarious until the return of the spring." We have never seen large flocks in Bucks. or Herts.

In the Thames Valley Mr. Pettitt notes it as breeding near Taplow, Slough, and the reservoirs on the Middlesex border.

F. A. Monckton has recorded a case in which the song was heard in November near Eton (*Field*, November 14, 1908, p. 888).

28 (43). **YELLOW BUNTING, or YELLOWHAMMER.** *Emberiza citrinella citrinella* L.

*B. of Berks. and Bucks.* p. 30. *Vict. Hist. of Bucks.* p. 18.

*Resident.*

A common bird, but somewhat diminished in numbers since 1917. Mr. A. H. Cocks records a nest built in the side of a straw-rick, about 3 ft. 7 in. from the



ground at Skirmett (*Zool.* 1916, p. 352), but this is not a very infrequent occurrence.

29 (47). **CIRL-BUNTING.** *Emberiza cirius cirius* L.

*B. of Berks. and Bucks.* p. 176. *Vict. Hist. of Bucks.* p. 138.

*Resident.*

The Cirl-Bunting breeds regularly in the Chiltern Hills district and neighbourhood. In winter it strays about, but apparently not usually very far from its breeding-grounds. The following are the localities from which we have evidence: Terriers End, near Tring (Chas. Oldham, evidently nesting); neighbourhood of Wendover (Hubert D. Astley, Oldham, Witherby, Hartert, nesting); Ashley Green, south of Berkhamsted, Coombe Hill, Chequers Court (Hubert D. Astley, nesting); Drayton Beauchamp (4. vi. 1864, nest found by H. H. Crewe, *Field*, 3. xii. 1864, p. 384); Halton (skins of winter birds, eggs seen); Pitstone (caught in winter, H. H. Crewe); Ivinghoe (seen in winter, Hartert); downs between Princes Risborough and Wendover common, five males singing between Kimble and Wendover 4. vii. 1910 (Chas. Oldham). In the Thames Valley it is of infrequent occurrence, but has been met with occasionally near Great Marlow. Mr. A. H. Cocks records one from Harleyford on January 26, 1884 (*in litt.*). The winter of 1917 has greatly diminished the number of Cirl-Buntings; near Tring we have not heard or seen them since.

30 (53). **REED-BUNTING.** *Emberiza schoeniclus schoeniclus* L.

*B. of Berks. and Bucks.* p. 29. *Vict. Hist. of Bucks.* p. 138.

*Resident, but breeding birds wander about in autumn.*

Not rare in suitable places on rivers and reservoirs. Breeds on the Tring and Halton Reservoirs, on the banks of the Thames, Colne, Chess, and Ouse, and in Stowe Park. In winter in small flocks, which haunt stack-yards and high-roads.

Mr. E. E. Pettitt found a nest of this species in June 1905 at Wraysbury, which was placed in the crown of a pollarded willow! He has also on two occasions met with Cuckoos' eggs in Reed-Buntings' nests in the county, both in 1908, in the Colne Valley.

A very remarkable clutch of four eggs, pale blue without any markings, was taken by James Street at Marsworth Reservoir on May 9, 1910, and is now in the Tring Museum.

31 (56). **SNOW-BUNTING.** *Plectrophenax nivalis* (L.).

*Vict. Hist. of Bucks.* p. 138.

*Winter visitor.*

Of somewhat rare and irregular occurrence in winter. The MS. in Dinton Hall mentions its occurrence there on January 8, 1776. Flocks have repeatedly been seen near Aston Clinton, and in 1895 near the Tring Reservoirs. On November 4, 1901, a male was shot at Drayton Lodge, Bucks., between Aston Clinton and Tring, by Mr. Henry Jenney. (February 22, 1894, another male was caught near Tring, between Tring and Aston Clinton, just in Herts.)

Mr. C. H. Emson met with two on Ivinghoe Beacon on November 7, 1903 (*Field*, November 14, 1903, p. 844).

32 (61). **WOODLARK.** *Lullula arborea arborea* (L.).

*B. of Berks. and Bucks.* p. 29. *Vict. Hist. of Bucks.* p. 139.

*Probably resident.*

Local and scarce. Observed in spring and summer near Fulmer, Beaconsfield, Princes Risborough, Halton, and Chequers Court.

33 (62). **SKYLARK.** *Alauda arvensis arvensis* L.

*B. of Berks. and Bucks.* p. 27. *Vict. Hist. of Bucks.* p. 139.

*Resident.*

Common on fields and meadows, from autumn to spring in flocks, which are probably partly composed of continental visitors. Breeds freely both in corn and grass land. An entirely buff-yellow variety was shot in December 1863 at Weston Turville (R. Tyrer, *Zool.* 1864, p. 8957). Such varieties are not rare and have been observed in many other places in England and elsewhere.

34 (67). **TREE PIPIT.** *Anthus trivialis trivialis* (L.).

*B. of Berks. and Bucks.* p. 86. *Vict. Hist. of Bucks.* p. 134.

*Summer resident.*

Not rare in wooded districts from April to September, but far from numerous in the Thames Valley, where, however, a few pairs may be found breeding in the Burnham and Taplow districts.

35 (68). **MEADOW PIPIT.** *Anthus pratensis* (L.)

*B. of Berks. and Bucks.* p. 27. *Vict. Hist. of Bucks.* p. 134.

*Resident and winter visitor.*

Nests in lowland pastures: on the canal banks near the Tring Reservoirs, Halton, Aylesbury, Buckingham, Castlethorpe, Farnham Common, Burnham Beeches, and, according to Kennedy, near Eton. In winter and during migration periods in small flocks near the Reservoirs. In the Thames Valley it is best known as a winter visitor, only a few pairs remaining to breed.

36 (74). **BLUE-HEADED WAGTAIL.** *Motacilla flava flava* L.

*Once observed.*

"In a pasture bordering one of the reservoirs near Tring, on April 29, 1917, my sister-in-law detected a Wagtail differing in colour from the Ray's Wagtails with which it was consorting. As we looked down from the top of the reservoir embankment on the birds running to and fro in the short grass, it was an easy matter to distinguish the stranger by its blue-grey crown and nape, the conspicuous whitish-buff superciliary stripe, the less distinct streak of the same colour through the ear-coverts, and the buff wing-bars. The upper parts and ear-coverts were greyish-brown, the breast and belly pale yellowish-buff passing into bright sulphur-yellow on the under tail-coverts. I cannot say positively to which subspecies of *Motacilla flava* the bird (a hen) belonged, but the blue-grey crown and the pale ear-coverts point to *M. f. flava*, the subspecies, apart from

*M. f. rayi*, most likely to occur" (Chas. Oldham, *Brit. B.* vol. xi. p. 20, 1917). There is also a female in the County Museum, found dying near Aylesbury, June 2, 1911 (Edwin Hollis, *in litt.*).

37 (79). **YELLOW or RAY'S WAGTAIL.** *Motacilla flava rayi* (Bp.).

*B. of Berks. and Bucks.* p. 85 (not 58). *Vict. Hist. of Bucks.* p. 134.

*Summer resident.*

Not a common bird, but more frequent in low-lying meadow land and in the neighbourhood of rivers, such as the Thames and Ouse.

38 (80). **GREY WAGTAIL.** *Motacilla cinerea cinerea* Tunst.

*B. of Berks. and Bucks.* p. 26. *Vict. Hist. of Bucks.* p. 134.

*A breeding species in very small numbers in the Chess Valley, otherwise winter visitor, not common.*

The first mention of the breeding of this species in Bucks by John Gould occurs in Jardine's *Contr. to Ornith.* 1849, p. 137, and is repeated in his *Birds of Great Britain*, vol. iii. p. 49 (1873), where he states that for many years he has been aware of the breeding of the Grey Wagtail in the Chess Valley, and that when the Duke of Bedford "favoured him with a day's fishing," he found the nest on a wall of Mrs. Dodd's beautiful garden, where it always nested. Another pair also bred at Latimer, but in this case he did not find the nest.

R. B. Sharpe, in his articles on the "Birds of Cookham," (*Quart. Mag. High Wycombe Nat. Hist. Soc.* vol. ii. p. 49, 1869), alludes to Gould's discovery of this nest in a rose bush against the wall, and the fact of the male bird being found on the four eggs. He also says that another pair bred at Elliot's Mill, two and a half miles up stream. Clark Kennedy (*l.c.*) was apparently unaware of Gould's observations, but says that a few have been procured on the Thames in summer, though it is better known there as a frequent winter visitor. Bryant Burgess, however, informed him that it bred annually on the banks of the Chess. Hartert did not meet with it at Latimer in 1902, but more recent observations by the Duchess of Bedford and Mr. W. Bickerton show that it still frequents its old haunts at Chenies, near Sarrat Mill, some distance below Latimer, where, however, it was not found in 1918, while no observation took place in 1919.\*

To other parts of the county it is only known as a winter visitor. Mr. C. Oldham states that it frequents the reservoirs, canals, and water-cress beds of North Bucks in small numbers regularly from early September to mid-March. The Rev. H. D. Astley has recorded it from Chequers Court, and it is met with every winter in the Thames Valley.

39 (81). **PIED WAGTAIL.** *Motacilla alba lugubris* Temm.

*B. of Berks. and Bucks.* p. 26. *Vict. Hist. of Bucks.* p. 134.

*Resident, but a good many move southwards in the autumn and return in early spring.*

A common bird, and widely distributed.

\* The breeding-place near Sarrat Mill, close to Chenies, is just a stone's throw or so outside Bucks., in Herts., while Latimer and Chenies are well within the Bucks. boundary.

40 (82). **WHITE WAGTAIL.** *Motacilla alba alba* L.

*B. of Berks. and Bucks.* p. 134.

*Rare on passage ; has apparently once bred.*

On June 17, 1902, Hartert and Arthur Goodson went along the River Chess, near Latimer, in search of the Grey Wagtail. They failed to find the latter, but saw a pair of Wagtails feeding young which seemed to have quite grey backs, and which they took to be *M. alba alba*. A few hundred yards away they observed *M. alba lugubris*. On subsequent visits later in the year and in 1903 and 1904 Hartert failed to see any grey-backed birds. Recently Mr. Chas. Oldham has observed the White Wagtail in spring, though not nesting. On May 5, 1912, he saw one on Wilstone Reservoir ; on May 4, 1913, one with a party of the Yellow (Ray's) Wagtails at Startops End Reservoir ; and on May 3 and 10, 1914, a single one on Wilstone Reservoir.

41 (83). **BRITISH TREE CREEPER.** *Certhia familiaris brittanica* Ridgw.

*B. of Berks. and Bucks.* p. 49. *Vict. Hist. of Bucks.* p. 133.

*Resident.*

Used not to be rare, but has greatly diminished in number since the severe winter of 1917.

42 (86). **BRITISH NUTHATCH.** *Sitta europaea britannica* Hart.

*B. of Berks. and Bucks.* p. 50. *Vict. Hist. of Bucks.* p. 133.

*Resident.*

Not uncommon in well-timbered parts of the county, particularly in Burnham Beeches and Ashridge Park, but somewhat local and not very numerous anywhere.

43 (88). **BRITISH GREAT TIT.** *Parus major newtoni* Prazak.

*B. of Berks. and Bucks.* p. 23. *Vict. Hist. of Bucks.* p. 133.

*Resident.*

Generally the commonest of our Titmice. Though greatly reduced in 1917, increasing again rapidly in numbers.

44 (90). **BRITISH BLUE TIT.** *Parus caeruleus obscurus* Prazak.

*B. of Berks. and Bucks.* p. 24. *Vict. Hist. of Bucks.* p. 133.

*Resident.*

Common, and apparently in many places scarcely less numerous than the Great Tit.

45 (92). **BRITISH COAL-TIT.** *Parus ater britannicus* Sharpe & Dress.

*B. of Berks. and Bucks.* p. 24. *Vict. Hist. of Bucks.* p. 133.

*Resident.*

Fairly common in woods, parks, orchards, and gardens, especially where conifers are grown. Though the species suffered greatly during the severe cold of 1917, it is already increasing remarkably.

46 (97). **BRITISH MARSH-TIT.** *Parus palustris dresseri* Stejn.

*B. of Berks. and Bucks.* p. 25. *Vict. Hist. of Bucks.* p. 133.

*Resident.*

Used to be fairly common, but has become much rarer since the severe frost of 1917. It is, however, increasing again in numbers.

47 (98). **BRITISH WILLOW-TIT.** *Parus atricapillus kleinschmidti* Hellm.

The only record for Bucks of which we are aware is a male, formerly in the collection of H. H. Slater (now in the Tring Museum), shot by him at "Chersley, Bucks, 9.xi.1882." It was, of course, labelled by the collector as "*Parus palustris*," as at that time it was not yet distinguished, but is undoubtedly the present form.

48 (101). **BRITISH LONG-TAILED TITMOUSE.** *Aegithalos caudatus roseus* (Blyth).

*B. of Berks. and Bucks.* p. 25. *Vict. Hist. of Bucks.* p. 133.

*Resident.*

Used to be found in practically all suitable localities, but suffered greatly during the severe frost of 1917. Near the Tring Reservoirs it bred year after year, but has been exterminated in that neighbourhood and not yet seen again.

Prior to 1917 it used also to nest fairly commonly at Burnham Beeches, Ditton Park, etc., but has disappeared almost entirely from that district (E. E. Pettitt). As it is beginning to recover its former status in Berks., it will probably reappear in these localities before long.

49 (103). **BRITISH GOLDCREST.** *Regulus regulus anglorum* Hart.

*B. of Berks. and Bucks.* p. 23. *Vict. Hist. of Bucks.* p. 132.

*Resident.*

Used to be fairly common in suitable localities, but has suffered greatly by the severe frost of 1917, and is now a rare bird. On July 28, 1918, Chas. Oldham heard one singing in the shrubbery at Aston Clinton Park, and another in the park at Ashridge on January 18, 1919—the only two he has come across since the winter of 1916–17. Hartert has only seen a few near Tring, but not yet in Bucks., since 1917. In the south of the county it was formerly not uncommon, breeding in the Thames Valley at many points, but is only just beginning to reappear in small numbers.

50 (104). **FIRECREST.** *Regulus ignicapillus ignicapillus* (Temm.).

*B. of Berks. and Bucks.* p. 173. *Vict. Hist. of Bucks.* p. 132.

*Exceptional winter visitor.*

Mr. Alfred Heneage Cocks informed us in 1902 of a specimen killed by his gardener, in his and his brother's presence, at Great Marlow in the sixties, about 1863. It was mounted and is in Mr. Cocks's possession, but it was only identified as a Firecrest some years after.

According to Kennedy (*l.c.*), two Firecrests were procured near Eton about 1865. This record is rather vague, and as soon after it is stated that a nest with



young, and the two parents, were brought to a Mr. Hasell in 1863, from Windsor Park, and the latter statement cannot be credited, the Eton record can hardly be accepted without caution. In *Trans. Herts. Nat. Hist. Soc.* vol. v. p. 82, it is stated that one was shot in January 1887, presumably at the Reservoirs. This statement, said to have been made on the authority of the then Hon. Walter Rothschild, is evidently erroneous, as all the supposed author remembers is a verbal statement made to him by the late Rev. H. H. Crewe that it had occurred in Ashridge Park.

51 (105). **BEARDED TITMOUSE.** *Panurus biarmicus biarmicus* (L.).

*B. of Berks. and Bucks.* p. 174.

*Exceptional vagrant—one old record.*

On December 21, 1848, a pair, male and female, were shot on Wilstone Reservoir by the Rev. James Williams, of Tring Park. Only these two specimens were observed, and there is no other record of the occurrence of this species (*Zoologist*, 1849, p. 2418.) (About twenty years ago some specimens imported from Holland were released on Wilstone Reservoirs, but they disappeared.)

52 (107). **GREAT GREY SHRIKE.** *Lanius excubitor excubitor* L.

*B. of Berks. and Bucks.* p. 168. *Vict. Hist. of Bucks.* p. 134.

*Irregular and rare winter visitor.*

On January 8, 1778, one was shot near Dinton Hall. A female was shot near Wendover about the middle of November 1854, and a male on November 4 of the same year near Weston Turville (H. H. Crewe, *Zoologist*, 1865, p. 9416). In the winter of 1859–60 a specimen was shot on the banks of the Thames near Clewer, Berks. According to Kennedy (*l.c.*), a male was shot in 1862 near the Almshouses at Stoke, another in the winter 1865–66 on the banks of the Thames near Windsor, a third at Hampden (no date) which was in Bryant Burgess's collection. Mr. A. H. Coeks also reports one shot close to Great Marlow, either in the eighties or early in the nineties. Hartert saw one in October 1895 near Halton. A female was shot by the present Lord Rothschild on the "Flats" close to the Bucks. boundary near Cholesbury, 17.x.1895; a male by a keeper near Long Marston, also close to the boundary, 18.xi.1896; another female caught in a Sparrow-trap at Wilstone Reservoir, 2.ii.1916.

53 (112). **RED-BACKED SHRIKE.** *Lanius collurio collurio* L.

*B. of Berks. and Bucks.* p. 72. *Vict. Hist. of Bucks.* p. 134.

*Summer resident.*

Rather local and less common during the last twelve years or more than it used to be. In Kennedy's time it was common near Eton. Hubert D. Astley found it not rare near Chequers Court; and Hartert has observed it there and near Wendover, Aston Clinton, Aylesbury, Buckingham, Dinton, Newport Pagnell, Castlethorpe, Wingrave, and Aston Abbots, but has not seen it recently near Wendover and Aston Clinton in places where it always used to be in evidence. Near the Reservoirs only about one pair has nested recently. In the Thames Valley it is rather local, but Mr. Pettitt reports a few pairs breeding near Colnebrook, Horton, and Little Marlow.

54 (113). **WAXWING.** *Bombycilla garrulus* (L.).

*B. of Berks. and Bucks.* p. 174. *Vict. Hist. of Bucks.* p. 135.

*Irregular and rare winter visitor.*

Kennedy (*l.c.*) writes: "An immense flock appeared along the eastern shores of our island in the winter of 1849-50, which was very severe, and several specimens were at that time procured in different parishes of Buckinghamshire. I am indebted to the Rev. Bryant Burgess for the notice of a Bohemian Waxwing which was killed at Ivinghoe Aston in January 1850, and which is now in his collection. An immense number of Bohemian Waxwings were shot in the neighbourhood of Buckingham during the spring of 1867, as Mr. J. W. Thorpe told me."

[In *Trans. Herts. Nat. Hist. Soc.* vol. v. p. 82, in a list of birds supposed to have occurred on the Reservoirs, it is stated that a Waxwing was "obtained in March 1883." Unfortunately this statement, made on the authority of the Hon. Walter Rothschild, cannot now be verified, as we cannot trace the specimen. In the *Vict. Hist. of Herts.* p. 201, it is said that "the first Hertfordshire specimen of the Waxwing was shot about a mile from Tring on the Aylesbury road, about 1851." As the Bucks boundary is very little more than a mile from Tring, this may almost be regarded as a Bucks record.]

55 (114). **SPOTTED FLYCATCHER.** *Muscicapa striata striata* (Pall.).

*B. of Berks. and Bucks.* p. 74. *Vict. Hist. of Bucks.* p. 135.

*Summer resident.*

Common everywhere in parks, large old gardens, and certain woods.

The blue unspotted type of egg has been found near Slough (H. H. Vyse, *Zool.* 1890, p. 352, and *Field*, August 16, 1890, p. 250).

56 (116). **PIED FLYCATCHER.** *Muscicapa hypoleuca hypoleuca* (Pall.).

*B. of Berks. and Bucks.* p. 169. *Vict. Hist. of Bucks.* p. 135.

*Probably occasional summer resident.*

The records for Bucks. are very few. According to Morris one was killed "many years ago" in the county, in the south-east, not far from Uxbridge. H. J. Elwes informed Kennedy of a well-authenticated nest taken near Eton in the summer of 1860. Mr. Heatley Noble, *in litt.*: "A nest with six eggs was taken on my late father's property, Berry Hill, Taplow, in June, 187- (the exact year cannot be given). The female was unfortunately killed on the nest." Mr. H. Heneage Cocks, *in litt.*, says: "On May 12, 1883, our gardener at Great Marlow saw in our orchard a bird with white on the wings, which, from its movements and other habits, must have been a Flycatcher. He said it looked somewhat like a female Chaffinch, but the beak was different. Sir J. A. Godley, K.C.B., reported several years before having seen one specimen there. Two days afterwards the gardener saw evidently the pair, but though I watched for them repeatedly I did not see them, nor were they ever seen again." On May 10, 1901, Hartert heard the song and observed a male in the park of Mentmore. In June of the same year he found no trace of these birds, nor ever afterwards.

Mr. Edwin Hollis, while fishing at Hartwell, August 22, 1919, saw a male Pied Flycatcher. It was quite clearly recognized, as it sat within 8 or 10 feet of the observer for several minutes.

57 (119). **CHIFFCHAFF.** *Phylloscopus collybita collybita* (Vieill.).*B. of Berks. and Bucks.* p. 85. *Vict. Hist. of Bucks.* p. 132.*Summer resident and autumn migrant.*

Common in all suitable localities. From February 10 to 18 a Chiffchaff frequented some willows on Wilstone Reservoir. (See *Brit. B.* vol. vi. p. 313.)

In the Thames Valley it is generally distributed, and Mr. Pettitt notes it as especially numerous in Ditton Park.

58 (122). **WILLOW-WARBLER.** *Phylloscopus trochilus trochilus* (L.).*B. of Berks. and Bucks.* p. 84. *Vict. Hist. of Bucks.* p. 132.*Summer resident and passage migrant.*

Generally distributed and hardly absent from any suitable localities.

59 (125). **WOOD-WREN or WOOD-WARBLER.** *Phylloscopus sibilatrix sibilatrix* (Bechst.).*B. of Berks. and Bucks.* p. 84. *Vict. Hist. of Bucks.* p. 132.*Summer resident.*

The Wood-Wren occurs from April to September in beech and oak woods, in the Chilterns and near Brickhill. In the Thames Valley it is decidedly scarce and entirely absent from the greater part of the district. Mr. Crossman, however, states that it was formerly fairly plentiful in Burnham Beeches and in the woods between that place and Ashley Green; but Mr. Pettitt has failed to meet with it breeding. A few pairs, however, haunt the woods near the western boundary where the county is more hilly.

[**SAVI'S WARBLER.** *Locustella luscinioides luscinioides* (Savi).]*B. of Berks. and Bucks* p. 172.

In the *Zoologist*, 1867, p. 704, Lord Clifton published a note saying that he believed that he had observed a Savi's Warbler in a low hedge near Eton, but his description of the bird he saw is by no means convincing; in fact the statement cannot be accepted. As is well known, the species was formerly a summer resident in Norfolk, Cambridgeshire, and Huntingdon, but, except for a single bird obtained on Fair Isle (!) in 1908, has not been proved to occur since 1856.

Another rather vague record appeared in Saunders' *Manual Brit. B.* ed. ii. p. 92 (1899), as follows: "There is some evidence that this species was noticed in May 1897, in the Humber district, as well as near Olney, Bucks." The latter statement refers to an observation by Mr. C. J. Wilson, M.B.O.U., who kindly wrote to Hartert that he is fully convinced that the "Savi's Warbler is a just record," because he was close to the bird for some minutes, and the locality, the appearance, and the note of the bird were all in favour of its being *L. luscinioides*.]

60 (133). **GRASSHOPPER-WARBLER.** *Locustella naevia naevia* (Bodd.).*B. of Berks. and Bucks* p. 78. *Vict. Hist. of Bucks.* p. 132.*Summer resident.*

Rather rare. The only certain localities we know of are: on the foot of the hills east of Halton (heard and seen by Arthur Goodson and Ernst Hartert),

Aylesbury (eggs seen by Hartert), Mentmore (heard by Hartert), Castlethorpe (observed by the late Lionel Wiglesworth), Farnham Common (observed by Alan Crossman), Chesham and High Wycombe (teste Kennedy), Drayton Beauchamp (Kennedy, probably from information of Harpur Crewe). In the Thames Valley it is a rare visitor, but Mr. E. E. Pettitt discovered a nest with five eggs at Hythe End in May 1894. Breeding also took place there in 1904, as well as at Wraybury in 1919. Mr. Pettitt notes the arrival of this species in the county on April 22, 1895, April 19, 1900, April 21, 1905, and April 30, 1910. In 1919 a pair nested close to Marsworth Reservoir, and the nest was found by Mrs. Oliver Pike, and some beautiful photographs taken by her husband. Mr. Pike is convinced that there were two pairs, but only one nest was found. The Grasshopper-Warbler had not occurred in this place during the last twenty-five years or more.

61 (136). **REED-WARBLER.** *Acrocephalus scirpaceus* scirpaceus (Herm.).

*B. of Berks. and Bucks.* p. 80. *Vict. Hist. of Bucks.* p. 132.

*Summer-resident.*

Very common on the Marsworth, Wilstone, and Halton (Weston Turville) Reservoirs, and also on the Rivers Thames, Colne, Chess, and Ouse, wherever reeds abound. On the Tring Reservoir the Reed-Warbler is the usual and apparently only foster-parent of the Cuckoo, and all Cuckoo's eggs found there for the last twenty-five years are of much the same type, of course with some variations.

Along the Thames and Colne Valleys it breeds commonly, as well as on the pond at Burnham Beeches. Mr. Pettitt has on two occasions found two Cuckoo's eggs in a Reed-Warbler's nest in Bucks.

For a note on unusually early nesting of this species at the Tring Reservoirs, see *Brit. Birds* (mag.), vol. ix. p. 48.

62 (137). **MARSH-WARBLER.** *Acrocephalus palustris* (Bechst.).

*Bred in 1909.*

(In *Trans. Herts. Nat. Hist. Soc.* vol. v. p. 76, it was stated, on the authority of the Hon. Walter Rothschild, that a Marsh-Warbler was shot near the Marsworth Reservoir in August 1883, and was in the Tring Park collection. This statement seems to be due to an error in identification of a young Reed-Warbler.)

At the time of the publication of the *Vict. Hist. of Bucks.* this species had not been ascertained to breed in the county. In 1909 Mr. G. W. Kerr, who had previously discovered the Marsh-Warbler breeding in Surrey, was fortunate in discovering a nest with two eggs of this species, and also one of the Cuckoo in a dense nettle-bed not far from Magna Charta Island on June 14. The nest was about 12 yards from the river on firm ground, woven round two nettle stems, and about 18 in. from the ground in the parish of Wraybury. (The locality in Surrey where the nest was found in 1907 is only a few miles south of the county boundary, and about five miles distant from where the birds were found breeding in 1909.) Subsequently Mr. E. E. Pettitt found a second nest at Wraybury in the same nettle-bed, containing four Marsh-Warbler's eggs and one of the Cuckoo, on June 30, 1909, but the Cuckoo's egg was of a different type to that found on June 14 (*Zool.* 1909, p. 397).



63 (139). **SEDGE-WARBLER.** *Acrocephalus schoenobaenus* (L.).

*B. of Berks. and Bucks.* p. 78. *Vict. Hist. of Bucks.* p. 132.

*Summer resident.*

The Sedge-Warbler is generally distributed in the valleys, in the neighbourhood of rivers, ditches, reservoirs and ponds, sometimes in thickly over-grown hedgerows quite a distance from water. Yarrell states that a single specimen was observed near High Wycombe in winter, without giving full date. Such a statement is hardly acceptable without proof, but curiously enough there are other statements of the occurrence of Sedge-Warblers in winter.

64 (145). **GARDEN-WARBLER.** *Sylvia borin* (Bodd.).

*B. of Berks. and Bucks.* p. 82. *Vict. Hist. of Bucks.* p. 131.

*Summer resident.*

In similar places to the Blackcap, but far less common. Crossman and Hartert have observed it near Chesham, Beaconsfield, Burnham Beeches, Halton, Aylesbury, Buckingham, Mentmore, Ashridge Park, Castlethorpe, and Newport Pagnell; but it occurs doubtless in many other places. In the Thames Valley it breeds in suitable spots, but in far smaller numbers than the Blackcap. Mr. E. E. Pettitt found a nest in Ditton Park which contained a young Cuckoo about four days old on June 5, 1906.

65 (146). **BLACKCAP.** *Sylvia atricapilla atricapilla* (L.).

*B. of Berks and Bucks.* p. 82. *Vict. Hist. of Bucks.* p. 131.

*Summer resident.*

Common in parks, woods with undergrowth, gardens and spinneys. Generally arrives end or middle of April, but Hartert has heard it in full song on April 10, near Wilstone Reservoir.

66 (147). **WHITETHROAT.** *Sylvia communis communis* Lath.

*B. of Berks. and Bucks.* p. 83. *Vict. Hist. of Bucks.* p. 131.

*Summer resident.*

Common in suitable localities, such as hedgerows, commons, edges of woods, and some gardens.

67 (148). **LESSER WHITETHROAT.** *Sylvia curruca curruca* (L.).

*B. of Berks and Bucks.* p. 83. *Vict. Hist. of Bucks.* p. 131.

*Summer resident.*

The Lesser Whitethroat is generally less numerous than the Whitethroat, but not a rare bird. It is curious that it should be so much more plentiful in Middlesex than in the adjoining parts of Bucks.

68 (155). **FIELDFARE.** *Turdus pilaris* L.

*B. of Berks. and Bucks.* p. 105. *Vict. Hist. of Bucks.* p. 130.

*Winter visitor.*

Arrives usually in October or even November, but there are records by Lord Rothschild and others for September; getting scarcer from end of March, and



usually leaving before the end of April, but Crossman mentions (*Vict. Hist. Herts.* p. 196) some seen at Great Gaddesden, on the boundary of Herts. and Bucks., on May 8, 1887.

69 (156). **MISTLE-THRUSH.** *Turdus viscivorus viscivorus* L.

*B. of Berks. and Bucks.* p. 12. *Vict. Hist. of Bucks.* p. 129.

*Resident.*

Common in woods and parks over the greater part of the county, but not in any great numbers in the Thames Valley.

70 (157). **BRITISH SONG-THRUSH.** *Turdus philomelos clarkei* Hart.

*B. of Berks. and Bucks.* p. 13. *Vict. Hist. of Bucks.* p. 129.

*Common resident.*

The British Song-Thrush is even more numerous than the Blackbird, and stays in Bucks. throughout the year, but a fair number pass through in the autumn, and some in the spring, evidently from higher ground in the north of England and Scotland. We have not been able to detect a specimen of the Continental Song-Thrush among them. The number of Song-Thrushes diminished very greatly in the severe winter of 1917, and though they have increased again considerably in numbers, they are still far behind their strength of before 1917.

In the Newton collection at Cambridge is a clutch of four eggs of this species, taken near Stoke in May 1861, in which the ground-colour is perfectly white, with the usual markings. They were at first recorded as eggs of the Golden Oriole. See *Ootheca Wolleyana*, vol. ii. p. 288, and *Field*, May 25, 1861, p. 451.

71 (159). **REDWING.** *Turdus musicus* L. 1758.

[*Turdus iliacus* L. 1766, of most authors.]

*B. of Berks. and Bucks.* p. 106. *Vict. Hist. of Bucks.* vol. i. p. 130.

*Common winter visitor.*

Generally arriving about the middle of October and leaving towards end of March. Mr. Heneage Cocks formerly reported a specimen shot at Harleyford on July 28, 1871, and Mr. E. Burton Durham records one picked up in September 1913 at Chesham Bois (*Field*, September 27, 1913).

On March 11, 1906, Mr. A. H. Cocks met with an enormous flock of this species resting in some meadows near Skirmett. The birds were thickly distributed over eight acres of grass land, so that allowing for one bird to each square yard, there must have been over 38,000 birds present!

In the cold winter of 1917 all or nearly all Redwings which were in the county at that time perished; but in the following winter, though scarcer than usual, more Redwings were seen than Fieldfares. The cold winter of 1854, according to the *Field*, also destroyed Redwings and Fieldfares "by tens of thousands." In 1918 Redwings were generally very scarce. Hartert saw none until March, when he came to a place—a shrubbery of evergreens—where hundreds were roosting. In 1919 they were probably about as common as before the severe frost, and hundreds came to roost in the same place as the winter before, at least from January to March.

72 (162). **RING-OUZEL.** *Turdus torquatus torquatus* L.

*B. of Berks. and Bucks.* p. 136. *Vict. Hist. of Bucks.* p. 130.

*Passage migrant.*

Kennedy (*l.c.*) mentions a specimen shot at Risborough "in the spring" of 1840, and another observed by Burgess in his garden at Latimer, September 9, 1862, when specimens were also seen near Dundry and Wendover. In *Trans. Herts. Nat. Hist. Soc.* vol. v. p. 82, specimens supposed to have been killed in July 1886, and in October of the same year, are mentioned. The former statement is probably incorrect, being from hearsay or recollection. In 1865 a male was killed near Burnham, and the Rev. H. H. Crewe observed specimens near Drayton Beauchamp, both in spring and autumn. Mr. A. H. Coeks informed Hartert, *in litt.*, that one was shot near Chequers Court about 1878, and another at Stoke Mandeville "at least as long ago as 1887." The Rev. Hubert Astley has several times observed Ring-Ouzels amongst the juniper bushes near Wendover and Chequers Court. In the Tring Museum is a ♂ shot at Wingrave 4. xi. 1896, while others have been observed in autumn, and two shot near Tring, September 14, 1893. Mr. E. E. Pettitt saw one on the Middlesex border, near Stanwell Moor, on April 1, 1907 (*in litt.*).

73 (164). **BLACKBIRD.** *Turdus merula merula* L.

*B. of Berks. and Bucks.* p. 14. *Vict. Hist. of Bucks.* p. 130.

*Common resident.*

Certainly one of the commonest birds in the county, and a great nuisance to the fruit grower, making the growing of strawberries almost impossible, unless the beds are netted.

74 (167). **GREENLAND WHEATEAR.** *Oenanthe oenanthe leucorrhoa* (Gm.).

*Passage migrant.*

This not uncommon passage migrant passes probably through Buckinghamshire in numbers, as there are in the Tring Museum three rather typical specimens shot in the neighbourhood of Tring: ♂ 20. iv. 1893, ♂ 12. iv. 1894, ♂ juv. 28. ix. 1896.

75 (166). **WHEATEAR.** *Oenanthe oenanthe oenanthe* (L.).

*B. of Berks. and Bucks.* p. 76. *Vict. Hist. of Bucks.* p. 130.

*Summer resident.*

Apparently less frequent than it used to be. Kennedy (*l.c.*) talks of it as "extremely numerous in summer" near Eton, where "a few nests are taken on the commons every year." The Rev. Hubert D. Astley found it regularly breeding on the slopes of Coombe Hill, near Wendover, and on chalk hills above Princes Risborough, in the vicinity of Whiteleaf Cross. Arthur Goodson saw it in June near Buckingham. It used to breed on the bare slopes to the north-east of Tring Station (in Bucks), towards Ivinghoe Beacon, but has not bred there for at least eight or ten years, nor on the hills near Halton, where it nested regularly some twenty years ago. Mr. C. Oldham saw twice, in 1913 and 1916, old birds feeding young just out of the nest on Beacon Hill, near Wendover. Otherwise he has

only observed Wheatears as passage migrants from the middle of March to the end of April, and again by the end of August. In the spring they are often observed near the Reservoirs, on passage, chiefly in April. On May 4, 1913, Oldham saw a male on the banks of Wilstone Reservoir which flew into a chestnut tree; this is unusual, but Hartert has seen Wheatears sitting on bushes and fruit trees in the oasis of El-Golea in the Sahara.

It is probable that a number of the passage migrants are Greenland Wheat-ears.

76 (176). **BRITISH STONECHAT.** *Saxicola torquatus hibernans* (Hart.).

*B. of Berks. and Bucks.* p. 21. *Vict. Hist. of Bucks.* p. 130.

*Local resident, but most birds leave their breeding-grounds in winter.*

In the Dinton Hall MS. recorded as being shot November 15, 1774. Now rather local, but one or more pairs nest on most of the commons, where gorse (furze) abounds. Mr. Oldham observed a pair on Cholesbury Common throughout the winter of 1917-18, where they mostly leave their nesting-grounds for the winter. Stonechats, on the other hand, often frequent the rushy margins of the Tring Reservoirs in winter, and Oldham observed a pair at Wilstone Reservoir throughout the winter of 1909-10, and again through the winter of 1910-11. Hartert saw them there two or three times in February and March, 1915 and 1917. A few pairs breed in the south of the county: Mr. E. E. Pettitt has noticed two or three pairs at Burnham Beeches, and several pairs also breed near the Stanwell Reservoirs.

77 (175). **WHINCHAT.** *Saxicola rubetra rubetra* (L.).

*B. of Berks. and Bucks.* p. 76. *Vict. Hist. of Bucks.* p. 130.

*Summer resident.*

Somewhat locally distributed, and rare or absent from the hills and drier districts, but regularly breeding along the Thames Valley, though not in any numbers, also by the Ouse, Chess, in the Vale of Aylesbury, and in the north of the county.

(A supposed occurrence of this species in winter, recorded in the *Field* for February 4, 1911, p. 230, is probably attributable to a hen Stonechat.)

78 (178). **COMMON REDSTART.** *Phoenicurus phoenicurus phoenicurus* (L.).

*B. of Berks. and Bucks.* p. 75. *Vict. Hist. of Bucks.* p. 131.

*Summer resident.*

The Redstart is generally not rare, but appears to be scarce on the Chiltern Hills and uncommon in the beech woods, though more frequent in the neighbourhood of rivers, on the River Ouse, near Newport Pagnell, Castlethorpe, on the Chess and Thames, and breeds also in Stowe Park and Buckingham, near Aylesbury and Halton, Chequers Court, Burnham Beeches, Mentmore, Amersham, and doubtless many other places.

79 (179). **BLACK REDSTART.** *Phoenicurus ochrurus gibraltariensis* (Gm.).

*B. of Berks. and Bucks.* p. 171.

*Exceptional visitor.*

Kennedy (*l.c.*) mentions a specimen observed near Cookham, in Berks., not far from Bucks., but the evidence appears to be somewhat inconclusive. Mr. A. H. Coeks reports one as seen near Wooburn on June 11, 1909, a remarkable date for the appearance of this species. On November 6, 1915, however, Chas. Oldham observed a female or male of the year on the embankment of the Wiltstone Reservoirs, a few hundred yards from the Bucks boundary. "At times the bird sought for food like a Robin on the sward which tops the embankment, but it fed mostly among the stones, and made frequent little sallies into the air to snatch insects, rising sometimes five or six feet above the ground. Twice whilst I watched it, visits were paid to an adjacent orchard, but the bird was back again in a minute or two on the embankment, where it seemed to find the best hunting" (Oldham, *Brit. B.* vol. ix. p. 185, 1915).

(A supposed ease of breeding near Windsor, reported in the *Zoologist*, 1916, p. 237, is probably attributable to the Redbreast, *t.c.* p. 421.)

80 (180). **NIGHTINGALE.** *Luscinia megarhyncha megarhyncha* Brehm.

*B. of Berks. and Bucks.* p. 81. *Vict. Hist. of Bucks.* p. 131.

*Summer resident.*

Generally absent from the hills and drier beech woods, but found in many places in the low-lying fertile districts, in the neighbourhood of water.

They used to breed in the neighbourhood of the Reservoirs about twenty-five and twenty years ago, but have disappeared from there.

As a rule this species is fairly well distributed in the Thames valley, and locally common. In 1917 Mr. Pettitt found it very scarce.

J. Macmeikan reports the arrival of the Nightingale on March 29, 1874, an extraordinarily early date, and barely credible (*Field*, April 22, 1876, p. 464).

81 (185). **BRITISH ROBIN.** *Erithacus rubecula melophilus* Hart.

*B. of Berks. and Bucks.* p. 18. *Vict. Hist. of Bucks.* p. 131.

*Common resident.*

We have never seen the continental Robin (*E. rubecula rubecula*) in the county and have not observed any migration. Of the many unusual nesting-sites that have been recorded, one of the most unusual ones—and not, we should say, beneficial to the books—is that of a pair which nested till recently, year after year, on bookshelves in a house near Amersham.

82 (188). **BRITISH HEDGE-SPARROW.** *Prunella modularis occidentalis* (Hart.).

*B. of Berks. and Bucks.* p. 17. *Vict. Hist. of Bucks.* p. 133.

*Common resident.*

Found in every suitable locality. A perfectly white specimen, which had been noticed for eight months previously, was captured on its nest near Tring in April 1848 (H. H. Crewe, *Zool.* 1848, p. 2143).



83 (189). **WREN.** *Troglodytes troglodytes troglodytes* (L.).

*B. of Berks. and Bucks.* p. 49. *Vict. Hist. of Bucks.* p. 133.

*Common resident.*

Found everywhere in woods, parks, orchards, gardens, and hedgerows.

84 (193). **DIPPER.** *Cinclus cinclus britannicus* Tschusi.

*B. of Berks. and Bucks.* p. 170. *Vict. Hist. of Bucks.* p. 133.

*Exceptional visitor.*

According to Yarrell it has occurred on the Colne near Wraysbury, on the Bucks border. Gould (*B. of Great Britain*, vol. ii. p. 41) says he has known of a solitary individual that had been killed on the River Chess. The Rev. H. Harpur Crewe observed one on the canal near Drayton Beauchamp (Kennedy, *l.c.*).

T. Marshall, in a note on the occurrence of the Dipper in Hants., says that a Dipper frequented the upper waters of the River Wick, above High Wycombe, for two or three months in the autumn of 1894" (*Field*, December 3, 1898, p. 897).

As Bucks is not a county with rapidly running mountain streams, the Dipper can never be anything else than an exceptional visitor, the River Chess alone approaching the type of stream suited to it, and that only in a few places.

85 (195). **SWALLOW.** *Hirundo rustica rustica* L.

*B. of Berks. and Bucks.* p. 88. *Vict. Hist. of Bucks.* p. 135.

*Common summer resident.*

Usually arriving in April, but in 1915 four were observed on the Tring Reservoirs from March 26 to 31. The present Lord Rothschild has recorded the hatching of one or more white Swallows together with normally coloured ones from 1891 to 1895, in Aylesbury, evidently the offspring of one pair (see NOVITATES ZOOLOGICAE, vol. i. p. 667, and vol. ii. p. 484).

86 (197). **HOUSE-MARTIN.** *Delichon urbica urbica* (L.)

*B. of Berks. and Bucks.* p. 90. *Vict. Hist. of Bucks.* p. 135.

*Summer resident.*

Common, though absent from many apparently suitable villages. Supposed to diminish steadily, but numbers fluctuate—though rather fewer appear in some years, more are seen again in subsequent years.

Does not, as a rule, arrive before April, but has been seen near Eton during the last week of March. Mr. Alfred Heneage Cocks observed an extraordinary number, he thought "about a million" (?), over the river and pool at Great Marlow, about 4 to 5 p.m. on September 18, 1896, and several hundreds on October 7, 1889. An old bird and two young were seen by the same observer on November 13, 14, and 15, 1889; and one is recorded from Eton on November 20, 1869 ("R. S.," *Field*, November 27, 1869, p. 458). The Rev. H. Harpur Crewe saw a Martin at Hartwell, near Aylesbury, on December 5, 1874 (*Zool.* 1878, p. 3833).



87 (198). **SAND-MARTIN.** *Riparia riparia riparia* (L.).

*B. of Berks. and Bucks.* p. 90. *Vict. Hist. of Bucks.* p. 136.

*Summer resident.*

Not rare; always to be seen on the Tring Reservoirs in summer, though we have not found their breeding-place anywhere near.

A white Sand-Martin is recorded by T. Marshall as having been shot on the Thames, near Marlow Road, August 20, 1867 (*Quart. Mag. High Wycombe Nat. Hist. Soc.* No. vi. p. 146).

88 (200). **SWIFT.** *Apus apus apus* (L.).

*B. of Berks. and Bucks.* p. 91. *Vict. Hist. of Bucks.* p. 139.

*Summer resident.*

Common everywhere. Swifts leave in bulk before the end of August, but sometimes, though quite exceptionally, some are seen as late as October or even November. It is sometimes suggested that these are migrants from Scandinavia, but this must be erroneous, because the most northerly breeding birds leave first for the south.

(For the last six years Swifts left the neighbourhood of Tring during the night from the 8th to the 9th of August, in 1919 leaving young in some nests to die.)

89 (202). **NIGHTJAR.** *Caprimulgus europaeus europaeus* L.

*B. of Berks. and Bucks.* p. 92. *Vict. Hist. of Bucks.* p. 139.

*Summer visitor.*

In suitable places by no means rare. It was, according to Kennedy, common in the woods near Beaconsfield, and is so still. It is also more or less regularly found, in summer, near Buckingham, Newport Pagnell, Bletchley, Aylesbury, Halton, Wendover, St. Leonards, Coombe Hill and Chequers Court, Princes Risborough, Burnham Beeches, Marlow, and the Hambleden district, and on the outskirts of Ashridge Park.

90 (206). **HOOPOE.** *Upupa epops epops* L.

*B. of Berks. and Bucks.* p. 179. *Vict. Hist. of Bucks.* p. 140.

*Irregular spring and autumn visitor; one breeding record.*

On account of its conspicuous plumage this bird is generally shot soon after its arrival, and our records of occurrences go back for a century and a half. The Dinton Hall MS. has excellent figures of two birds with the following note appended: "Hoop or Dung Bird. Shot by William Lee of Ford, 1760. The vulgar in country esteem it a forerunner of some calamity. It visits these islands frequently, but not at stated seasons, neither does it breed with us."

About 1828 one was shot near Eton Wick and brought to John Gould, being one of the first birds preserved by him. Kennedy also mentions one shot at Lacey Green in 1838 as being in the collection of the Rev. B. Burgess, who also informed him of a fourth, killed at Aston Abbots in 1851.

One was seen by the Hon. G. F. Berkeley at West Wycombe in April 1859 (R. B. Body, *Field*, May 7, 1859, p. 364), while another was wounded and captured alive at Burnham Gore, near Maidenhead, on May 3 (I. Ingatton, *Field*, loc. cit.). Kennedy also mentions one caught at Eton about 1860 or 1861, which lived for

about two years in confinement and became very tame. A female was shot at Stewkley on April 24, 1862 (H. J. Jones, *Field*, May 3, 1862, p. 387). Another, killed about two miles from Buckingham in 1867, is recorded by Kennedy, who also states that specimens have been captured "more recently" near Chesham, but gives no date.

In 1888 one was shot, presumably in April, on the Chilterns near Wendover (E. C. Odling, *Field*, April 14, 1888, p. 536); and in the following year W. Tomalin records one shot at Lavender Park Farm on November 21 (*Field*, November 30, 1889, p. 777).

All the above records probably relate to birds on spring or autumn migration, and no evidence of breeding in the county was forthcoming till 1916, when Mr. C. E. J. Hannett, in a letter to the *Selborne Magazine*, 1916, p. 93, stated that a pair had actually bred near Taplow in that year and had apparently reared at least one young bird. They were repeatedly seen in early spring by Mr. and Mrs. W. R. Dunstan, in a rather secluded garden, but were not disturbed and the nest was not found. Towards the end of the third week in May a single young bird was seen by Mr. Dunstan in company with its parents. It was actually caught by him, and described as about the size and weight of a good-sized Thrush. The birds disappeared shortly before June 25, but the two parents were again seen on July 5.

91 (208). **KINGFISHER.** *Alcedo atthis ispida* L.

*B. of Berks. and Bucks.* p. 52. *Vict. Hist. of Bucks.* p. 140.

*Resident.*

The Kingfisher is still regularly to be found on most streams and reservoirs. Though not particularly numerous, it is always to be seen on the Tring Reservoirs, in Stowe Park, and commonly on the Thames. It must have once been quite numerous, and would be commoner now if it were not so often shot without object or reason. A. R. Cocks tells us (*Zoologist*, 1891, p. 154) that a bird-stuffer at Great Marlow had *nearly a hundred* specimens to stuff in the year 1890.

92 (209). **BRITISH GREEN WOODPECKER.** *Picus viridis pluvius* Hart.\*

*B. of Berks. and Bucks.* p. 43. *Vict. Hist. of Bucks.* p. 139.

*Resident.*

Not rare wherever there are sufficiently old trees for them to nest in, but of course absent from treeless tracts. It seems, however, to become scarce on the lower ground in the eastern part of the Thames Valley, though fairly numerous in the beech woods of the western part.

93 (211). **BRITISH GREAT SPOTTED WOODPECKER.** *Dryobates major anglicus* (Hart.).

*B. of Berks. and Bucks.* p. 44. *Vict. Hist. of Bucks.* p. 139.

*Resident.*

Apparently formerly more numerous than nowadays. Now very scarce in the Chilterns and Mid-Bucks generally, but evidently less rare in South Bucks.

\* Recent examination of larger series by Witherby and Hartert make it very doubtful if this race can be separated, and it may be necessary to abandon it and call the British Green Woodpecker *Picus viridis virescens* Brehm, which appears to be the correct name of the Central European form, "*pinetorum*" being preoccupied.—E. H.

In North Bucks it has been noticed at Stowe Park and Castlethorpe. Mr. Pettitt records it as breeding at Burnham.

[**BLACK WOODPECKER.** *Dryocopus martius martius* (L.).

Kennedy (*B. of Berks and Bucks*, p. 178) says: "In March 1867, while walking under some elms in Ditton Park, I saw a great Black Woodpecker busily engaged on one of the tallest trees within a short distance of me. I was sufficiently near to identify the bird with certainty, and had an opportunity of observing its movements for the space of half a minute, when it flew off with an undulating flight to a considerable distance, and was seen no more."]

94 (212). **BRITISH LESSER SPOTTED WOODPECKER.** *Dryobates minor comminutus* (Hart.).

*B. of Berks. and Bucks.* p. 44. *Vict. Hist. of Bucks.* p. 139.

*Resident throughout the year.*

Though nowhere actually numerous, probably occurring in most of our larger parks, woods, and orchards.

95 (213). **WRYNECK.** *Jynx torquilla torquilla* L.

*B. of Berks. and Bucks.* p. 86. *Vict. Hist. of Bucks.* p. 139.

*Summer visitor.*

Regular summer visitor, but has recently decreased in number, at least in eastern and southern Bucks. Crossman found it common near Farnham and Burnham. A pure white specimen, a young bird of the year, was killed in September 1877 in the grounds of Wendover Hall and brought to H. Harpur Crewe on October 23. It is now in the Calke Abbey collection (*Zool.* 1878, p. 29).

Mr. C. Wolley-Dod reports the arrival of this species at Eton on April 2, 1876, an early date (*Field*, April 8, 1876, p. 414), but "H. M. B." states that in 1911 it was heard at Eton on March 13 (*Field*, March 18, 1911, p. 538). Some interesting notes on the nesting habits of the Wryneck, as observed at High Wycombe by R. C. Priestley, will be found in *Wild Life*, vol. ix. p. 268.

96 (214). **CUCKOO.** *Cuculus canorus canorus* L.

*B. of Berks. and Bucks.* p. 87. *Vict. Hist. of Bucks.* p. 140.

*Common summer visitor.*

Cuckoos appear to be more or less common everywhere. Near the Tring Reservoirs, where they seem to lay exclusively in the nests of the Common Reed-Warblers, they are numerous.

In the Thames Valley the Reed-Warbler is also a common foster-parent. Mr. E. E. Pettitt has met with eggs or young in the nests of the following species in this district: Marsh-Warbler (two cases), Garden-Warbler (one), and Reed-Bunting (two), in addition to the ordinary foster-parents. He also obtained eleven eggs which were obviously the produce of a single female in one season (*Wild Life*, vol. vi. pp. 56-60, 92-7).

[SNOWY OWL. *Nyctea nyctea* (L.).

In the *Zoologist*, 1916, p. 313, Mr. A. Heneage Cocks gives full details of a Snowy Owl seen by him and others, on July 31, 1912, at Yewdon Manor, Hambleton. When first seen it was seated on a sycamore tree in a hedgerow, but took wing, and after croaking hoarsely passed within 80 yards of the observer. On August 2 it was again seen by Mr. L. Deane, and two or three days later by Mr. Deane, sen., the bird passing within 8 or 10 yards of him. There seems to be no doubt as to the identity of the bird, but the date points to the bird having escaped from captivity. It is, however, worth noting that genuinely wild birds have occasionally been met with in summer: *e.g.* one is recorded from Elgin on June 18, 1917 (*Seott. Naturalist*, 1918, p. 274).]

97 (222). LITTLE OWL. *Athene noctua mira* With.

*Athene noctua mira* With., *Brit. B.* xiii. p. 283 (1920—Holland, etc.).  
*Vict. Hist. of Bucks.* p. 141.

*Recently introduced, now common resident.*

Since 1890 Little Owls have been captured and reported from various parts of Bucks, and during the last eight or ten years have become quite common. All these are probably the offspring of the Little Owls introduced into Northamptonshire by the late Lord Lilford, from Holland. Lord Rothschild also released a number in Tring Park, but they almost, if not altogether, disappeared, and it is only recently that this species has become common in the neighbourhood of Tring. In the south of the county it has now become plentiful, being perhaps attracted by the suitable breeding-sites provided by the old willows near the river.

Among the earlier records of occurrences, which illustrate the gradual spread of this species, may be mentioned the following: one at Turville, January 1894 (C. J. Barnett, *Field*, May 26, 1894, p. 735); one at Fingest (T. Marshall, *Field*, January 30, 1897, p. 135); Bletchley, 1902; and Fulmer, November 20, 1911 (H. H. Vyse, *Field*, December 2, 1911, p. 1234).

98 (224). LONG-EARED OWL. *Asio otus otus* (L.).

*B. of Berks. and Bucks.* p. 5. *Vict. Hist. of Bucks.* p. 140.

*Resident.*

Not numerous, but breeds regularly in woods and large parks, as for example in Burnham Beeches and Fulmer (Clark Kennedy); the Chiltern Hills, at Beaconsfield; Ashridge Park (H. H. Crewe); and Mentmore Park. Sometimes congregates in considerable numbers; in a wood to the west of Tring. Rothschild and Hartert saw probably not less than forty on one day in autumn, when Pheasant-shooting.

99 (225). SHORT-EARED OWL. *Asio flammeus flammeus* (Pontopp.).

*B. of Berks. and Bucks.* p. 104. *Vict. Hist. of Bucks.* p. 140.

*Autumn and winter visitor.*

Though not rare, of irregular occurrence, being apparently absent in some seasons, and not found every winter anywhere. Generally met with more



frequently in the low-lying districts, such as the neighbourhood of Drayton Beauchamp, Marsworth, Long Marston (near the Reservoirs), and chiefly in October and November, but also in fields on the Chiltern Hills.

[**SCOPS-OWL.** *Otus scops scops* (L.).

*B. of Berks. and Bucks.* p. 166. *Vict. Hist. of Bucks.* p. 141.

A. and H. Matthews wrote in the *Zoologist*, 1849, p. 2596: "A bird of this species was shot by a farmer on the borders of Buckinghamshire, near Brill, in the spring of 1833, and taken to Mr. Forrest, from whom we shortly afterwards received information of its occurrence."]

100 (229). **TAWNY OWL.** *Strix aluco sylvatica* Shaw.\*

*B. of Berks. and Bucks.* p. 10. *Vict. History of Bucks.* p. 141.

*Common resident.*

The Brown or Wood-Owl is common in woods, parks, and other suitable places throughout the county. O. V. Aplin (*Zoologist*, 1884, p. 471) mentions an extremely grey variety "with the white markings conspicuous and no trace of rufous tawny," which was shot at Great Horwood, near Winslow, in July 1884. In Great Britain the rufous tawny is the prevailing phase, while on the continent greyish specimens are commoner.

101 (227). **BARN-OWL.** *Tyto alba alba* (Scop.).

*B. of Berks. and Bucks.* p. 8. *Vict. Hist. of Bucks.* p. 140.

*Not uncommon resident.*

Though decidedly less numerous than the Tawny Owl, this species is by no means uncommon in suitable localities. Clark Kennedy states that a nest found in Burnham Beeches in 1865 contained the unusual number of nine eggs, while on one occasion eleven eggs were found in a nest near Tring. Mr. Crossman found a bird incubating one of its own eggs and two of the Stock-Dove at Newton Blossomville in 1893.

102 (233). **PEREGRINE FALCON.** *Falco peregrinus peregrinus* Tunst.

*B. of Berks. and Bucks.* p. 162. *Vict. Hist. of Bucks.* p. 142.

*Irregular straggler on passage and in winter.*

It is somewhat remarkable that we have comparatively few records of this species, when it is remembered that it occurs regularly every year in the neighbouring counties of Oxfordshire and Berkshire, and possibly closer observation may result in its recognition as an annual visitor.

The Rev. Bryant Burgess in 1846 saw one which had been shot in Liscombe Park. Another was reported by James Britten as having been captured in the sixties in Brickhill Wood, near Woburn (Clark Kennedy, *l.c.*).

\* In the *Handlist of Brit. Birds*, p. 109, we have called the British Tawny Owl *Strix aluco aluco*, but it must be separated from the continental form. It is smaller, wings ♂ 246-264 (? 268), ♀ 260-276, while North and Central European examples measure ♂ 265-293, ♀ 267-304 mm. Moreover, the brownish-rufous coloration predominates, grey ones being comparatively rare, and the greyest not so whitish grey as the greyest and lightest on the continent, where the rufous type is very much rarer than the grey one. Cf. *Vög. pal. Fauna*, ii. pp. 1023, 1025.—E. H.



Mr. A. H. Cocks (*in litt.* 1902) states on the authority of Mr. W. Rhodes that one was killed "about thirty years ago" at Fawley, and adds that another was trapped "recently" at the same place.

An adult Peregrine shot at Old Windsor and sent to Curtis for preservation on November 5, 1879, may have been a trained bird (*Zoologist*, 1880, p. 70).

Mr. G. Tickner killed a tiercel while pigeon-shooting about New Year's Day, 1894 or 1895, at Collett Farm, between Aylesbury and Tring.

Mr. John Chapman shot a moulting male in nearly complete adult plumage on October 4, 1897, at Folly Farm, near Long Marston, on the Bucks boundary.

One was brought to the Rev. H. D. Astley at Chequers Court in the autumn of 1898, which had been found drowned in the small reservoir on Beacon Hill.

Another male in full plumage was killed by a keeper, Charles Double, on October 10, 1905, at Folly Farm, near Long Marston; and on April 17 of the same year a male moulting into adult plumage was shot near Tring.

Mr. W. D. Mackenzie (*Field*, February 23, 1907, p. 307) states that in 1905 a female was trapped in Fawley Park, and that another was picked up dead at the same place on February 5, 1907.

Mr. O. V. Aplin (*Zoologist*, 1911, p. 7) records a fine and unusually dark-coloured Peregrine in first year's plumage, shot at or near Buckingham, November 7, 1910.

A beautiful old Falcon was shot at Wingrave, on February 8, 1913, only about two miles from Folly Farm, from which place two specimens are recorded above.

In 1917 a pair of Peregrines stayed so late at Fawley Court as to lead to the impression that they were breeding in one of the old elms from 100 to 120 feet high, though no actual proof was obtained. In 1919 Mr. W. D. Mackenzie also noticed a pair on several occasions in April: both birds were seen on April 21. These birds subsisted almost entirely on Woodpigeons.

### 103 (235). **HOBBY.** *Falco subbuteo subbuteo* L.

*B. of Berks. and Bucks.* p. 69. *Vict. Hist. of Bucks.* p. 142.

*Formerly bred in Bucks, and probably does so even now, though only occasionally observed.*

According to Kennedy a pair nested in a wood near Datchet in the summer of 1861, but four of the young ones were shot at Thorney almost as soon as they could fly; only two, however, were actually seen by Kennedy, and it is not very likely that four came from the same nest. The same author speaks also of specimens observed in Langley Park and of its occurrence near Chesham.

An adult male and female were shot at Folly Farm, near Long Marston, close to the Bucks boundary, on August 14 and 16, 1894, by Mr. J. Chapman, and another adult male near Drayton Beauchamp, May 28, 1912, by W. H. Price. These specimens are in the Tring Museum. The last occurrence suggests that the bird might have nested not far away, if left alive; and in the County Museum at Aylesbury are specimens shot near Wootton Underwood, August 1, 1908, and June 26, 1909.

Mr. T. Steele Elliott (*Zool.* 1913, p. 465) also records an adult bird as killed at Lavendon on August 23, 1913.

104 (236). **MERLIN.** *Falco columbarius aesalon* Tunst.

*B. of Berks. and Bucks.* p. 102. *Vict. Hist. of Bucks.* p. 142.

*Winter visitor, but rare.*

(E. Curtis (*Field*, December 27, 1879, p. 853) records two young birds shot near Windsor, in Berkshire.)

Mr. J. Chapman shot two adult males at Folly Farm, near Long Marston, on the Bucks boundary, on November 14, 1895, and December 21, 1897, both being now in the Tring Museum.

On November 21, 1909, Mr. A. H. Cocks records a Merlin striking a bird (apparently a Starling) within a few yards of where he was standing, and carrying off its prey with some difficulty. Another was also seen by him while Partridge-shooting.

C. Oldham (*in litt.*) has the following two observations: "February 21, 1915. A Merlin stooped at a Goldfinch on the bank of Weston Turville Reservoir." "February 25, 1917. An adult male observed near Wilstone Reservoir."

105 (237). **KESTREL.** *Falco tinnunculus tinnunculus* L.

*B. of Berks. and Bucks.* p. 1. *Vict. Hist. of Bucks.* p. 142.

*Resident.*

More in evidence in autumn and winter, but nesting wherever not destroyed by keepers, who, if not energetically checked, kill every "hawk"—and owl!

[**RED-FOOTED FALCON.** *Falco vespertinus vespertinus* L.

*B. of Berks. and Bucks.* p. 162. *Vict. Hist. of Bucks.* p. 142.

*Exceptional vagrant—one reported occurrence.*

Kennedy (*l.c.*) gives the following somewhat unsatisfactory report: "The inspector of the Eton police force—an intelligent man, who has a taste for natural history—informed me that an Orange-legged Hobby was shot by the under-keeper on Sir Harry Verney's estate at Steeple Claydon, near Buckingham, in January 1858. The date is an unusual one at which to find the species here, but my informant is acquainted with the bird and is not likely to have been mistaken."]

[**GOLDEN EAGLE.** *Aquila chrysaetus chrysaetus* (L.).

*B. of Berks. and Bucks.* p. 154.

Clark Kennedy (*l.c.*) mentions a Golden Eagle killed at Billing Bear, near Cookham, in Berkshire, but not far from the Buckinghamshire border. Date and year are not stated, but it was trapped by a keeper and its identification rests on the evidence of Briggs, who collected many birds for Mrs. De Vitre. There is no reason to believe that this specimen was ever seen by R. B. Sharpe (cf. *Quart. Mag. High Wycombe Nat. Hist. Soc.* 1867, p. 123). Probably the date was not later than about 1850. Another so-called "Golden Eagle," recorded by Kennedy from Berkshire is known to be a White-tailed Eagle, and this may well have been the case also in the present instance.]

106 (242). **ROUGH-LEGGED BUZZARD.** *Buteo lagopus lagopus* (Brünn.).

*B. of Berks. and Bucks.* p. 165. *Vict. Hist. of Bucks.* p. 141.

*Irregular and rare winter visitor.*

Kennedy (*l.c.*) mentions a pair shot in Bledlow Woods, not far from Princes Risborough, in November 1839. A specimen was trapped near Wycombe, December 6, 1880 (T. Marshall, *Field*, December 18, 1880, vol. ii. p. 905). Mr. Heatley Noble saw one at Fawley Court in the winter of 1885 or 1886. Three were trapped (one alive) in the late autumn of 1891 near Halton, two of which are preserved in the Tring Museum. In the autumn of 1912 Hartert saw one alive in the possession of Mr. Harry Jenney, which had been winged by his keeper not far from Aston Clinton. It lived for several weeks and then died.

Probably a "huge hawk" seen by a keeper near the Reservoirs in the winter of 1917 was a Buzzard, and perhaps a Rough-leg.

107 (243). **BUZZARD.** *Buteo buteo buteo* (L.).

*B. of Berks. and Bucks.* p. 164. *Vict. Hist. of Bucks.* vol. i. p. 141.

*Formerly a resident, now only a very rare straggler.*

Although Buzzards probably bred at one time in most of our large woods, our information on this point is lamentably scanty, though fortunately we possess full details of what may have been the last nest in the county. Dr. Lamb, of Newbury, writing in the early part of the nineteenth century (*circa* 1814), described it as "very common" about that time in the neighbouring county of Berkshire.\* Its disappearance must have been very rapid, for Clark Kennedy, writing in 1868, only gives three instances of its occurrence in the two counties, and Sharpe, in his articles on the "Birds of Cookham" (October 1867), refers to one of these cases only.

Mr. T. Marshall, in a note contributed to the *Quarterly Magazine of the High Wycombe Nat. Hist. Soc.* for January 1869 (p. 71), states that he has recently received a long and interesting account of the taking of a Buzzard's nest in Bucks. In 1806 Mr. R. Spieer, of Marlow, was a pupil of the Rev. Thomas Scott at Gawcott, near Buckingham, and while shooting in the neighbourhood with two fellow-pupils discovered a Buzzard's nest in the top of a high oak tree. "The tree was of great size, and the nest was built on a fork which towered some 5 feet above the rest of the tree. His companions tried, but in vain, to reach the nest. My informant then essayed to do so, and after labours which nearly exhausted him, succeeded in gaining the summit, and to his great joy found two eggs, very round, large and thick, white with yellow spots." The eggs were taken and the descent made in safety.

In 1874 one was killed at Little Marlow, which, according to Mr. T. Marshall, had been observed and stalked for a long time previously. Another was trapped near High Wycombe early in March 1875 (T. Marshall, *Field*, March 30, 1875, p. 272).

One was seen on the wing at Hambleden on May 18, 1900, by Mr. A. H. Coeks, who reports that a Buzzard (possibly the same bird) was killed at Datehet in the following June (*Zool.* 1904, p. 34).

\* *Zool.* 1880, p. 314.

Mr. E. M. Dowson saw one circling at 300–400 feet above the golf course at Stoke Poges on April 13, 1913 (*Field*, April 19, 1913, p. 772).

108 (245). **MARSH-HARRIER.** *Circus aeruginosus aeruginosus* (L.).

*B. of Berks. and Bucks.* p. 4. *Vict. Hist. of Bucks.* p. 141.

*Said to have been resident in former times ; no recent data.*

Kennedy (*l.c.*) wrote : " Resident throughout the year, but nowhere numerous. It is distributed sparingly in both counties, and is doubtless often confounded with the Hen-Harrier. It was formerly more common than it now is ; and when there was a greater extent of uncultivated heaths and moorland wastes the Marsh-Harrier might frequently have been observed sailing in mid-air in search of prey. A few are still to be seen at various seasons in the neighbourhood of Chesham ; and it remains all the year in some favoured localities, which are now, alas ! ' few and far between,' in the two counties. The Rev. Bryant Burgess, of Latimer, near Chesham, wrote me word of an immature Marsh-Harrier, which was killed some years ago at Risborough."

Unfortunately all these statements are rather vague and do not contain one single exact date. The next record is fortunately more precise. Mr. A. H. Cocks received a male alive, which had been winged near Spade Oak, Little Marlow, in the heavy snow of January 19, 1881. This bird was kept for several months in a walled-in garden, but was eventually killed by a Common Buzzard on May 30, 1882.

109 (246). **MONTAGU'S HARRIER.** *Circus pygargus* (L.).

*B. of Berks. and Bucks.* p. 166. *Vict. Hist. of Bucks.* p. 141.

*Occurring occasionally.*

Clark Kennedy wrote (*l.c.*) : " The Rev. Harpur Crewe informed me that a specimen of this bird was killed some years since by Mr. A. H. Jenney in the parish of Drayton Beauchamp, in Buckinghamshire. It is now in the collection of Sir J. H. Crewe. Mr. R. B. Sharpe sent me word that a Harrier of this species was procured by a gentleman of his acquaintance near Eton in the summer of 1867, and is now in his collection."

Mr. A. H. Cocks (*Field*, February 8, 1873) records a specimen killed near Hurley in 1870.

An adult male was trapped by a keeper near Wigginton, near Tring, close to the border of Bucks, in the spring of 1891, and is in the Tring Museum.

110 (247). **HEN-HARRIER.** *Circus cyaneus cyaneus* (L.).

*B. of Berks. and Bucks.* p. 4. *Vict. Hist. of Bucks.* p. 141.

*Formerly said to have been common, now disappeared.*

Kennedy (*l.c.*) says that in the forties of the nineteenth century it was, according to Mrs. Hussey, " a common bird in Buckinghamshire." A male was shot at Eton College in 1857. A specimen shot in the Rev. H. H. Crewe's time near the reservoirs is in the collection of Sir Vauncey Crewe. Another is said to have been shot at the same place in December 1884. Kennedy also says,



"The Hen-Harrier has occurred at Chesham and near Cookham, and it has been seen flying over Langley Park at such a low altitude as to enable the beholder to ascertain the species." Unfortunately he gives no dates for these occurrences.

The latest occurrence of this species is that of a female bird, shot by a keeper at Upton Wood, Langley, on October 23, 1911, and recorded by H. H. Vyse in the *Field* for December 2, 1911, p. 1234.

111 (248). **GOSHAWK.** *Accipiter gentilis gentilis* (L.).

*Vict. Hist. of Bucks.* p. 142.

*Two occurrences only.*

A male shot September 10, 1789, near Dinton Hall, by the Rev. W. Goodall, is well figured in the Dinton Hall MS.

In the *Quart. Journ. of the High Wycombe Nat. Hist. Soc.* vol. ii. p. 15, a specimen of the Goshawk is recorded as having been exhibited at the third winter session of the Society, which had been shot near Stone.

112 (249). **SPARROW-HAWK.** *Accipiter nisus nisus* (L.).

*B. of Berks. and Bucks.* p. 3. *Vict. Hist. of Bucks.* p. 142.

*Resident.*

Breeds in larger woods in spite of persecution by keepers. In winter in parks and gardens, and working along uncut hedges.

113 (250). **RED KITE.** *Milvus milvus milvus* (L.).

*B. of Berks. and Bucks.* p. 163. *Vict. Hist. of Bucks.* p. 142.

*Rare straggler, formerly resident.*

There is no doubt that this species, like the Buzzard, formerly bred in the larger woods of the county, and evidence of this is furnished by the prevalence of local names such as "Kite's Wood," "Kite's Hill," especially in the Vale of Aylesbury, as pointed out by John Young (*Zool.* 1892, p. 232). The same writer also states that an old gardener named Lloyd used to tell stories of the depredations of the old birds, and of nests found in the neighbourhood of Quainton. The references to socks and small linen found in the nest show that in this case there was no confusion with the Buzzard.

The late S. W. Jenney shot a Kite near the Wilstone Reservoir in the sixties, which is now in the collection of Sir Vauncey H. Crewe. C. Wolley saw a Kite in a field near Eton "many years ago" (Kennedy, *l. c.*).

During the eighties one was reported to Mr. A. H. Cocks as frequenting the late Mr. J. P. Ellames's property at Little Marlow, but though seen on several occasions, managed to escape the usual fate of such visitors.

Mr. Guy C. Robson informed the present Lord Rothschild that on December 15, 1913, he twice saw a bird between Wendover and Halton which he felt sure was a Kite, and independent enquiries tended to confirm the identification. Kites were also identified in December 1913 in North Somerset, and from April to June 1913 in Derbyshire (cf. *Brit. Birds*, vol. vii. p. 299).



114 (252). **HONEY-BUZZARD.** *Pernis apivorus apivorus* L.

*B. of Berks. and Bucks.* p. 165. *Vict. Hist. of Bucks.* p. 142.

*Now only rare casual visitor on migration.*

Apparently this species formerly bred in the county, but as a nesting-species it has long been extinct, though it is possible that an occasional bird may still visit us, especially on the autumn migration from Scandinavia.

In an article on the "Pern or Honey Buzzard," by Edward Blyth, in Charlesworth's *Mag. of Nat. Hist.* vol. i. p. 529 (1837), it is stated on John Gould's authority that this species "breeds annually" at Burnham Beeches. The assertion is repeated in A. G. More's paper in the *Ibis*, 1865, p. 13, "On the Distribution of Birds in Great Britain during the Nesting-season."

Bryant Burgess informed Clark Kennedy of one which was captured in 1842 between Chesham and Missenden.

J. Gardner recorded one shot near Maidenhead in July 1867 (*Field*, July 27, 1867, p. 73). This is, however, almost certainly a Berks. record, as Mr. W. J. Robson states (*in litt.* to Mr. H. Noble, September 20, 1904) that a fine specimen exists at Attwood which was shot at Shottsbrook [Berks.] about 1866. This is evidently the bird set up and recorded by Gardner.

Two were killed in Shabbington Woods, near Brill, on or about September 23, 1882, by Mr. Henley's head-keeper, and one, a very dark bird, was set up by Darby of Oxford (F. C. Aplin, *Zoologist*, 1882, p. 116).

115 (244). **WHITE-TAILED, or SEA- EAGLE.** *Haliaeetus albicilla* (L.).

*B. of Berks. and Bucks.* p. 155. *Vict. Hist. of Bucks.* p. 142.

*Rare and irregular visitor in autumn or winter.*

The earliest definite record of this species is contained in a paper on "The Birds of Oxfordshire," by the Rev. A. and H. Matthews (*Zool.* 1849, p. 2594), where it is stated that a White-tailed Eagle was caught in a trap near Chequers Court in 1846. The Rev. H. G. Nind, of South Stoke, Oxon, also has a stuffed specimen, formerly in his father's collection, which was killed on the playing-fields of Eton about 1846, by the Rev. Edward Coleridge, then an assistant master there (E. E. Pettitt *in litt.*). Another is also said by Messrs. Matthews to have occurred "a few years ago" near Henley-on-Thames. Possibly this is the same bird that Yarrell recorded, without further details, as having been taken at Fawley Court, which is near Henley. C. E. Stubbs, when compiling his MS. "Sketch of the Ornithology of Henley-on-Thames about 1868," also states that "many years ago" a white-tailed Eagle was taken alive in a fir plantation at Fawley Court. Probably the actual date was somewhere in the early forties. (Cf. *Zool.* 1903, p. 445.) Kennedy mentions three or four occurrences from the Windsor district in 1851, 1856, and 1865, but all apparently from the Berks. side.

An immature bird remained for some weeks in Fawley Court Deer Park during the shooting-season of 1894-5, under Mr. W. D. Mackenzie's protection. On one occasion he saw the Eagle settle in a tree just overhead. It was also seen by Mr. H. Noble (*Zool.* 1903, p. 13). Probably this is the same bird which is stated in the *Vict. Hist. of Bucks.*, loc. cit., to have frequented Fawley Deer Park "about 1885 or 1886."

116 (253). **OSPREY.** *Pandion haliaetus haliaetus* (L.).

*B. of Berks. and Bucks.* p. 158. *Vict. Hist. of Bucks.* p. 143.

Formerly the Osprey appears to have been an occasional visitor on migration to the reservoirs and the Thames Valley, but there are no records since 1901.

The earliest occurrence of which we have any note is that of one killed in February 1845 at Chequers, which is stated by Clark Kennedy to have passed into the collection of Lady Frankland Russell.

In 1853, according to the Rev. H. Harpur Crewe (or 1854 as quoted by Clark Kennedy), another was shot by a labourer on the bank of the canal at Halton, while devouring a dead pigeon which was lying on the towing-path, and passed into the possession of Sir Anthony de Rothschild, of Aston Clinton (*Zool.* 1865, p. 9416; *Ibis*, 1865, p. 114). One which was shot at Hambleden in the winter of 1858 had been seen for several days previously in the Fawley woods, according to Mr. Dalziel Mackenzie.

One which had been seen fishing on the Thames for some days previously was shot by the lodge keeper at Ditton Park on September 24, 1862 (T. Willis, *Field*, October 4, 1862, p. 319). The date is erroneously given by Clark Kennedy as September 26, 1863. Throughout the greater part of September 1864 two Ospreys frequented the Wilstone Reservoirs. They were very tame, and were apparently not molested by the keepers, but on September 30 the female was killed, while eating a fish, by a country lad. The skin was afterwards given to Mr. Harpur Crewe. The male left the neighbourhood shortly after, but John Gould informed Mr. Crewe that another, also a male, was killed on the Thames near Maidenhead about this time, which was probably the same bird (*Zool.* 1865, p. 9415; *Ibis*, 1865, p. 113). On May 9 James Street observed an Osprey at the Tring Reservoirs. R. B. Sharpe gives details of another, which had been seen near Hedsor for several days, and was finally shot on the Thames at Cookham on October 6, 1864. He also refers to another which is said to have been seen near the same place three days later, and was reported to have been killed at Windsor (*Quart. Mag. High Wycombe Nat. Hist. Soc.* 1867, p. 124).

Clark Kennedy states that an Osprey was frequently observed on the Thames near Surley Hall in 1865, 1866, 1867, and the early part of 1868, but though frequently shot at, it managed to escape (*B. of B. and B.* p. 161). A female was, however, shot by Captain Robson near Maidenhead in August 1867 (*Vict. Hist.* p. 143). L. Hibbert records another shot at Chalfont Park, near Slough, on September 28, 1883 (*Field*, October 6, 1883, p. 490), which had been there for about a fortnight previously. The last instance took place in 1901, when Mr. Pope, jun., shot one on Aston Hill, above Halton, on October 11. Reports from two different sources would seem to indicate that a second bird was present in the neighbourhood.

117 (256). **WHITE STORK.** *Ciconia ciconia ciconia* (L.).

*B. of Berks. and Bucks.* p. 189. *Vict. Hist. of Bucks.* p. 143.

Once recorded.

According to James Dalton, of Oxford, a stork was shot a few miles from Buckingham, in September 1846 (Morris, *Hist. Brit. B.* vol. iv. p. 162, ed. ii. 1870).

118 (259). **GLOSSY IBIS.** *Plegadis falcinellus falcinellus* (L.).

*Once recorded.*

A Glossy Ibis, a bird of the year, was shot by a lock-keeper on the Wendover arm of the canal, not far from Halton, in October 1886, and is now in the Tring Museum (Littleboy, from Rothschild, *in litt.*, *Trans. Herts. Nat. Hist. Soc.* vol. v. p. 82).

119 (260). **COMMON HERON.** *Ardea cinerea cinerea* L.

*B. of Berks. and Bucks.* p. 60. *Vict. Hist. of Bucks.* p. 143.

*Resident, breeding in two or three localities, and present on the reservoirs and rivers throughout the year.*

Heron is always to be seen on the Thames, Ouse, and the reservoirs, but principally in late summer and autumn. On the Tring reservoirs it is no uncommon sight to see a dozen or more together.

Probably the oldest heronry in the county is that which still exists, though in greatly reduced numbers, at Harleyford Manor, above Marlow, on the Thames. In 1866 C. E. Stubbs stated that there were over forty nests here, but in 1902 Mr. A. F. Crossman found that this once flourishing colony had dwindled down to a few nests in two or three tall fir trees, and of late years the birds are said to have been much disturbed by timber felling. At Fawley Court there is now a flourishing colony, which in 1919 contained forty-four nests. Mr. W. D. Mackenzie has supplied us with some interesting notes on the history of this heronry, which is of comparatively recent origin. The first nest was built in an oak, some time in the sixties, but the young birds were taken. In 1890 there were two nests, four in 1891, and ten in 1892. About this time Mr. Mackenzie saw no fewer than sixty-four birds on the wing at once. They had evidently just arrived, and about half the number remained to breed, some sixteen nests being built that year. Up to 1910 the number of breeding pairs varied from eleven to sixteen, but from 1917 to 1918 it has remained stationary at about thirty. The Rooks at Fawley Court have forsaken their old haunts near the house and have followed the Herons to a wood about a mile away.

Another heronry is said to have existed in Claydon Park, but we can find no direct evidence of this, and probably the statement is due to confusion of Claydon Park with Harleyford Manor, which belonged to Lady Clayton.

About 1912 or 1913 a pair nested at Dinton on Colonel Goodall's property, but the site appears to have been deserted. Mr. Edwin Hollis discovered a small heronry of about a dozen nests near Gayhurst, about half a mile from the River Ouse, in March 1919 (E. Hollis *in litt.*).

120 (266). **NIGHT-HERON.** *Nycticorax nycticorax nycticorax* (L.).

*B. of Berks. and Bucks.* p. 189. *Vict. Hist. of Bucks.* p. 143.

*Exceptional visitor.*

According to Pennant (*in litt.* to Latham) an immature example (called the "Gardenian Heron") was shot near Cliefden in Bucks in 1797.

(Another immature example was killed near Thame, in Oxfordshire, not far from Buckinghamshire.)

Sir H. Rae Reid (*Field*, August 26, 1899, p. 394) records the appearance

of one of these birds at Taplow for three or four days in August 1899, but there is some reason to believe that this may have been an escaped bird.

121 (267). **LITTLE BITTERN.** *Ixobrychus minutus minutus* (L.).

*B. of Berks. and Bucks.* p. 186. *Vict. Hist. of Bucks.* p. 143.

*Rare visitor, chiefly to the Thames Valley.*

Clark Kennedy refers to several occurrences of this species on the Thames, but in most cases with somewhat scanty data. An immature bird, shot on the Thames near Windsor in the summer of 1826, was believed to have been bred in the neighbourhood (cf. Yarrell, ed. iv. vol. iv. p. 202, and *Zool. Journal*, 1827, p. 88). John Gould received another about 1828 from the Thames near Monkey Island, and a third was shot on Queen's Eyot, near Windsor, in the summer of 1860. About 1856 or 1858 another was killed near Monkey Island, and others of which no dates are given, are said to have been obtained near Surley, Windsor and Uxbridge (Clark Kennedy, *l.c.*).

T. Marshall (*Field*, October 7, 1865, p. 254) recorded a specimen shot in August 1865 on the Thames near Maidenhead.

Mr. A. Allen records a male bird killed near Olney "a few weeks ago" in the *Field*, August 19, 1911, p. 474.

122 (268). **BITTERN.** *Botaurus stellaris stellaris* (L.).

*B. of Berks. and Bucks.* p. 187. *Vict. Hist. of Bucks.* p. 143.

*Formerly breeding, now only an irregular and uncommon winter visitor.*

A nest was found on one of the Tring Reservoirs (the great Marsworth Reservoir) in 1849. The old bird was killed on the nest (!) and some of the eggs were taken. One of these is in the Newton Collection in Cambridge, another in that of Miss Ellen Williams, Tring.

Kennedy (*l.c.*) records a specimen shot at Fawley Court in January 1864, one shot at Medmenham in 1851, and some killed near Chesham. One was shot at Cockmarsh, close to the river, January 14, 1871 (Cocks, *Field*, 1873, p. 135). The present Lord Rothschild shot one at the Reservoirs in 1890 or 1891. A male was shot on Cholesbury Common 12. xii. 1892 by William Street; other specimens were killed on the Tring Reservoirs 21. xi. 1894 by James Street, 9. ii. 1906 by the present Lord Rothschild, and 12. i. 1916 by James Street, three of which were males. Another remained there for ten days, but left on January 14, 1909 (*Brit. Birds*, vol. ii. p. 309).

In the winter of 1912 (probably in January, but date not recorded) Rothschild observed a Bittern for ten minutes at Marsworth Reservoir.

Some years ago a Bittern stayed several weeks in winter at one of the reservoirs, but no note was made of the date.

[An American Red Flamingo stayed several weeks on the reservoirs in the summer of 1918.]

123 (271). **WHOOPER SWAN.** *Cygnus cygnus* (L.).

*B. of Berks. and Bucks.* p. 118. *Vict. Hist. of Bucks.* p. 144.

*Rare winter visitor.*

Kennedy (*l.c.*) quotes the following instances of the occurrence in Bucks. In the winter of 1835 a Whooper was shot near Eton. Another was killed about



1837 near Eton, and two were shot above Surley Hall in 1838. "Some" were procured in 1848 in the neighbourhood of Burnham, and two shot out of five between Cookham and Maidenhead in 1855. In the winter of 1862 two were killed at Wraybury, and stuffed by Mr. Hasell, of Windsor. Another was shot "on the river" in the winter of 1865-6. "Others have been brought at various times to the Eton and Windsor bird-stuffers, but the dates of their occurrence have been forgotten." Seven were seen for some days in some meadows near Fawley and Greenlands during December 1860 and January 1861; two were afterwards shot at Medmenham and one near Windsor. "This Swan has been procured near Chesham." Some years before 1868 one was killed at Latimer and was, in 1868, in the collection of Lord Chesham. On February 21, 1864, five "Wild Swans" were seen at Fawley, and with them were two Mute Swans; the two latter were killed, but the Whoopers flew westward over the Chiltern Hills. According to H. H. Crewe, the Whooper "occasionally visits the reservoirs at Wilstone and Marsworth in severe winters."

In the winter of 1891 a flock of Swans visited the Tring Reservoirs; two were shot, of which one is a Bewick's, the other a Whooper. Another Whooper was shot a week or two after.

124 (272). **BEWICK'S SWAN.** *Cygnus bewickii bewickii* Yarr.

*Very rare winter visitor.*

In the winter of 1891 a flock of Swans visited the Tring Reservoirs; two were shot, of which one is a Bewick's, the other a Whooper. Both are in the Tring Museum.

125 (273). **MUTE SWAN.** *Cygnus olor* (Gm.).

*B. of Berks. and Bucks. p. 64. Vict. Hist. of Bucks. p. 144.*

*Semi-domesticated on many waters.*

On the Thames and the Tring Reservoirs Mute Swans are living and propagating as if they were wild birds, and it is a wonderful sight to see them flying round the reservoirs, and from one to the other of these waters, but they remain always more or less tame, and never attain the shyness of wild birds.

126 (274). **GREY LAG-GOOSE.** *Anser anser* (L.).

*B. of Berks. and Bucks. p. 199. Vict. Hist. of Bucks. p. 144.*

*Rare winter visitor.*

According to Kennedy (*l.c.*), alighting sometimes on inundated meadows in the Vale of Aylesbury, near Huleott and Aston Clinton. The Hon. Walter (now Lord) Rothschild informed Littleboy that a specimen was shot at the Tring Reservoirs in September 1886. The late L. W. Wilesworth told Hartert that he had several times seen it on the River Ouse, near Castlethorpe.

127 (275). **WHITE-FRONTED GOOSE.** *Anser albifrons* (Scop.).

*B. of Berks. and Bucks. p. 199. Vict. Hist. of Bucks. p. 144.*

*Rare winter visitor.*

According to Kennedy (*l.c.*) it has occasionally been seen and shot on the Thames (Eton, Datchet), and H. H. Crewe has observed it sometimes on the reservoirs near Tring.



"A White-fronted Goose with some Mallards in the rushes at Little Tring Reservoir. It rose with the Mallards, and flew across to Wilstone Reservoirs, but two hours later it was back at Little Tring, feeding in the rushes. When disturbed it flew off, but returned presently and pitched on the water. This is hardly the behaviour of a wild Goose" (C. Oldham *in litt.*).\*

128 (277). **BEAN-GOOSE.** *Anser fabalis fabalis* (Lath.).

*B. of Berks. and Bucks.* p. 117. *Vict. Hist. of Bucks.* p. 144.

*Rare visitor.*

According to Kennedy (*l.c.*), visits the Thames from time to time, and has been shot near Slapton and Chesham.

(From time to time—according to farmers and keepers now much more rarely—geese are seen flying overhead, which may belong to this species, but they are never identified.)

129 (283). **BRENT-GOOSE.** *Branta bernicla bernicla* (L.).

*B. of Berks. and Bucks.* p. 118. *Vict. Hist. of Bucks.* p. 144.

*Rare winter visitor.*

In 1865 a pair were shot near Datchet; one was killed on the Thames near Eton and another near Cookham during the hard winter of 1866-7; the late Rev. H. Harpur Crewe states that small flocks visited the Wilstone Reservoir in severe weather. Two were killed and several seen at Surley in January 1867 (C. Kennedy, *l.c.*)

December 7, 1913, Charles Oldham observed a Brent-Goose with two Sheld-Ducks on Wilstone Reservoir. It got up twice, while he watched it, once alone and once with the Sheld-Ducks, but it seemed loth to leave the water and dropped again, well out in the middle.

130 (285). **COMMON SHELD-DUCK.** *Tadorna tadorna* (L.).

*B. of Berks. and Bucks.* p. 205. *Vict. Hist. of Bucks.* p. 144.

*Occasional visitor in winter or spring to the reservoirs and Thames Valley.*

A male was shot in March 1780, near Dinton Hall, and is very well figured in the Dinton Hall MS. The Rev. H. H. Crewe informed Clark Kennedy that he had observed it several times in winter on the reservoirs near Tring. One was observed by Rothschild here 8. i. 1888, and another shot 6. xi. 1893. James Street saw a third 10. i. 1897, and a fourth was shot 12. xii. 1899. Both birds shot were young males, and are now in the Tring Museum. C. Oldham saw two Sheld-Duck and a Brent-Goose on Wilstone Reservoir 7. xii. 1913, two birds on 19. iv. 1914, one on 18. iv. 1915, a very wild male 28. iv. 1918, and another 12. v. 1918, all at the same place.

To the south of the county and the Thames Valley it is a scarce casual winter visitor. Clark Kennedy mentions one shot on the Thames near Cookham some

\* Knowing how many Geese and foreign Ducks are kept in England on ponds in parks and gardens, and considering that Canada-Geese have often visited the Tring Reservoirs, and that an American Flamingo was observed there two years ago, occurrences of all sorts of uncommon water-fowl are open to suspicion, and each case must be taken on its merits and judged by collateral circumstances.

years prior to 1868, and also states (on R. B. Sharpe's authority) that one was seen near Cookham for several days during the winter of 1867-8.

E. Curtis records one killed at Surley Hall on the Thames (*Field*, vol. liv. December 27, 1879, p. 853); and Mr. E. E. Pettitt informs us that on December 30, 1906, he saw seven fly from the Bucks side and settle on the Stanwell Reservoir, within the Middlesex boundary (*in litt.*).

Although this species is principally a resident on our low-lying coasts and estuaries, there seems no reason why the above records should not relate to genuinely wild birds, but it is possible that some may be due to the presence of escaped park birds.

[**RUDDY SHELD-DUCK.** *Casarca ferruginea* (Pall.).

*Vict. Hist. of Bucks.* p. 144.

Though we do not for a moment doubt that the many occurrences of this species in Great Britain and Ireland in 1892 and several other years are those of genuine wild birds from abroad, we must be prepared for the occurrence of escaped birds in England, and the two appearances in Bucks should no doubt be referred to such. In 1892 (*Zoologist*, p. 359) Mr. H. H. Vyse states that ten were bred at Stoke Park, near Slough, of which only two were caught and pinioned, while the rest flew away, usually when frost and snow came.

"A specimen killed at Wootton Underwood in December 1908, in the Bucks County Museum. Probably an escaped specimen" (Edwin Hollis *in litt.*).

Mr. C. Oldham observed a male and female on the Tring Reservoirs, March 21, 1915, of which he says, "no doubt escaped birds."]

131 (287). **MALLARD or WILD DUCK.** *Anas platyrhynchos platyrhynchos* L.

*B. of Berks. and Bucks.* p. 122. *Vict. Hist. of Bucks.* p. 145.

*Common resident.*

Nests in all suitable localities in small numbers, but in great numbers on the Tring and Halton Reservoirs, especially the former. From about 1890 numerous eggs were hatched under hens and the ducks were fed during the whole year. This, in connection with intense protection from poachers and other unwelcome visitors as well as the destruction of all "vermin," resulted in an unnatural increase in the numbers of Wild Ducks, and regular battues were held, hundreds being killed on single days. From 1915-16 to the present time no eggs have been hatched under hens and no food could be given, the severe winter of 1916-17 caused some losses, and no doubt they were more closely shot down in the surrounding district, so that their numbers decreased considerably. While, therefore, small numbers only were shot, the decrease of the over-population of ducks of this kind was probably welcome to other species, and the reappearance of the Teal, among others, may be due to this fact.

[**GADWALL.** *Anas strepera* L.

*B. of Berks. and Bucks.* p. 121.

We have no definite record for Buckinghamshire, but the late Rev. H. H. Crewe informed Clark Kennedy that the Gadwall "has occasionally been killed on the reservoirs at Marsworth and Wilstone" in winter.]

132 (289). **TEAL.** *Anas crecca crecca* L.

*B. of Berks. and Bucks.* p. 123. *Vict. Hist. of Bucks.* p. 145.

*Resident in small numbers; common autumn and winter visitor.*

"In the summer of 1861 two nests of this species were discovered among some moss and rank herbage growing by the side of a pond near Burnham" (Kennedy, *l.c.*).

Both H. H. Crewe and James Williams stated in 1868 that Teal then nested in limited numbers near the Marsworth and Wilstone Reservoirs. Apparently they continued to do so until 1887, when a nest with five eggs was found by James Street under a willow stump, which is exhibited, together with the old birds, in the series of groups of British Birds in the Natural History Museum. Since then there has been no definite record of the nesting of Teal until 1918, when a brood hatched off at Marsworth Reservoir on July 14 (James Street). In that same year Hartert saw some Teal in June, Oldham observed half a dozen at Little Tring Reservoir on July 6, and Hartert thirteen about the middle of August. In 1919 they were also seen in spring and summer. The late Lionel Wigglesworth found it breeding in small numbers near Castlethorpe.

The Teal is a common winter visitor to the reservoirs. According to Oldham's observations, the first migrants usually arrive in the last week in July (25, 1919; 25, 1914; 25, 1915; August 6, 1917 and 1918). From then until the end of March they are about the Tring and Halton Reservoirs in varying numbers—on July 1, 1914, Oldham saw more than a hundred on Wilstone Reservoir. He saw birds in pairs, "no doubt on passage," in some years about the middle of April.

Teal are occasionally met with on the Thames in winter, especially during hard frost, when the inland waters are frozen over, and at the time of spring and autumn migration.

133 (292). **GARGANEY.** *Anas querquedula* L.

*B. of Berks. and Bucks.* p. 123. *Vict. Hist. of Bucks.* p. 145.

*Rare visitor.*

According to the late Rev. H. Harpur Crewe, the Garganey "has been several times obtained on the reservoirs at Marsworth and Wilstone in cold weather" (Kennedy, *l.c.*). At the end of March 1849 four males and four females appeared on one of the reservoirs near Tring and remained for some days. On March 24 the Rev. J. Williams, with two other guns, obtained seven out of the eight shot.\* Subsequently seven more appeared, but moved off on the following night (*Zool.* 1849, p. 2421).

Miss Williams informed Littleboy (*Trans. Herts. Nat. Hist. Soc.* vol. v. p. 83) in 1887 that it was "an occasional summer visitor."

A ♂ in partial eclipse, the only bird of this species ever observed by him on the reservoirs, was seen by C. Oldham August 3, and again August 11, 1918.

\* One of these was later examined by Rothschild, while in the possession of the late George Pratt in Marsworth.

134 (293). **WIGEON.** *Anas penelope* L.

*B. of Berks and Bucks.* p. 124. *Vict. Hist. of Bucks.* p. 145.

*Not uncommon winter visitor and passage migrant on rivers and reservoirs.*

"The first Wigeon usually arrive at the reservoirs in October (only in 1916 I saw three on September 26), and from then until early April frequent the Tring and Halton (Weston Turville) Reservoirs in varying numbers. On February 23, 1919, Oldham and Hartert saw a flock of twenty. Birds on passage occur in later April and May, *e.g.* ♂ 16.v.1909, ♂ 24.iv.1910, two ♂♂ 12.v.1912, pair 13.iv.1913" (C. Oldham *in litt.*). Said formerly to have been "very plentiful" on the Tring Reservoirs, but in recent years to have occurred there in small parties only (Crossman, *Trans. Herts. Nat. Hist. Soc.* vol. x. p. 96, 1901).

[**MANDARIN DUCK.** *Aix galericulata* (L.).

*B. of Berks. and Bucks.* p. 208.

The adult male shot by Briggs on the river near Cookham in May 1866 was, of course, an escaped bird.]

135 (296). **PINTAIL.** *Anas acuta* L.

*B. of Berks. and Bucks.* p. 122. *Vict. Hist. of Bucks.* p. 145.

*Fairly regular but uncommon visitor.*

Clark Kennedy states that a male was shot on a sheet of ice in Stoke Park in the winter of 1863, while the female which was in its company escaped. The Rev. H. H. Crewe informed Kennedy "that this species visited the reservoirs at Marsworth, Wilstone, and Weston Turville every winter in considerable numbers." This latter statement can hardly have been correct, as the Pintail is now known to be rather irregular in its visits to the reservoirs. A male was shot February 14, 1892, a female on October 3 of the same year, also in December 1893, though the last had apparently escaped from a pond near Tring. Another male in full moult January 31, 1906. An adult male was shot November 20, 1907. Mr. C. Oldham observed males on eight occasions, but females only once:—

14.iii.1909. A ♂ with some Mallards at Startops End.

24.xi.1909. A ♂ with Mallards on the ice at Marsworth Reservoir.

12.i.1913. A ♂ with some Mallards on Little Tring Reservoir.

16.i.1916. A ♂ in a pack of Mallards on Wilstone Reservoir. It was still there January 23, and January 31 there were three males together—no female.

1.iv.1917. "Two Pintails flying at a great height over Wilstone Reservoirs. They dropped somewhere in the neighbourhood of the other reservoirs, and later I found them—both adult males—asleep on the margin of Little Tring Reservoir."

1.xii.1917. An adult male with Mallards on Wilstone Reservoir.

20.1.1918. An adult male with Mallards on Wilstone Reservoir. Several in February 1919, on Wilstone Reservoir.

1.ii.1919. Two males and two females at Wilstone Reservoir.

136 (295). **SHOVELER.** *Spatula clypeata clypeata* (L.).

*B. of Berks. and Bucks.* p. 121. *Vict. Hist. of Bucks.* p. 145.

*Resident in small numbers; also regular autumn and winter visitor.*

Near Dinton Hall a Shoveler was shot on September 10, 1774, and four were



seen, one of which was shot, on August 29, 1800. The Rev. H. Harpur Crewe regarded it as a regular, though never a common, winter visitor on the reservoirs.

Nowadays it is not rare in autumn and winter, and one, two, or three pairs have bred every year there for some time—from at least 1905 or before. In June 1918 Hartert came across a female leading eight ducklings along a ditch to the Wilstone Reservoir. In August he counted fifteen on Little Tring Reservoirs. During the last few years more pairs have nested.

Mr. C. Oldham sends the following notes :

“ The first Shovelers usually arrive at the end of September or early in October, and from then until mid-April are nearly always to be seen at the Tring and Weston Turville Reservoirs. In the winter 1914–15 the numbers were greater than usual. On December 6, 1914, I counted fifty-one on Startops End, and seventeen more at Wilstone; on January 24, 1915, I saw twenty-one on Wilstone; and on January 18, 1914, there were twenty at Weston Turville.”

Oldham also saw an old bird, August 23, 1908, others May 2 and 16, 1909, June 21, 1913 (three males in eclipse), July 25, 1914.

It appears to be rarely met with on the Thames, but E. E. Pettitt saw a male near Queen's Eyot, February 18, 1917 (*in litt.*).

137 (297). **RED-CRESTED POCHARD.** *Netta rufina* (Pall.).

*Vict. Hist. of Bucks.* p. 145.

*Rare visitor; some specimens probably escaped birds.*

Littleboy recorded a female shot on the Tring Reservoirs in September 1887, but the specimen was erroneously identified by Rothschild, it being only an abnormally coloured female Scoter (*Vict. Hist. of Bucks. l.c.*). A flock of about forty individuals, however, visited Wilstone Reservoir in the autumn of 1889 or 1890, out of which four males and two females were shot. Three males and one female of these are now in the Tring Museum, and a pair in Mr. John G. Millais' collection. The exact date is not preserved, the labels of the specimens giving only the locality.

A beautiful male was shot on the reservoirs 9.xi.1915. On November 4, 1917, Charles Oldham observed an adult pair on Little Tring Reservoir. In December 1918 a male was on Halton Reservoir for over a fortnight at least. It was seen on several occasions by Oldham and Hartert.

As these beautiful birds have nested for several years in Woburn Park, this last bird—and possibly others of the single birds recently seen—was probably an escape; it was by no means very wild. In January 1920 a male was recorded on Halton Reservoir by the keeper.

138 (298). **COMMON POCHARD.** *Nyroca ferina ferina* (L.).

*B. of Berks. and Bucks.* p. 127. *Vict. Hist. of Bucks.* p. 145.

*Not uncommon, but very local resident.*

The Pochard has, like the Tufted Duck, spread and increased in many parts of England, especially in the eastern counties. It probably nested in Bucks long ago, as a specimen was shot at Dinton Hall on June 16, 1825. In 1868 it was, however, not yet common, as Kennedy (*l.c.*) thought it still worth to record single occurrences, and he was informed by the Rev. H. H. Crewe that the Pochard



had "on two occasions been known to breed on the water near Drayton Beauchamp," a nest containing eggs having been taken in June 1850 at the Marsworth Reservoir by a gamekeeper, of the Rev. James Williams, and a pair breeding on the banks of the same piece of water "a few years later." At the same time the late Rev. J. Williams, who had taken eggs at Wilstone Reservoir, believed that it bred there "in limited numbers every year." Now the species breeds numerously at the Halton and Tring Reservoirs. Their numbers seem to fluctuate somewhat, and have, since 1915, decreased a little, probably only temporarily. The Pochards that are killed during Duck-shoots are not very many.

To the Thames and the south of the county generally it is chiefly known as an uncommon winter visitor in severe weather when the reservoirs are frozen. Breeding is, however, known to have taken place at one locality in the south of the county. Two pairs nested on a pond in the Burnham Beeches district in 1916, and it is quite possible that they may have nested there previously (E. E. Pettitt, *in litt.*).

### 139. BAER'S DUCK. *Nyroca nyroca baeri* (Radde).

A male was shot, in the presence of the Hon. N. Charles Rothschild, on Marsworth Reservoir, on November 5, 1901.

It is, of course, in many cases impossible to say whether a Duck shot in England is of direct foreign origin, *i.e.* a wanderer from afar, or whether it has escaped from ponds in parks where so many foreign ducks are now kept and bred in semi-confinement. In this case, however, all enquiries tend to prove that this specimen was a genuine migrant, though the first and only known occurrence in Europe. The specimen was exhibited by the Hon. N. Charles Rothschild at the B.O.C. meeting on November 20, 1901 (*Bull. B.O. Club*, vol. xii. p. 25). "The exhibitor urged in support of the view that the specimen was a wild, rather than an escaped bird: (a) that no specimen of this duck had escaped from the Zoological Gardens, where there were now four pinioned examples sent by Mr. Frank Finn, of Calcutta; (b) that both the Duke of Bedford and Mr. J. G. Millais had stated, in reply to enquiries on the subject, that they were not aware of any of these birds having been turned out on artificial waters in this country."

In *Brit. B.* vol. i. p. 14 (1907), Howard Saunders deprecated the admission of Baer's Duck to the "British List," stating that it was "well known that the species had been introduced on the ornamental waters of England." In the same volume, p. 63, the Hon. Walter Rothschild replied, asking for further explanation of the statement with regard to the introduction to ornamental waters. No response, however, was forthcoming, and enquiries from dealers and owners of "ornamental waters" did not elicit any new facts about the introduction of Baer's Duck before or in 1901.

### 140 (300). TUFTED DUCK. *Nyroca fuligula* (L.).

*B. of Berks. and Bucks.* p. 129. *Vict. Hist. of Bucks.* p. 146.

*Now numerous resident on Weston Turville and Tring Reservoirs.*

In 1868 this Duck was only known to Kennedy (*l.c.*), and Harpur Crewe as a "common winter visitor" to the Tring Reservoirs. In 1893 it was already nesting on these waters, and also on the Halton (Weston Turville) Reservoir,

but not in large numbers. Since then it has become much more numerous and it is now a very common breeder.

To the Thames Valley and the Stanwell Reservoirs it is still only known at present as a winter visitor, usually occurring on the river during severe frosts, but occasionally met with at other times. Pettitt reports it as common at Stanwell, and has observed it at Burnham, Horton, and Hambleden.

141 (301). **SCAUP.** *Nyroca marila marila* (L.).

*B. of Berks. and Bucks.* p. 129. *Vict. Hist. of Bucks.* p. 146.

*Irregular winter visitor to the reservoirs.*

"On the 26th of January, 1855, the Rev. B. Burgess observed a female Seaup Duck swimming about in company with Coots and Dabehicks on the water in the park at Latimer, near Chesham, which was not frozen, and a few days afterwards Mr. Elliott, of Chesham Bois Mill, sent him a Seaup which he had just shot on the stream. The Rev. H. Crewe states that it is an occasional winter visitant to the Wilstone Reservoirs" (Kennedy, *l.c.*). G. A. Crewe records four seen by him about three weeks previously on the Grand Junction Reservoir, while staying at Drayton Beauchamp (*Field*, December 15, 1883, p. 809). One was shot on the Tring Reservoirs in October 1884; and in December 1900 or January 1901, Rothschild and Hartert observed a large flock.

The following specimens are now in the Tring Museum :

♂ juv., 2.xii.1892.

♀, 7.xi.1905.

♂ ♀, 20.xi.1907.

♀, 12.i.1912.

♂ in nearly full plumage, 23.i.1912.

♀, 24.i.1913.

Mr. Oldham made the following notes :

"27.x.1907. ♀, Wilstone Reservoir.

"18.xii.1909. Adult ♂, Wilstone Reservoir.

"21.i.1912. Pair on Marsworth Reservoir. ♂ not in full plumage, mantle only partially vermiculated and showing a good deal of brown, flanks dusky brown as in the ♀. Street told me some months afterwards that he had shot the ♂ and hit the ♀, but failed to drop her. On March 10 there was a ♀—presumably this bird—standing with some Pochards and Tufted Ducks on an island in Little Tring Reservoir. She was there again on March 17, and, although she may have been wounded, was able to fly well. I saw the bird again at the same place on March 30, April 13, and April 21. I saw nothing of the bird after that until July 21. On that date she was on Marsworth Reservoir with two ducklings—sooty little things like young Tufteds. I have no doubt that the ducklings were hers, for she was with them for an hour and a half while I watched them in the morning, and again when I passed the place in the evening. There were many young Tufteds on the water, but the Seaup was never many yards away from her own two, and they went with her wherever she went in the corner of the reservoir that constituted their feeding-ground. Once, when a Coot came near them, she drove it away, and she made an angry rush at a Dabehiek which approached them. She even drove off a Tufted Duckling, of larger size than her own, when it crossed their path. The Seaup had presumably paired with a Drake Tufted.

[No bird showing sign of hybridism was subsequently shot on the reservoirs.—E. H.]

"4.i.1914. Two white-faced birds, on Marsworth Reservoir.

"15.iii.1919. A female Scaup at Little Tring Reservoir."

142 (302). **GOLDENEYE.** *Bucephala clangula clangula* (L.).

*B. of Berks. and Bucks.* p. 130. *Vict. Hist. of Bucks.* p. 146.

*Irregular winter visitor to larger waters.*

In 1849 the Rev. J. Williams stated that small flocks visited the Tring Reservoirs annually, arriving at the end of October and staying till driven away by frost, but that nearly all were females or birds of the year. He records one fine male in full plumage shot early in 1849 (*Zool.* 1849, p. 2421).

The late Rev. H. Harpur Crewe also described the Goldeneye as a "regular visitor" to the Tring Reservoirs, but its visits are now rather irregular, though by no means rare. Rothschild and Hartert have often seen single birds and small flocks, when shooting on the reservoirs, and the following specimens have been shot and are now in the Tring Museum :

♀, 26.i.1893.

♂ juv., still in almost complete juvenile plumage, 10.i.1901.

♀ ad., 26.x.1901.

♀, 28.xii.1905.

♀ ad., 11.i.1906.

♀ ad., 10.xi.1908.

♂ ad. and ♀ ad., 13.i.1909, the ♂ in perfect plumage.

♂ of the year in almost complete juvenile plumage, 4.ii.1914.

♀ ad., 6.ii.1914.

♂ ad. in full plumage, 7.i.1915.

♂ with traces of eclipse plumage, 9.xi.1915.

♀, 24.xii.1915.

♂ juv., 1.i.1920.

Larger flocks than usual were seen by Hartert in December 1893 and January 1894.

Mr. Oldham observed the following specimens :

1.iii.1908. An adult male and a brown-headed bird, Wilstone Reservoirs.

10.iv.1910. An adult male and a female, Wilstone Reservoirs.

5.vii.1911. A brown-headed bird, Wilstone Reservoirs.

30.xi.1913. A male assuming full plumage and two brown-headed birds, Wilstone Reservoirs.

20.xii.1914. An adult male and brown-headed bird on Wilstone, a brown-headed bird Startops End Reservoir.

21.xi.1915. A male in nearly full plumage, and three brown-headed birds on Wilstone Reservoirs.

20.i.1918. A brown-headed bird, Wilstone Reservoirs.

28.iv.1918. A brown-headed bird, Wilstone—the latest date.

From 24.xi.1918 until mid-January 1919, two and sometimes three constantly on Wilstone Reservoirs.

15.iii.1919, three on Wilstone Reservoirs.

In February 1917, when the Reservoirs were frozen over and hundreds of Ducks were crowded together on a small open space on Wilstone Reservoirs, Hartert saw among them several adult males; there were probably some females as well, but without a telescope he could not make them out in the crowd of other Ducks.

On January 8, 1919, Lord Rothschild saw two adult males and a brown-headed bird on Wilstone Reservoir.

On the Thames it is usually met with in hard winters, such as 1916-17, when it was not uncommon (Jourdain). Four were seen at Queen's Eyot on February 2, 1917, by E. E. Pettitt.

143 (304). **LONG-TAILED DUCK.** *Clangula hyemalis* (L.).

*Very rare winter visitor.*

A young male was shot at one of the reservoirs 28.x.1892. An adult male still retaining some feathers of the summer plumage on back and scapulars was shot on the reservoirs 12.xi.1906; a young male on Marsworth Reservoir 20.xi.1908 (*Br. Birds.* vol. ii. p. 309), and another male in moult 2.xi.1915. All four specimens are in the Tring Museum.

On November 8, 1908, C. Oldham observed a young bird on Wilstone Reservoir, perhaps the same bird which was shot on Marsworth Reservoir on the 20th.

[**HARLEQUIN DUCK.** *Histrionicus histrionicus* (L.).

*B. of Berks. and Bucks.* p. 206.

Clark Kennedy records one occurrence of this species on R. B. Sharpe's authority as having been shot during the winter of 1866-7 on the river at Maidenhead, and preserved by Wilmot, the bird-stuffer of that town. Sharpe does not refer to this specimen in his *Handbook of the Birds of Great Britain*. Probably a mistaken identification.]

144 (309). **COMMON SCOTER.** *Oidemia nigra nigra* (L.).

*B. of Berks. and Bucks.* p. 125. *Vict. Hist. of Bucks.* vol. i. p. 146.

*Irregular and generally rare visitor to the Tring Reservoirs and the River Thames.*

Although chiefly a marine species, except during the nesting-season, the Common Scoter has occurred not infrequently on the Upper Thames. Clark Kennedy mentions one shot in the winter of 1862 at Datehet, and another killed in 1865 near Cookham. The latter was a male in adult plumage, and was also killed in winter. E. Curtis (*Field*, March 29, 1879, p. 369) records a male seen by him, which was shot on the Thames near Windsor on March 22.

On the Tring Reservoirs they are sometimes, though irregularly, observed. A female was shot in October 1884.

In October and December 1892 there were quite a number on the reservoirs, four females being preserved in the Tring Museum. A young male was shot at Deadmere, Great Marlow, December 18, 1893, by Joe Cox, jun. (A. Heneage *Cocks in litt.*).

On April 10, 1910, ten Scoters were observed by C. Oldham, Erwin Strese-



mann, and Ernst Hartert on Startops End Reservoir, seven of which were adult males. Five more—three of them adult drakes—were on Wilstone Reservoir, and eleven on Weston Turville Reservoir, of which seven were adult drakes. After a long spell of N.E., E., and N. wind, on the 9th it had veered to N.W. and on the 10th to a light S.W. breeze (C. Oldham, *Brit. Birds*, vol. iii. p. 414). On July 13, 1913, C. Oldham saw a female or immature male on Wilstone Reservoir, which was still there on July 19, on which day an adult male was seen at Weston Turville (*op. cit.* vol. vii. p. 119). The date of these latter records is remarkable.

An adult male on Startops End Reservoir on March 7, 1915 (C. Oldham *in litt.*). An adult ♂ and an adult ♀ observed on Wilstone Reservoirs, April 29, 1917 (*idem, in litt.*). February 7, 1918: an adult male shot on Marsworth Reservoir, preserved in the Tring Museum.

Mr. E. E. Pettitt informs us that two shot at Bell Weir are now preserved at the "Angler's Rest," Egham (*in litt.*).

145 (310). **VELVET SCOTER.** *Oidemia fusca fusca* (L.).

*B. of Berks. and Bucks.* p. 206. *Vict. Hist. of Bucks.* p. 211.

*Very exceptional visitor.*

J. Gould (*Birds of Great Britain*, vol. v. pl. 29, text) states that "during the severe winter of 1866-7 a splendid old male was killed at Cookham, in Berkshire." This specimen was almost certainly shot on the river, which forms the boundary between the two counties.

The Rev. H. Harpur Crewe told Kennedy that he had on two occasions observed the Velvet Scoter on the large reservoir near Drayton Beauchamp in cold weather, but he gave no dates or other particulars!

Mr. J. M. Knapp records one killed at Linford, Bucks, on October 27, 1890 (*Field*, November 1, 1890, p. 668).

146 (312). **GOOSANDER.** *Mergus merganser merganser* L.

*B. of Berks. and Bucks.* p. 131. *Vict. Hist. of Bucks.* p. 146.

*Irregular and uncommon winter visitor.*

A female (called *Mergus serrator*, but from the figure a Goosander) was shot at Dinton Hall on November 26, 1774. Kennedy mentions several specimens obtained on the Thames in 1847, 1856, 1860, 1864, 1866, and 1867 (the last seen only), and says that in hard weather it is "often found on the reservoirs near Drayton Beauchamp." Mr. Heneage Cocks says (*in litt.*) that one was shot near Great Marlow January 27, 1881. Two were killed at Tring in February 1885, and two seen by the keeper on November 25, 1895, as well as two in January 1896 (*Vict. Hist. of Herts.* vol. i. p. 211). Single females were shot there by James Street on November 8 and 29, 1901, and November 21, 1902.

A most interesting specimen, a male in eclipse plumage, was killed by Street, August 31, 1903, and an adult male in full brilliant plumage was shot during a Duck-shoot on December 11 of the same year.

Mr. Oldham observed two "brown-headed birds" (females) on Wilstone Reservoirs February 27, 1910, another on December 18 of the same year, which "from the purity of its colours and small size he judged to be an adult female."



January 21, 1917, he saw an adult male on Wilstone Reservoirs. A pair were on the reservoirs during the last week of December 1919 until January 1, 1920.

147 (313). **RED-BREASTED MERGANSER.** *Mergus serrator* L.

*B. of Berks. and Bucks.* p. 131. *Vict. Hist. of Bucks.* p. 146.

*Rare winter visitor.*

The Rev. H. H. Crewe informed Clark Kennedy that small parties of four or five were seen on Wilstone Reservoir almost annually. "A year or two before 1883, which was the first year I shot on the reservoirs, the Rev. A. Birch shot a female on Little Tring Reservoir, which he had stuffed" (Walter Rothschild, *Vict. Hist. of Bucks.* p. 146). Several visited Marsworth Reservoir in November 1901; on the 5th the Hon. N. Charles Rothschild shot a female, and on the 7th James Street a male and a female; all three are in the Tring Museum.

On the Thames it is of very rare occurrence, but a female is mentioned by Clark Kennedy as having been shot at Wraybury in the winter of 1854, and another was reported by R. B. Sharpe from Cookham a few years prior to 1868.

148 (314). **SMEW.** *Mergus albellus* L.

*B. of Berks. and Bucks.* p. 207. *Vict. Hist. of Bucks.* p. 146.

*Rare winter visitor.*

The earliest record of this species from the county is that of a female shot on November 23, 1774, at Dinton Hall. Now and then small flocks or single birds—very rarely adult males—are observed on larger waters. In the winter of 1850–51, however, an adult male was killed on the Thames near Boveney Lock. In the winter of 1861–2 a flock of five was observed by Harpur Crewe on the Wilstone Reservoirs, where they remained several days (Kennedy, *l.c.*). Mr. A. Heneage Cocks records an adult male shot in January 1876 on the Thames, opposite Stonehouse (*Zool.* 1891, p. 153). A flight of nine visited Marsworth Reservoir about the middle of February 1885 (Littleboy, ex Rothschild, *in litt.*, *Trans. Herts. Nat. Hist. Soc.* vol. v. p. 83). A young female was shot on January 12, 1891, at the Brewery Sewage Works below Great Marlow (A. H. Cocks, *Zool.* 1891, p. 153).

On January 26, 1913, Oldham saw a single brown-headed bird on Little Tring Reservoirs, another (or the same) on February 22, and again March 2; while Lord Rothschild saw three, an adult male and two brown-headed ones, on Wilstone Reservoir. On January 6, 1917, Oldham again saw a brown-headed smew on Wilstone Reservoirs, and again on January 20, evidently the same bird. Another female was seen by Oldham in the same place on February 17, and again March 3, while an adult female was shot there December 12, 1917, which had been seen for nearly a fortnight.

149 (316). **CORMORANT.** *Phalacrocorax carbo carbo* (L.).

*B. of Berks. and Bucks.* p. 214. *Vict. Hist. of Bucks.* p. 143.

*Rare occasional visitor to the Thames and reservoirs.*

Clark Kennedy mentions one shot near Marlow Railway Bridge about 1857, on R. B. Sharpe's authority, and another shot on the Weston Turville Reservoir in 1858.

The late C. E. Stubbs, of Henley (*ob.* 1872) states in his *Egg-Book*, probably completed about 1868, that he has known Cormorants shot in winter (among other places) at Bolney, Magpie Eyot, Medmenham, and Marlow (*cf. Zool.* 1903, p. 453).

On June 2 and August 8, 1900, James Street observed single birds on the Tring Reservoirs, and on November 15, 1900, two specimens.

Mr. A. H. Cocks saw a Cormorant or Shag flying on the Thames between Bisham and Marlow in a thick fog, but was unable to identify the species with certainty. This was some time prior to 1902.

In 1902 an immature Cormorant was seen for some weeks on the Thames near Culham Court, above the Bucks boundary; and either this or a second bird was subsequently seen on the river below Henley, according to Mr. C. Barnett (H. Noble, MSS.).

On October 11, 1907, and April 29, 1909, young males were shot on the Tring Reservoirs, both of which are now in the Tring Museum. On April 25, 1909, Mr. C. Oldham saw a single bird on the reservoirs, doubtless the bird which was shot there four days later, and also records others seen at the same place on September 4, 1910, May 5, 1912, and July 25, 1914. Mr. Oliver Pike observed a Cormorant on Wilstone Reservoir, September 14, 1919.

Mr. E. E. Pettitt informs us that there is a stuffed specimen at the "Bells of Ousely," Old Windsor, which was shot on the river at Wraysbury "a few winters ago."

150 (317). **SHAG.** *Phalacrocorax graculus graculus* (L.)

*B. of Berks. and Bucks.* p. 214.

*Very rare visitor.*

According to Kennedy (*l.c.*), a Shag was shot on the Thames near Wraysbury in 1850. A bird of the year was shot on the reservoirs October 14, 1903, another October 22, 1908 (*Brit. B.* vol. ii. p. 309), and a third January 16, 1917; all three are in the Tring Museum.

Mr. Oldham (*in litt.*) observed a Shag, also a young bird, at Marsworth Reservoir August 30 and September 7, 1913. In the Bucks County Museum in Aylesbury is an immature bird killed on Oving Church, 20.xii.1909 (Edwin Hollis *in litt.*).

151 (318). **GANNET.** *Sula bassana* (L.).

*B. of Berks. and Bucks.* p. 216. *Vict. Hist. of Bucks.* p. 143.

*Accidental visitor: three occurrences.*

A Gannet was captured by the Rev. T. Rogers, at Sherrington, near Newport Pagnell, in November 1847. Another was killed on the canal near Wendover in 1886. In the Bucks County Museum, Aylesbury, is an adult male picked up alive, 9.xii.1910, by a labourer in a meadow in Hambleden parish and brought to Mr. A. H. Cocks. Although apparently unable to move, no trace of injury could be found (A. H. Cocks and E. Hollis *in litt.*).

152 (319). **STORM-PETREL.** *Hydrobates pelagicus* (L.).

*B. of Berks. and Bucks.* p. 218. *Vict. Hist. of Bucks.* p. 152.

*Rare straggler ; four or five occurrences.*

F. O. Morris states that a specimen was picked up dead near Buckingham but does not give the date. Kennedy records the finding, during the last days of October 1859, of a Storm-Petrel on the road opposite the Priory, Burnham, and also mentions another which was shot in the neighbourhood of Burnham in 1865, while a third was knocked down near Wycombe on January 21, 1868 (*Zool.* 1868, p. 1178). About the middle of October 1877 a small Petrel (said to have been this species) was seen flying against a mill at High Wycombe, but recovered and flew away (*Field*, 1877, October 20, p. 441). In November 1880 a Storm-Petrel was picked up near Wendover (H. H. Crewe, *Zoologist*, 1881, p. 68).

153 (320). **LEACH'S FORK-TAILED PETREL.** *Oceanodroma leucorhoa leucorhoa.* (Vieill.).

*B. of Berks. and Bucks.* p. 217. *Vict. Hist. of Bucks.* p. 152.

*Rare straggler ; three occurrences prior to 1868, two subsequently.*

"After a strong gale of wind in the summer of 1847 or 1848, a man named William Hibbs noticed a bird fluttering against a lamp at the corner of Brocas Lane, Eton ; he caught it, and it proved to be a Petrel of this species." "It appeared extremely thin, and was very weak, although in good plumage." "The Rev. Bryant Burgess, of Latimer Rectory, near Chesham, sent me an account of one of these rare Petrels which was taken in that neighbourhood. Upon the 1st of November, 1859, during a very strong gale of wind, Mr. Poulter, gardener to Lord Chesham, found a Fork-Tailed Petrel lying upon the ground in the deer-park at Latimer. \* \* \* The stomach was empty, the whole frame was very thin and emaciated, and it was much battered about the head. \* \* \* Another specimen was picked up in an exhausted state at Woughton, Buckinghamshire." One was caught alive in a hedge at Berton, after the great gale of October 14, 1881 (A. H. Cocks *in litt.*). This specimen is mounted in the Rectory, Maid's Moreton, near Buckingham (W. K. Clay *in litt.*). Mr. E. Hollis obtained for the Bucks County Museum a specimen from Mr. Littlechild Sleeper, in Westcott, which had been caught early in November 1910, having been mobbed by Rooks.

[**GREAT SHEARWATER.** *Puffinus gravis* O'Reilly.

Mr. Archibald Allen, writing in the *Field* (October 28, 1911, p. 968), records a Greater Shearwater, *Puffinus major*, as having been killed by striking telegraph wires "a few weeks since" near Olney. No investigation appears to have been made as to whether the specimen in question was correctly identified, and the date suggests the probability of confusion with the Manx Shearwater, which frequently occurs inland during September, though, curiously enough, there appears to be no record of this species from Bucks.]

154 (336). **GREAT CRESTED GREBE.** *Podiceps cristatus cristatus* (L.).

*B. of Berks. and Bucks.* p. 65. *Vict. Hist. of Bucks.* p. 152.

*Locally numerous breeding species on reservoirs, but few remain throughout winter.*

As is well known, the breeding-range of this Grebe has been extending during the last twenty years or more. The Rev. H. H. Crewe informed Clark Kennedy that he noticed a bird on Marsworth Reservoir in May 1864. In the sixties it began to breed on the Tring Reservoirs, but it was then a rare bird. The first nest was found and the eggs taken by Miss E. Williams in 1867 (Miss Ellen Williams *in litt.*). It is now a very common breeder on the Marsworth and Wilstone and also on the Halton (Weston Turville) Reservoirs. From statements by the keeper, the Hon. Walter (now Lord) Rothschild recorded (*Trans. Herts. Nat. Hist. Soc.* vol. v. p. 81) on the Tring Reservoirs for 1884 not less than seventy-five nests, forty-five for 1885, forty-three for 1886, and that 115 birds were seen in April 1887. These numbers were, of course, approximate, but may not have been exaggerated. In 1918 Street thought that about thirty pairs or more nested. The number varies, and the breeding pairs diminished greatly during the dry summers at the beginning of this century, when the reeds were dry; but now, since the water has been very high for several years, their number has much increased again, and the bird will always hold its own, as it is strictly protected. Mr. Oldham sent the following very interesting, full notes:

"Most of the birds have left by end of October, but unless there is hard and continual frost a few stay at Tring and Weston Turville through the winter. (Eight on December 18, 1910, stayed until January 12, 1911, when heavy frost drove all but one away; about ten all through December 1912 and January 1913; nine on December 20, 1914; eight on December 26, 1915; twenty at least on December 8, 1917, but frost in January 1918 drove all but two away.) The birds begin to return about beginning of third week in February (twelve on February 19, 1911; thirty on February 22, 1914; nineteen on February 21, 1915; thirty-three on February 20, 1916), but in the backward spring of 1917 they were later: none to be seen on February 25, and only about a dozen on March 4.

"In February and March there are usually a good many birds that show no signs of breeding-plumage (the majority are in full breeding-dress by middle of February). I take it that this species does not breed in its second year, and that these clean-necked birds are young of the previous year. I have often noticed animosity shown to them by the adults, and believe they are all driven off the waters by the adults before the actual nesting-season.

"In *Brit. Birds*, vol. iii. pp. 30-1, I recorded nestlings at Weston Turville on May 2, 1909, but since then have seen still earlier young, *e.g.* at Wilstone on April 21, 1912, and at Marsworth on April 27, 1913."

Mr. L. W. Crouch (*Br. Birds*, vol. i. p. 327) records a nest found on May 20, 1907, on a reservoir near Aylesbury, containing the unusually large number of seven eggs.

On the Thames it is only seen occasionally during the winter, and does not breed either here or on the Stanwell Reservoir, where, however, it is a common winter visitor (E. E. Pettitt).



155 (338). **RED-NECKED GREBE.** *Podiceps griseigena griseigena* (Bodd.).

*B. of Berks. and Bucks.* p. 209. *Vict. Hist. of Bucks.* p. 152.

*Rare winter visitor.*

According to Kennedy (*l.c.*), a specimen was shot at Saunderton, near Risborough, October 10, 1848. The late C. E. Stubbs, of Henley, stated that it was occasionally met with on the Thames: one shot at Greenlands "some years ago" (*i.e.* prior to 1872); cf. *Zoologist*, 1903, p. 453. (The Rev. H. H. Crewe stated this species "had once been obtained at Tring," but, as so often, gave no particulars.) Oldham observed an immature bird, with the neck still retaining some stripes, on Wilstone Reservoir, December 18, 1910. There was a Slavonian Grebe on the water on the same day. Oldham further observed an adult, assuming summer dress, on Wilstone Reservoir, March 16, 1913. He saw this bird on several occasions up to and including June 22, 1913 (*Brit. B.* vol. vi. p. 374). Another adult, assuming summer dress, was seen by the same observer on Tringford (Little Tring) Reservoirs, February 8, 1914. This bird was picked up dead February 10, showing signs of an old wound on one wing, and with a broken tarsus. Mr. Oldham thinks this was probably the same bird which he observed so often in the spring of 1913, but if so it is curious how it had escaped his and other people's notice in the interval between June 22, 1913, and February 8, 1914.

156 (337). **SLAVONIAN GREBE.** *Podiceps auritus* (L.).

*B. of Berks. and Bucks.* p. 132. *Vict. Hist. of Bucks.* p. 152.

*Rare winter visitor.*

Clark Kennedy records two specimens obtained near Windsor in 1858, another killed on January 17, 1861, below Windsor Weir, and a fourth shot in the winter of 1865 near Cookham Bridge. He also mentions a specimen killed December 9, 1867, on the Thames at Eton, and he "heard of another specimen which was shot on the Thames close to Eton" about the same time.

Mr. Heneage Cocks's gardener shot one at Great Marlow "in the sixties." According to Rothschild two specimens were shot at Halton Reservoir between 1874 and 1880. They were first identified by the late Rev. H. Harpur Crewe, and were afterwards seen by the present Lord Rothschild in a keeper's possession near Halton. Unfortunately we have not been able to find out what became of them.

On March 14, 1909, Mr. Oldham observed an adult in winter plumage, but showing incipient ear-tufts and a tinge of chestnut on the flanks, on Wilstone Reservoirs. The bird was still there on March 21 (*Brit. B.* vol. ii. p. 426). Another specimen was observed by Oldham, December 18, 1910, and an adult also on Wilstone Reservoirs on April 1, 1917, and several times on the 8th and 9th. It was beginning to assume summer dress; the flanks were tinged with chestnut, the cheeks ashy.

On the Stanwell Reservoir Mr. E. E. Pettitt saw a single bird from December 25, 1913, to January 25, 1914, and also noticed another early in 1915 at the same place.



157 (339). **BLACK-NECKED GREBE.** *Podiceps nigricollis nigricollis* Brehm.

*B. of Berks. and Bucks.* p. 210. *Vict. Hist. of Bucks.* p. 152.

Black-necked Grebes were obtained on the Tring Reservoirs as long ago as 1846 or 1847; the specimens were mounted and seen by the present Lord Rothschild, but their whereabouts are now unknown. The statement by Kennedy (p. 210, under the name of *P. auritus*) that it nested on the reservoirs, however, was an error, due to the name "Eared Grebe" being used for this and other species as well: the eggs taken by Mr. Williams were those of the *Great Crested Grebe*. The Black-necked Grebe, however, has appeared from time to time on the reservoirs in the autumn and spring, but as an irregular and uncommon visitor only. There are specimens in the Tring Museum from November 24, 1903, November 19, 1908, November 21, 1908, and April 23, 1909. Mr. Oldham observed specimens on April 18, 1909, November 5, 1911, December 26, 1915 (probably of this species), and January 20 and 27, 1918.

Mr. Oldham was the first to observe these birds breeding on the reservoirs in 1918, and he published, among others, the following most interesting notes in the *Bull. B. O. Club*, vol. xxxix, pp. 28-34:

"On April 28, 1918, I noticed two birds in full breeding-plumage, obviously from the slight difference in size a pair, swimming in close company on one of the reservoirs, and it was with a very lively interest that my sister-in-law, D., and I saw them again at the same place on May 4 and 14, for their sojourn suggested that possibly they would settle down and nest. Three days later D. saw four birds, and on the 21st a party of seven—three pairs and an unattached male. I had these seven birds under observation for some hours on the 26th. For the most part they fed in close proximity—indeed, at times a blanket would have covered the whole party,—but now and then a pair would detach themselves from the others and go off on a short cruise. Essentially sociable as the birds were, the odd male was treated with some intolerance, for at times one of the others made a rush at it as though to drive it off. That the birds, although paired, should at the end of May maintain this close association and spend hours together fishing in the open water was puzzling, for although from the first there had been indications of nuptial display—of which more hereafter—there was nothing to suggest that nesting had actually begun, and at the breeding-place described in 1904 by Mr. O. V. Aplin (*Zoologist*, 1904, pp. 417-420), which is now generally known to be in Wales, young are often hatched at the beginning of June. The association that had obtained during the second half of May did, however, break down at the end of the month, for on June 1 the three pairs were feeding in different parts of the reservoir, whilst the unattached male was cruising alone, and after that date we only saw the birds singly or in pairs. By June 6 a pair had moved to one of the other reservoirs, and later in the month another pair frequented the place for a day or two. On the 26th D. saw two birds, not mates apparently, fishing at some distance apart on this water. One of them went repeatedly into a thick bed of *Typha*, always at the same spot, behaviour which the head keeper noticed too on the 29th. The inference was that the bird was feeding a sitting mate, or more probably newly-hatched young, on the nest. The reservoirs are fringed in places with broad dense beds of reeds and *Typha angustifolia*—admirable nesting-places

for Grebes,—and, although the keepers by Lord Rothschild's orders were on the look-out for nests, it is hardly a matter for surprise that none was seen, for the recesses of the reed-beds could only have been explored at the risk of disturbing the birds.

“ On the last day of June a pair and an unattached bird were swimming in open water on the reservoir which the whole party had frequented during May. Even at a considerable distance one of this pair looked much more bulky and sat higher in the water than its mate, and I suspected that it was carrying young. This suspicion was strengthened when its mate swam towards it with food in its mouth and passed the food to something on its back. With the telescope we could plainly see the heads of young ones protruding above the raised wings of the bulkier bird, but it was impossible to tell at the distance how many young there were. Once during the two hours we were at the place a single young one swam clear of the parent for a minute or two and then clambered up again over its tail. Except for a few brief intervals the other parent was constantly bringing food to the young, diving in the shallow water close to its mate. It stayed under water for only a few seconds at a time, and so achieved several journeys per minute; indeed, its industry and activity were astonishing compared with the more leisurely tactics of the Great Crested Grebe when feeding young. Although I never ascertained how many young were hatched out by this pair—it is certain that there was more than one chick on the back of the old bird on June 30—it may be that only one was reared, for in the latter part of July I could never detect more than one, with an old bird always in close attendance. On August 11, by which time it was well grown, this young bird was fishing on its own account, and I could see nothing of either parent.

“ Four days after our first sight of this brood D. saw a pair with newly hatched young on the other water, at the edge of the *Typha*-bed and close to the spot where she had seen the bird go in on June 26. We spent some time watching this pair at close quarters on the afternoon of July 6. The three chicks were carried on the back of one parent and fed in that position by the other, which came at frequent intervals with a small fish held crosswise in its bill. Now and then on the approach of the old bird with food a chick would slide into the water from the back of the nursing bird, only to regain its cradle quickly by climbing up over its tail. Once the bird that was carrying the young shook them off its back and dived. They swam immediately to the other bird, clambered up over its tail, and the rôles of the old birds were reversed. A fortnight later the division of labour still obtained, but its mode had changed, for then one parent had sole charge of two and the other of one of the clamorous and apparently insatiable chicks, each party feeding independently of and at some distance from the other. On August 4 the young birds were diving and fishing to some extent on their own account, but most of the food was still caught by the old birds. By August 11 the young, which were then about two-thirds the size of the old birds, were scattered about the reservoir and seemed to be quite independent of parental control. A week later I could find neither old nor young, and can only conclude that all the birds left the neighbourhood so soon as the young could fly—a proceeding in striking contrast with that of the Great Crested Grebes, which do not leave the reservoirs for the winter until the latter part of October. That two pairs nested and reared broods is beyond question. It may be that the third pair nested, but escaped notice—an easy matter if the total acreage of the reservoirs

is taken into account ; but after the party broke up at the beginning of June little was seen of this pair or of the unattached bird.

"As few people in this country have any first-hand acquaintance with the Black-necked Grebe in its nesting-haunts, some extracts from my note-books regarding the appearance and behaviour of the birds may not be out of place.

"In life the silky yellow ear-coverts are not folded closely as represented in most figures, but, radiating from a centre, occupy a third of a circle and show as golden rays against the black cheeks. In conjunction with the upstanding frontal crest, the tip-tilted bill, and crimson eye, they contribute not a little to the bizarre appearance of the bird. The young for the first few days are much darker in colour than Great Crested Grebes of the same age and resemble young Dabchicks, but the stripes on the neck and body are more obscure than in either. At four weeks the stripes on the body are imperceptible and those on the neck difficult to make out, even with a glass, at a distance of a few yards. The birds are then dark ash-grey with fore-neck, breast, and cheeks white, and at a little distance look like young Coots rather than Grebes. Their rate of growth is astonishing. A couple of days makes a perceptible difference in their size and at six weeks they are more than two-thirds the size of the adults. The rate of growth in the Great Crested Grebe, and I think the Dabchick too, is much slower. The curious habit that Grebes have of protruding and wagging a foot behind them is practised early in life, for several times we saw a young one do so whilst on the old one's back.

"Before nesting actually began there was evidence that the Black-neck engages in nuptial displays akin to those of the Great Crested Grebe, but unfortunately the performance which Mr. L. Huxley (*P.Z.S.* 1914, pp. 491-562) calls a 'shaking bout,' although often observed, was always engaged in at too great distance for details of pose and of the disposition of the plumage to be appreciated. Mr. Aplin (*loc. cit.*) refers to a bout between two birds that had a young brood, and such a thing may be not uncommon ; it certainly is not in the case of the Great Crested Grebe. On May 19 a bird—I think, a male—brought to the surface what looked like a piece of matted alga, and swimming up to its mate proffered the morsel, an action probably connected with courtship, whilst on May 21, D. saw two of the birds 'stand up in the water on their tails, facing one another and shaking and bowing their heads,' a performance obviously analogous to the 'penguin-dance' of the Great Crested Grebe described by Mr. Huxley.

"The paired birds usually kept close together, but sometimes when fishing they became separated and would then call to one another with a plaintive *pee-eep*, a note which Naumann (*Nat. Vög. Deutschl.* vol. ix. pp. 768-84, 1838) renders *beeb*. That author describes as *bidder*, *vidder*, *vidder*, *vidder*, another note which is very like the rippling cry of the Dabchick, though lacking perhaps something of its trill. In Wales I have heard a harsh creaking note strongly reminiscent of the call of the Partridge, and probably the analogue of the groaning croak which the Great Crested Grebe utters in the spring. The alarm-note resembles the *whit* of the Dabchick, but it is neither so loud nor so sharp. The hunger-cry of the young, uttered incessantly as they follow the old birds for food, is similar in general character to that of the Great Crested Grebe, which Mr. W. P. Pyecraft (*The British Bird Book*, vol. iv. p. 427) aptly renders as *pee-a*, *pee-a*, *pee-a*, and of the Dabchick, but is not quite like either. The difference, although difficult to express in words, was apparent enough when the young of all three species



were calling at once in close proximity. The hunger-cry of the Dabchick is shriller and more quickly iterated than that of the Great Crested Grebe and lacks something of its querulous tone.

"When feeding, the birds are more under water than on the surface. Half a dozen dives in deep water, not consecutive but taken at random, timed 25, 26, 23, 27, 28, and 26 seconds respectively, but in shallow water and particularly when the old birds are feeding young the duration is often much less. So far as I could judge the young were fed exclusively on small fish, but when old enough to forage for themselves they took other food as well. They picked something, apparently small insects, from the surface of the water, and on one occasion one brought from the bottom what looked like a large drowned earthworm and swallowed it.

"The birds evinced little fear of people walking on the reservoir banks and merely swam out for a few yards if anyone passed when they were feeding close inshore. When encumbered with a brood this indifference was even greater, and they would feed the young ones with apparent unconcern, although people were standing and watching them at a distance of a few feet. I was standing one afternoon at the water's edge looking at an old bird with two young ones. On two occasions this bird came to the surface just at my feet. It did then evince some alarm; uttering a cry, *whit, whit, whit*, it rushed through the water for a yard or two with body submerged and head and neck only protruding, then dived again just as the Great Crested Grebe does under similar circumstances. This discomposure was, however, only momentary, and the bird resumed the even tenor of its fishing without more ado."

In 1919 three, if not four, pairs returned to the reservoirs. According to Mr. Oliver G. Pike's observations (*Brit. B.* vol. xiii. p. 146, 1919), one pair was driven off from Marsworth Reservoir, where only one remained to breed. They had eggs by the middle of May, but the eggs disappeared, either being taken by a rat or Moorhen, or possibly by an unscrupulous egg-collector, who might easily have been guided to the nest by the conspicuous "hide" erected near the nest by Mr. Pike and a keeper, for the purpose of photographing nests and birds, which, as the photographs published in *Country Life*, *Brit. Birds* vol. xiii., and the accompanying plate show, was most admirably accomplished by Mr. Pike. at the second nest, which contained eggs early in June, the first egg being hatched on June 20. The birds on the other reservoir must also have hatched, but no exact dates are available. We have no doubt that these birds will now again return and regularly nest on the reservoirs, which are well watched by interested keepers, so that egg-collectors, if they should attempt to find eggs, will have small chance. In 1920 a specimen was seen on March 28!

158 (340). **LITTLE GREBE or DABCHICK.** *Podiceps ruficollis ruficollis* (Pall.).

*B. of Berks. and Bucks.* p. 67. *Vict. Hist. of Bucks.* p. 152.

*Common resident on ponds and reservoirs.*

Breeds in considerable numbers on the reservoirs, especially on those at Tring and Halton. It also nests commonly on the Thames from Boveney to Hambleden, and a pair or two may be met with on almost any suitable piece of water. Some leave the reservoirs and other inland waters for the rivers, which remain open, but many remain throughout the winter.

159 (341). **GREAT NORTHERN DIVER.** *Colymbus immer* Brünn.

*B. of Berks. and Bucks.* p. 210. *Vict. Hist. of Bucks.* p. 151.

*Rare winter visitor to the Thames and reservoirs.*

In the Dinton Hall MS. is a description and figure of an adult bird found by William Saunders in the neighbourhood on December 3, 1774. Dr. Lamb records one under the name of *C. glacialis* from Maidenhead in January 1794, and also a second, evidently an immature bird, as *C. immer*, shot at the same place and at the same time (cf. *Zoologist*, 1880, p. 317). In December 1841 another immature specimen was obtained on the Tring Reservoirs; while what is described as a "young one" was captured alive in a ditch at Chequers Court on May 9, 1850. In November or December 1859 a specimen was procured at Chesham, according to the Rev. B. Burgess. W. B. Botting records a specimen bought by him, which had been recently killed on the Thames near Great Marlow (*Field*, December 9, 1865, p. 426); and H. Noble states that one was killed near Temple Island, below Henley, in 1865, and is now in the possession of Mr. W. D. Mackenzie, of Fawley Court (*Vict. Hist. of Berks.* vol. i, p. 165). Another was also killed near Henley (but apparently just outside the county boundary) on November 18, 1872 (C. A. Sheppard, *Field*, November 30, 1872, p. 530).

On the reservoirs the keeper, James Street, observed one on February 15, 1886. Rothschild also informed Littleboy that one was shot in November 1885, and another on January 1, 1887; while another is said to have been seen in the following month (cf. *Trans. Herts. Nat. Hist. Soc.* vol. iv. p. 166, vol. v. p. 83, vol. ix. p. 159; and *Vict. Hist. Herts.* vol. i. p. 216).

E. E. Pettitt informs us that there is a specimen at the "Angler's Rest," at Egham, which was shot by E. Hanks at Bell Weir in 1889. Street also reported another as seen on the reservoirs on January 12, 1897 (*Trans. Herts. Nat. Hist. Soc.* vol. x. p. 40).

In the winter of 1905-6 E. E. Pettitt also noted one on the Stanwel Reservoir, just over the Middlesex boundary.

On November 2, 1913, Oldham observed a restless bird on Wilstone Reservoir. "It frequently took flight, going from one part of the reservoirs to another. Finally it rose in circles until it became a mere speck in the sky, and then dropped, as I thought to Marsworth Reservoir, but I could not find it, when later I searched that water" (Oldham *in litt.*). It was almost certainly this bird which was picked up dead near the reservoirs November 8, 1913. The bill was damaged at the base, probably by shot, or possibly by striking a wire.

160 (343). **BLACK-THROATED DIVER.** *Colymbus arcticus arcticus* L.

A female was shot by the present Lord Rothschild on Wilstone Reservoir, December 27, 1910, and is in the Tring Museum.

161 (344). **RED-THROATED DIVER.** *Colymbus stellatus* Pontoppidan.

*B. of Berks. and Bucks.* p. 134. *Vict. Hist. of Bucks.* p. 151.

*Rare winter visitor.*

According to Kennedy, *l.c.*, this species was formerly the commonest of the three Divers, and specimens used to be killed almost annually on the Thames



near Windsor, Eton, and Datehet, occasionally at Maidenhead and Cookham, and once near Burnham. He states that most of the birds obtained are immature. There seem, however, to be no definite records from the river since 1864. They are very rarely seen on the Tring Reservoirs.

On January 10, 1909, Oldham watched a specimen for some time on Wilstone Reservoirs (*Zoologist*, 1909, p. 77), where he also saw an adult on July 3, 1910.

A female was shot on the Reservoirs, January 14, 1910, which is in the Tring Museum.

The late Dr. Eagles, of Aylesbury, presented a mounted specimen to the Bucks County Museum in 1910, which he said he had shot himself "some years before" near Aylesbury railway-station.

162 (345). **WOOD-PIGEON.** *Columba palumbus palumbus* L.

*B. of Berks. and Bucks.* p. 54. *Vict. Hist. of Bucks.* p. 146.

*Common resident ; great increase in winter.*

Breeds everywhere in woods and parks. In winter appears in great flocks, wherever beech-mast is plentiful, but during the last twenty-seven years has never been so numerous as in the winter of 1894-5.

[**ROCK-DOVE.** *Columba livia livia* L.

*Vict. Hist. of Bucks.* p. 146.

In 1902 Mr. A. Heneage Cocks wrote to Hartert as follows: "A wild, white-rumped Pigeon, slightly smaller than the Wood-Pigeon, and equally distinct from the Stock-Dove, is, or was, plentiful at one particular spot in Buckinghamshire, viz. a high chalk cliff, facing the Thames near the lower end of the Danesfield estate, near where Harleyford estate adjoins. These birds could always be seen flying thence over the river, and I have shot specimens, but never since I began collecting, and for some years now shooting has been stopped on the river, and I cannot say whether they are still there, but see no reason to the contrary." Mr. Cocks also had a good view of a white-rumped bird at Little Marlow, which rose from a gravel-pit by the roadside.

As feral Pigeons are often almost indistinguishable from wild Rock-Doves, it is difficult to say whether these Pigeons were really originally wild birds or feral, though in the latter case all the individuals in a colony are not as a rule alike.]

163 (346). **STOCK-DOVE.** *Columba oenas oenas* L.

*B. of Berks. and Bucks.* p. 55. *Vict. Hist. of Bucks.* p. 146.

*Resident, common though local.*

Not rare generally where old trees afford nesting-places. Hartert (*l.c.*) supposed that Stock-Doves were migrants, because they are migratory in the northern parts of the continent, leaving their nesting-places in the autumn and returning to them early in March, if not before. They are, however, resident in the British Isles. Hartert also doubted the statements of Kennedy and H. H. Crewe, who reported "large flocks" and "great numbers" feeding upon beech-mast, and probably not without reason, though they flock together to some extent

in winter, as Oldham observed about twenty feeding on a fallow near Hastoe on April 25, and a flock of eleven on March 31, 1917, in a field near Wilstone Reservoirs. As at that time Stock-Doves in many cases have already eggs and certainly are paired at their breeding-places, these flocks (though not "large") were possibly migrants from the north of the continent.

164 (348). **TURTLE-DOVE.** *Streptopelia turtur turtur* (L.).

*B. of Berks. and Bucks.* p. 94. *Vict. Hist. of Bucks.* p. 147.

*Summer resident.*

Seems to be not rare in all well-wooded parts and to have increased lately in several places. Breeds in considerable numbers in the Thames Valley. Mr. A. H. Cocks noted a great increase in the numbers of this species about twenty-five years ago. Like the Wood-Pigeon, the Turtle-Dove is at times attacked by diphtheria, and one was picked up by Mr. A. H. Cocks at Skirmett on July 31, 1908, which had evidently succumbed to this disease.

[**INDIAN SPOTTED DOVE.** *Streptopelia chinensis suratensis* (Gm.).

*B. of Berks. and Bucks.* p. 95.

Donovan, *Nat. Hist. Brit. B.* vol. vii. pl. 149 and text (1816), figures and names "*Columba albinotata*" \* specimens of *S. chinensis suratensis* that passed into his collection from the Leverian Museum, said to have been shot in Buckinghamshire, where, according to Latham, they had not been rare. No doubt these birds, which like other Doves are often kept in cages in the East, were "introduced by some fortuitous circumstance into the vicinity of Buckinghamshire," as Donovan wrote.]

165 (350). **PALLAS' SAND-GROUSE.** *Syrnhaptes paradoxus* (Pall.).

*Vict. Hist. of Bucks.* p. 147.

*Exceptional visitor ; no specimen shot in Bucks seems to exist.*

Mr. A. F. Crossman writes (*in litt.*): "During the visitation of this species in 1888 my grandfather saw a flock of birds at Farnham Royal, which from his description were undoubtedly of these birds. I was unfortunately unable to see them on going to the place about an hour afterwards." F. Bond recorded a flock of about a dozen birds as seen on June 19, 1888, near Staines Moor, on the borders of Bucks. and Middlesex (*Zoologist*, 1889, p. 227). Rothschild believes that he saw three flying overhead when shooting near Halton in 1896, but as it is not known that any visited Europe that year, we fear that a mistake was made.

Edwin Hollis saw three birds, 28. viii. 1908, flying over the road between Wendover and Aylesbury, which he took to be Sand-Grouse. They were certainly not Partridges, he says.

On December 1, 1908, Rothschild recorded a flock of seven or eight of these birds which rose out of a turnip-field in the parish of Buckland, on the Bucks. and Herts. boundary, near Tring, while Pheasant-shooting (*Brit. Birds*, vol. ii. p. 309).

\* This name has been overlooked in the *Cat. B. Brit. Mus.* vol. xxi., and other synonymic lists.

166 (352). **STONE-CURLEW** or **THICK-KNEE**. *Burhinus oedicnemus oedicnemus* (L.).

*B. of Berks. and Bucks.* p. 97. *Vict. Hist. of Bucks.* p. 148.

*Summer visitor in greatly reduced numbers, breeding very locally.*

Formerly this interesting species bred in some numbers on the slopes of the Chiltern Hills, and also on the chalky uplands near Ivinghoe. The late C. E. Stubbs had eggs taken at Fawley on May 23, 1860 (cf. *Zoologist*, 1903, p. 450). In Clark Kennedy's time its numbers had apparently already been diminished, but H. Harpur Crewe reported that it might still often be heard wheeling overhead on a summer's night at Drayton Beauchamp. Bryant Burgess also stated that its note had been heard near Chesham; and Kennedy mentions occurrences near Aylesbury, Buckingham, and several times at Slapton.

About 1900 Mr. A. H. Cocks found it still numerous in summer on the east side of the Chilterns near Skirmett, and from there to Turville Heath and across the Oxfordshire border. He relates how the birds used to spend some hours after sunset flying backwards and forwards past his house screaming, from the end of May onward. About the year 1909 or 1910 a great diminution in their numbers seems to have taken place (*Brit. Birds*, vol. viii. p. 173). Heatley Noble (*loc. cit.*) also states that up to 1905 one or two pairs bred regularly on a part of the Fawley Park estate. There are, however, entries in Mr. A. H. Cocks's diary of occasional appearances of this species up to much later dates. Three or more were heard on April 13, 1908, and again on the 17th, and others are noted under the dates of May 13, 1912, and August 8, 1913. The Bucks County Museum also contains an immature bird with the following inscription: "Bred on borders of Hambleden and Turville parishes. Captured with broken wing, 20.vii.1907" (E. Hollis *in litt.*).

A clutch of eggs now in the Aylesbury Museum was taken in May 1910 in the Saunderton district, and in April 1914 another nest with eggs was found and photographed, which hatched off successfully (E. Hollis, *Brit. Birds*, vol. viii. p. 121). According to the farmer the birds still breed in this locality annually (E. Hollis *in litt.*).

Although the Stone-Curlew is not now known to breed on the Ivinghoe Downs, it is worth noting that Hartert heard the unmistakable cry of this species over Tring both in 1914 and 1915.

167 (351). **OYSTER-CATCHER**. *Haematopus ostralegus ostralegus* L.

*B. of Berks. and Bucks.* p. 184. *Vict. Hist. of Bucks.* p. 148.

*Exceptional straggler.*

Kennedy says that specimens have occasionally been killed on the Thames, and instances one seen near Surley in March 1866, and another shot near Windsor "a few years since." Mr. A. H. Cocks believes that he recognized the note about midnight on August 8, 1893, at Great Marlow. James Street shot a female of the year on Little Tring Reservoir on September 7, 1897 (not September 24, as stated in *Trans. Herts. Nat. Hist. Soc.* vol. x. p. 38). This specimen is now in the Tring Museum. Street also told Oldham that he had seen one on March 20, 1915, at Marsworth Reservoirs.

168 (356). **DOTTEREL.** *Charadrius morinellus* L.

*B. of Berks. and Bucks.* p. 140. *Vict. Hist. of Bucks.* p. 148.

*Rare visitor ; no recent records.*

This bird, like the Golden Plover, seems to have been of much more frequent occurrence in former days. Being exceedingly good to eat and less shy than most other Waders, they were apparently caught and shot a great deal. Kennedy (*l.c.*) says that a few were shot in a field near Burnham in the spring of 1857, and that they were rarely seen in the vicinity of Eton and Windsor, also that they have been procured in the neighbourhood of Aylesbury and Drayton Beauchamp. The late Rev. H. Harpur Crewe had an adult male which, together with a female, was shot at Tringhoe, near Ivinghoe, August 14, 1862, by one of Earl Brownlow's keepers (*Ibis*, 1862, pp. 390-1).

169 (358). **RINGED PLOVER.** *Charadrius hiaticula hiaticula* L.

*B. of Berks. and Bucks.* p. 141. *Vict. Hist. of Bucks.* p. 148.

*Regular bird of passage.*

Seen in suitable localities, except during the breeding-season and in the depth of winter. Oldham sent the following notes about the reservoirs :

"Bird of passage at the reservoirs. If there is much mud a good many are seen, but in seasons when the water is high there is no inducement for them to stay. I saw none in 1916 or 1917.

"The spring passage apparently extends from mid-March to third week in May (my outside dates are March 14 [1909] and May 21 [1911]).

"The autumn passage extends from end of July to third week in September. (I have only once seen a bird in October, *i.e.* on October 13, 1907.) The birds occur more frequently and in greater numbers in autumn than in spring. I saw a party of ten, immature birds, on September 11, 1910 ; one of fourteen, adult and immature birds, on September 18, 1910 ; and one of eleven, adult and immature birds, on August 9, 1914.

"The birds often consort with Dunlins. Used to occur not infrequently on the banks of the Thames, and probably does so now, though there are no recent dates."

[**KENTISH PLOVER.** *Charadrius alexandrinus alexandrinus* L.

Although just outside our boundary, it seems worth recording that G. W. Kerr saw a Kentish Plover at the Stanwell Reservoir, Middlesex, on April 21, 1915 (*in litt.* to Pettitt).]

170 (362). **GOLDEN PLOVER.** *Charadrius apricarius* L.

*B. of Berks. and Bucks.* p. 114. *Vict. Hist. of Bucks.* p. 148.

*Late autumn and winter visitor.*

The Golden Plover was, according to accounts by sportsmen and farmers, much more frequent formerly than it is now. We have no information of its annual occurrence of late years near the reservoirs, where it is now only seen from time to time in small flocks or singly, in winter. Several were shot near Aston Clinton and Marsworth in November and December 1917. Flocks are often



observed near Aylesbury, Princes Risborough, and Chesham, also near Buckingham. Oldham observed a single bird, flying high, calling, near Marsworth on July 13, 1910; he heard one December 5, 1915, and again on March 19, 1916, and saw a flock of fifteen in a pasture near the reservoirs February 16, 1917.

In the Thames Valley it appears to be more numerous, and E. E. Pettitt describes it as common in winter in the meadows between Taplow and Boveney.

171 (365). **GREY PLOVER.** *Squatarola squatarola squatarola* (L.).

*Vict. Hist. of Bucks.* p. 148.

*Rare visitor.*

On November 25, 1819, a Grey Plover was obtained near Dinton Hall. According to Rothschild (information given to Littleboy) one was shot near the reservoirs in March 1885. A male was shot by Hartert on the Wilstone Reservoir December 12, 1897, and is in the Tring Museum.

172 (367). **LAPWING.** *Vanellus vanellus* (L.).

*B. of Berks. and Bucks.* p. 59. *Vict. Hist. of Bucks.* p. 148.

*Common resident.*

The same birds seem to remain here throughout the year, but they assemble in great flocks after the breeding-season. In severe winters they suffer badly, and many die for want of food, as in the winter of 1917.

173 (370). **RUFF.** *Philomachus pugnax* (L.).

*B. of Berks. and Bucks.* p. 193. *Vict. Hist. of Bucks.* p. 150.

*Occasional visitor.*

A Ruff was shot at Dinton Hall August 8, 1774. One was killed near Chesham in the sixties (Kennedy, *l.c.*). Single birds or small parties visit the Tring Reservoirs from time to time. Crossman (*Vict. Hist. of Herts.* vol. i. p. 213) records specimens shot in August 1884 (one) and two in August 1886. Specimens shot there on September 5, 1894 (♂), September 19, 1898, September 15, 1904 (♀ ad.), September 11, 1907 (♀ juv.), are in the Tring Museum. We know nothing of the bird shot August 17, 1895, which is mentioned by Crossman (*Vict. Hist. of Herts.* vol. i. p. 214). Mr. Oldham made the following observations: October 13 and 20, 1907, a young ♂; May 9, 1909, a female; August 23, 1914, a young ♂, feeding on Mollusca (apparently *Limnaea pereger*) on the mud.

174 (371). **KNOT.** *Erolia canutus canutus* (L.).

*Rare visitor.*

A young male was shot on the Tring Reservoirs on September 15, 1904, and is in the Tring Museum. Mr. Oldham observed an adult bird, changing into winter plumage, but still retaining a good deal of chestnut colour on the breast, feeding with a Redshank on the mud at Wilstone Reservoirs, on September 12, 1909. A specimen was shot near Halton, January 28, 1911, and is mounted in the Bucks. County Museum in Aylesbury.



175 (372). **SANDERLING.** *Crocethia leucophaea* (Pall.).

*B. of Berks. and Bucks.* p. 184. *Vict. Hist. of Bucks.* p. 149.

*Rare visitor.*

According to Kennedy, from information by George Lillywhite, a specimen was shot on the banks of the Thames not far from Surley Hall in the depth of the winter of 1866. According to Rothschild it occurred on the Tring Reservoirs in 1886. An adult male was shot on August 18, 1902, near Drayton Beauchamp by Mr. J. Horwood. The skin is in the Tring Museum. On May 9, 1909, Mr. Oldham observed two Sanderlings with some Dunlins and Ringed Plovers on the mud at Startops End Reservoir. It must always have been a very rare bird, and can never have been "fairly common" on the reservoirs, as reported to Littleboy (*Trans. Herts. Nat. Hist. Soc.* vol. v. p. 78).

176 (373). **DUNLIN.** *Erolia alpina alpina* (L.).

*B. of Berks. and Bucks.* p. 145. *Vict. Hist. of Bucks.* p. 149.

*Not uncommon passage migrant and occasional winter visitor.*

Formerly not unfrequently seen on the banks of the Thames, but more regularly on reservoirs and ponds, if there is sufficient mud to feed on, therefore commoner when the water is low. Often consorts with other Waders, such as Ringed Plovers, and other species of *Erolia*. According to Oldham (*in litt.*), noticed from mid-March to mid-May, and again from mid-July to mid-October. In the spring mostly in small parties from two to four, or singly; in autumn old and young often in parties of ten, twelve, and fourteen. Oldham observed Dunlins on November 21, 1909 (one), December 7, 1913 (four), and November 15, 1914. Hartert observed three in November and December 1915. A female shot on December 2, 1916, is in the Tring Museum.

177 (374). **CURLEW-SANDPIPER.** *Erolia ferruginea* (Brünn.).

*Vict. Hist. of Bucks.* p. 149.

*Passage migrant.*

Three young birds were shot on the Tring Reservoirs September 3, 1892, and a young female August 28, 1893. Mr. Oldham sent us the following notes: "A Curlew-Sandpiper and a Little Stint—both birds of the year—were feeding with a party of six Ringed Plovers and ten Dunlins on the mud at Wilstone Reservoir on August 29, 1909. Another Curlew-Sandpiper, or possibly the same bird as I had seen on August 29, was feeding by itself on the mud at Startops End Reservoir a week later. On August 27, 1911, a bird of the year was feeding with four Dunlins at the same place. On September 20, 1914, two were feeding with two Dunlins on the mud at Wilstone Reservoir."

178 (375). **LITTLE STINT.** *Erolia minuta minuta* (Leisl.).

*Vict. Hist. of Bucks.* p. 149.

*Occasional migrant.*

Obtained on the Tring Reservoirs in August 1883 (not 1885), and July 29, 1893, the latter specimen being in the Tring Museum. Mr. Oldham writes (*in litt.*):

"August 29, 1909.—A Little Stint and a Curlew-Sandpiper—both birds of the year—feeding with a party of six Ringed Plovers and ten Dunlins on the mud at Wilstone Reservoir.

"September 18, 1910.—A Little Stint with a Dunlin and fourteen Ringed Plovers on the mud at Wilstone Reservoir.

"August 23, 1914.—A Little Stint with a Redshank and three immature Ringed Plovers on the mud at Startops End Reservoir. At Wilstone another Little Stint was feeding with two adult and one young Dunlin.

[**TEMMINCK'S STINT.** *Erolia temminckii* (Leisl.).

In *Trans. Herts. Nat. Hist. Soc.* vol. v. p. 78, J. E. Littleboy wrote: "A Temminck's Stint was shot on the reservoirs in September 1887. It is preserved in Mr. Rothschild's collection." At that time local birds used to be stuffed by the late A. Minall. There are now two mounted specimens of Temminck's Stints evidently stuffed by Minall, one bearing under the stand the note "Rye," the other "Thames." Whether one of these was at the time supposed to be from the reservoirs, or whether the specimen has been destroyed, like the Marsh-Sandpiper, when attacked by moths, cannot now be ascertained.]

179 (387). **COMMON SANDPIPER.** *Tringa hypoleuca* L.

*B. of Berks. and Bucks.* p. 98. *Vict. Hist. of Bucks.* p. 150.

*Common bird of passage, breeding in small numbers.*

Apparently nests near suitable watercourses, such as the Chess, Colne, and possibly the Thames. Mr. Oldham writes (*in litt.*): "Regular bird of passage at the reservoirs from mid-April to third week in May, and again from end of July to mid-September. The earliest date in spring, during the past ten years, is April 9, and that, curiously enough, was in the inclement spring of 1917. I have only once observed specimens so late as October, *i.e.* on October 3 and 10, 1915."

Although it is probable that a few pairs breed in the Chess Valley, there is no recent definite proof. Clark Kennedy states that it breeds near the Chess and Colne, and in *Yarrell* (4th ed. vol. iii. p. 447) the Editor says: "It is believed to have nested in Kent and in Buckinghamshire." As, however, isolated instances of nesting have been reported from Hertfordshire and Oxfordshire, there is no reason why a few pairs should not breed in Buckinghamshire.

180 (389). **WOOD-SANDPIPER.** *Tringa glareola* L.

*B. of Berks. and Bucks.* p. 191. *Vict. Hist. of Bucks.* p. 150.

*Uncommon visitor.*

Kennedy mentions a specimen shot on Dorney Common near Eton in the sixties, and another killed near Surley in the spring of 1867. Between 1892 and 1900 Hartert has observed several on the Tring Reservoirs, but the dates were not noted. Littleboy (*Trans. Herts. Nat. Hist. Soc.* vol. v. p. 78) recorded a specimen shot on the reservoirs in August 1886, on the authority of the Hon. Walter Rothschild. The specimen cannot now be traced in the Tring Museum, but at that time specimens used to be stuffed and the labelling left to irresponsible persons and frequently omitted.

181 (390). **GREEN SANDPIPER.** *Tringa ochropus* L.

*B. of Berks. and Bucks.* p. 143. *Vict. Hist. of Bucks.* p. 150.

*Rare bird of passage.*

Kennedy mentions a specimen shot in the spring of 1859, near Chenies, in Buckinghamshire; another shot on Dorney Common, near Eton, in the autumn of 1863, when a second specimen was seen at the same time. A pair was observed frequently near Fawley, in December 1864, where one was shot on December 24, and another February 11, 1865. Two were also seen, and one shot, near Eton in the winter of 1865, and others killed at Cookham and Surley in 1865 and 1867. According to the late Rev. H. Harpur Crewe, the Green Sandpiper has been observed "to frequent the reservoirs and canals near Drayton Beauchamp in small parties every winter," and a bird of this species was shot "many years ago" near Risborough.

Possibly in Harpur Crewe's time the species may have been less scarce near Drayton Beauchamp, when some of the canals which are now dry contained water, but it was probably rare even then. In the Tring Museum is a specimen shot near Long Marston by Mr. J. Chapman. Mr. Oldham observed it on Startops End Reservoir on August 14, 1909, and near Wilstone Reservoir September 13, 1914. Street reported four May 12, 1897.

All through August 1918 single Green Sandpipers were seen by Hartert on the mud of Little Tring and sometimes at Wilstone Reservoir. On August 11 Oldham saw three together at Little Tring; and E. E. Pettitt noticed one on Ham Island, River Thames, on August 3 of the same year.

182 (397). **MARSH-SANDPIPER.** *Tringa stagnatilis* (Bechst.).

*Vict. Hist. of Bucks.* p. 150.

*Exceptional straggler.*

In October 1887 a specimen shot near the Tring Reservoirs was identified by Lord (then the Hon. Walter) Rothschild as the Marsh-Sandpiper. Unfortunately the mounted specimen was inadvertently burnt with a few other rare birds in 1890 (cf. *Brit. B.* vol. iii. p. 356, footnote; *Hand-list Brit. B.* p. 184).

183 (394). **COMMON REDSHANK.** *Tringa totanus totanus* (L.).

*B. of Berks. and Bucks.* p. 191. *Vict. Hist. of Bucks.* p. 150.

*Breeds in small numbers, and is not rare on passage.*

Not uncommon on passage in spring and autumn, but also sometimes observed in winter. Has probably nested in small numbers for many years past. A specimen was shot at Dinton Hall on August 11, 1774. A little over twenty years ago Mr. Charles J. Wilson observed one and sometimes two pairs frequenting the River Ouse, just above Olney, during the months of May and June, for two or three years. "During May 1909, when the water was low, and there was much mud in consequence, three or four clamorous birds were always to be seen at Wilstone Reservoirs. On June 7 of the same year a pair was feeding on the mud at the edge of a big patch of rushes with a brood of downy young. I think another pair nested, but have no proof" (C. Oldham *in litt.*). In 1917 and 1918 several pairs were observed nesting in a meadow near Aylesbury by

Mr. Edwin Hollis. Three nests were found April 26 and 27, 1917, one April 27, 1918, the hen bird sitting. An egg is in the Aylesbury County Museum. In 1918 first seen March 23rd, in 1920 March 24th, in 1919 the first to return to this breeding-place was a pair observed by Edwin Hollis on March 15. On the Tring Reservoirs Mr. C. Oldham and Hartert have observed it as a bird of passage, usually singly in March and April, and again from end of June to end of August. It is rather an uncommon winter visitor, but Oldham observed it on November 26, 1916, and Oldham and Hartert saw one walking on the ice on Startops End Reservoir on January 6, 1918.

Possibly a pair may nest occasionally in the Thames Valley, for Pettitt records this species from Ham Island on June 6, 1916, and thought that a pair was breeding here, but was not certain.

184 (395). **SPOTTED or DUSKY REDSHANK.** *Tringa erythropus* (Pall.).

*One observation of a flock in 1918.*

At mid-day, on August 25, 1918, Mr. Charles Oldham observed a party of five Dusky Redshanks dropping to the mud at Little Tring Reservoir. They at once began to feed in a large bed of *Polygonum amphibium* in three or four inches of water. After being put up they returned in a minute or two, feeding assiduously; but after a stay of about an hour in all they got up, rose high in the air, and went clear away (*Brit. B.* vol. xii. p. 117, 1918). This is the first and only record of the occurrence of this species in Herts., nor has it been observed in Bucks.

185 (396). **GREENSHANK.** *Tringa nebularia* (Gunn.).

*B. of Berks. and Bucks.* p. 145. *Vict. Hist. of Bucks.* p. 150.

*Passage migrant.*

Kennedy reports one as shot near Chesham, and states that it has occasionally been obtained on the Thames. It also occurs on the Tring Reservoirs. Hartert has seen it several times in autumn during the last twenty-five years, but omitted to note the dates. Street saw it often in autumn and May. Oldham (*in litt.*) calls it "a rather uncommon bird of passage at the reservoirs." He notes the following occurrences:

9. v. 1909, one at Startops End Reservoir.

12. and 19. ix. 1909, four at Wilstone Reservoir.

13. and 27. viii. 1911, one at Startops End.

23. viii. 1914, one at Little Tring Reservoir.

6. ix. 1914, one at Startops End.

13. ix. 1914, one at Wilstone, the last three observations referring perhaps to the same bird.

The species probably occurs every year.

186 (398). **GREY PHALAROPE.** *Phalaropus fulicarius* (L.).

*B. of Berks. and Bucks.* p. 197. *Vict. Hist. of Bucks.* p. 149.

*Rare on autumn migration and in winter.*

One was shot on the Thames at Windsor in December 1851, and another, much exhausted, was seen on the river at Maidenhead in the autumn of 1867.



In the autumn of 1866 there was an extraordinarily large immigration to England, and a specimen was then observed on the canal near Halton. A young bird, moulting into winter plumage, was shot on Tring Reservoirs 20. x. 1891; a male was picked up in the woods near Tring, close to the boundary of Bucks., in December 1899; a female shot on Marsworth Reservoir 2. xi. 1904 by Hartert, another female 18. xi. 1911. These four specimens are in the Tring Museum. (Crossman's statement that *four* were shot in October 1891 is apparently an error; at least we can only trace the one mentioned above.) Mrs. and Miss Oldham observed a Grey Phalarope at the reservoirs September 29, 1919, swimming and flying over from Marsworth to Startops End Reservoir.

187 (399). **RED-NECKED PHALAROPE.** *Phalaropus lobatus* (L.)

*Vict. Hist. of Bucks.* p. 49.

One specimen Tring Reservoirs, October 1885. Erroneously recorded as Grey Phalarope (*Ph. fulicarius*) in *Trans. Herts. Nat. Hist. Soc.* vol. v. p. 83, 1890.

[The supposed instance of breeding of Black-winged Stilt (*Himantopus himantopus*) in 1834 near Beaconsfield, recorded by Clark Kennedy (*B. of Berks. and Bucks.* p. 192), is of course quite unworthy of credit.]

188 (402). **BAR-TAILED GODWIT.** *Limosa lapponica lapponica* (L.).

*B. of Berks. and Bucks.* p. 192. *Vict. Hist. of Bucks.* p. 150.

*Uncommon passage migrant.*

There are very few records of this species. During the first week of May 1846 a pair of these birds was observed to frequent a field on the farm of a Mr. Biggs, near Slapton. The hen bird was shot, and examined by the Rev. Bryant Burgess, of Latimer (*B. of Berks. and Bucks.* p. 193, from a letter of Burgess). One was shot on the reservoirs in December 1880 (Rothschild, *Trans. Herts. Nat. Hist. Soc.* vol. v. p. 77). According to a letter from Mr. H. M. Roberts of Ivinghoe a specimen was shot in the winter of 1895 near the brewery, at Ivinghoe. An adult male in nearly full summer plumage was shot on Wilstone Reservoir on May 6, 1907, by James Street, and is now in the Tring Museum. On April 29, 1917, Mr. Charles Oldham observed one feeding on swampy ground at the edge of Wilstone Reservoir, which did not show any of the foxy-red colour of the summer plumage.

189 (403). **BLACK-TAILED GODWIT.** *Limosa limosa limosa* (L.).

*Rare passage migrant.*

A young female was shot at Wilstone Reservoir 24. vii. 1893, a young male 15. ix. 1904. Both are in the Tring Museum.

Littleboy, apparently from information by the Hon. Walter Rothschild, says that one was shot on the reservoirs in September 1886 (*Trans. Herts. Nat. Hist. Soc.* vol. v. p. 78, 1890; see also Crossman, *Vict. Hist. of Herts.* vol. i. p. 214). The specimen is not preserved.



190 (404). **CURLEW.** *Numenius arquata arquata* (L.).

*B. of Berks. and Bucks.* p. 142. *Vict. Hist. of Bucks.* p. 150.

*Passage migrant.*

Curlews have been observed chiefly on spring and autumn migration, and a few shot in many places of the county. They are heard almost every spring passing over the Tring Reservoirs in the evening, and on October 16, 1907, Street saw sixteen at the reservoirs.

Oldham made the following notes :

"July 21, 1912.—At 2.30 p.m. three Curlews came down to Wilstone Reservoir. They did not alight, but circled round the reservoir two or three times, calling as they flew, and then rose and went off again. I lost sight of the birds behind some trees, and cannot say which direction they took.

"March 2, 1913.—Wind W.S.W. ; a Curlew calling high overhead near Marsworth Reservoir at mid-day. After circling round for a few minutes, it alighted in a field near the reservoir.

"January 2, 1916.—A Curlew going north-east, with the wind, near Marsworth Reservoir."

191 (405). **WHIMBREL.** *Numenius phaeopus phaeopus* (L.).

*B. of Berks. and Bucks.* p. 143. *Vict. Hist. of Bucks.* p. 150.

*Rare and irregular visitor.*

The Rev. H. Harpur Crewe wrote (Kennedy, *l.c.*): "A few specimens of the Whimbrel are seen almost every winter on the banks of the reservoirs here, that is to say, the Marsworth Reservoir, . . . The Weston Turville sheet of water, and the canals at Halton and Wilstone." Kennedy also notes that it is occasionally met with on the Thames in spring and autumn. Two were shot in the north-eastern corner of Buckinghamshire, not far from the River Ouse, in the second week of May 1894 (Aplin, *Zoologist*. 1894, p. 267).

Probably the Whimbrel was always very rare, and the statement "almost every winter" not literally correct, as we have no recent evidence of its occurrence, except that Mr. Headley saw two Whimbrel (*Numenius phaeopus*) at Tring on May 5, 1916 (*Trans. Herts. Nat. Hist. Soc.* vol. xvii. p. 40, 1918).

[**GREAT SNIPE.** *Gallinago media* (Lath.).

*Vict. Hist. of Bucks.* p. 149.

*No proof of occurrence in Bucks.*

The statement of the occurrence near Tring, in the *Vict. Hist. of Herts.* vol. i. p. 213, of an albino Great Snipe is an error, this variety being one of the Common Snipe. Among the numerous Snipe which Lord Rothschild and Hartert have examined from the Tring Reservoirs there has never been a single Great Snipe.

In the *Field*, vol. xli. p. 135, February 8, 1873, A. H. Cocks wrote: "When shooting with Mr. T. O. Wethered by the river side at Marlow in September 1871 (I think the 3rd), I saw a Great Snipe (*G. major*), but did not get it."

192 (409). **COMMON SNIPE.** *Gallinago gallinago gallinago* (L.).*B. of Berks. and Bucks.* p. 115. *Vict. Hist. of Bucks.* p. 149.*Resident, passage migrant and winter visitor.*

Common in suitable localities from October to March, and on the Tring Reservoirs a considerable passage takes place during the last days of March and till April 12. These Snipe never drum and do not attempt to nest there, though in one place the ground appears to be suitable. Kennedy states that nests have been found several times on East Burnham Common. Alan F. Crossman and Hartert heard Snipe drumming on Farnham Common in 1900 and 1901, so that they may have been breeding there. Apparently nested near Halton recently.

In the Thames Valley, while the Cornerake has to a great extent disappeared from the meadows near the river, the Snipe has undoubtedly increased considerably in numbers, as is also the case in the neighbouring counties of Berks. and Oxon. Mr. E. E. Pettitt states that two or three pairs nest near Wraysbury, and that this species also breeds near Marlow, Medmenham, and Hambleden.

[**WILSON'S SNIPE.** *Gallinago gallinago delicata* (Ord.).*Vict. Hist. of Bucks.* p. 149.*No reliable evidence of occurrence in the British Isles.*

Harting (*Zoologist*, 1872, p. 3273, id. *Handb. Brit. B.* p. 143) stated that a specimen of the American Snipe, *G. g. delicata* (*wilsoni* of older authors), shot at Taplow, Bucks., on August 1, 1863, had been forwarded in the flesh for identification to Mr. Gould, in whose possession he had examined it. The case must remain doubtful, and can hardly be accepted as correct. The American Snipe is so similar to *G. g. gallinago* that single specimens cannot always be identified with absolute certainty. The chief differences are: normally sixteen tail-feathers in *delicata*, normally fourteen in *gallinago*, bill generally shorter in *delicata*, mostly longer in *gallinago*, sharper and more regular black cross-bars to the axillaries and under wing-coverts and usually cross-bars to the sides of the breast in *delicata*. Sixteen tail-feathers, however, occur also sometimes, and not so very rarely, in *gallinago*, and the bill as well as the cross-barrings differ in both forms. Moreover, Harting specially states that the "*wilsoni*" which he examined had only fourteen rectrices—thus lacking one of the chief characteristics of *G. g. delicata* ! ]

193 (410). **JACK SNIPE.** *Limnocryptes gallinula* (L.).*B. of Berks. and Bucks.* p. 116. *Vict. Hist. of Bucks.* p. 149.*Winter visitor.*

A regular winter visitor and not rare, though far less numerous than the Common Snipe. It frequents the same localities as the latter, but occurs also on meadows and even on little bits of marshy ground among bushes and trees. A well-marked spring movement has been observed annually near the Tring Reservoirs, as in the Common Snipe, at the end of March and at the beginning of April.

In the south of the county it seems to be much less frequently observed, and Mr. A. H. Cocks remarks of one flushed on October 25, 1909, at Skirmett, that it is the first seen by him there !

194 (411). **WOODCOCK.** *Scolopax rusticola rusticola* L.

*B. of Berks. and Bucks.* p. 114. *Vict. Hist. of Bucks.* p. 149.

*Regular visitor in autumn and winter, but not numerous.*

Woodcock generally arrive towards the end of October, and may be found until the end of February, but they seem to be nowhere very common in Buckinghamshire. In the last months of 1919 they were more frequent than usual near Tring and Halton. We have no recent records of their breeding in the county, but they have nested near Beaconsfield and near Burnham (1867). In the sixties a few birds bred near Stoke, Burnham, and Brickhill. According to Lord Rothschild a pair nested in the woods above Drayton Lodge, at the boundary of Herts. and Bucks., about 1888, but the eggs were deserted, because one of the parents was shot by a neighbouring keeper! (sic!).

Mr. W. Dalziel Mackenzie informed Clark Kennedy that a Woodcock disturbed on December 13, 1859, perched on a large oak, where it remained for some time.

195 (412). **BLACK TERN.** *Hydrochelidon nigra nigra* (L.).

*B. of Berks. and Bucks.* p. 149. *Vict. Hist. of Bucks.* p. 150.

*Not uncommon on passage.*

In the Dinton Hall MS. occurs the passage: "These birds were shot by Sir John van Hatten and the Rev. W. Nance on May 10, 1774, at Elthorpe." It is a not unfrequent but somewhat irregular visitor to the Thames and other large waters. Clark Kennedy records one from Risborough, and about a dozen from the Thames Valley. It visits the Tring Reservoirs probably every year, generally throughout May, but in the Tring Museum are specimens shot on April 22 and 27, while Oldham once saw three as early as April 19, 1914. The return passage begins early in August and lasts through September. Mr. H. Boswell Lee records one from near Amersham on July 28, 1906, and another near Wendover in August 1905 (*Field*, August 4, 1906, p. 239). In 1907 Mr. Oldham observed ten on Wilstone Reservoir on October 13 and three on October 20. In 1913 he saw one there on October 19, and again on November 2 and November 9, but these occurrences in October and November are quite exceptional. On May 4, 1918, about 11 a.m., a party of nine Black Terns and about the same number of Common Terns with six Black-headed Gulls were seen by Mr. Oldham at Startops End Reservoir. An hour later, at Wilstone, another party of Terns, *i.e.* twelve Black and five Common Terns, were seen flying high in the direction of the other reservoirs. On returning to Startops End the observer found thirteen Black and five Common Terns there, probably the party he had seen over Wilstone at mid-day. On July 21, 1918, he saw an adult bird at Wilstone Reservoir; September 8, a young bird about Startops End and Marsworth Reservoirs. Two were observed by Mr. E. Hollis over Halton Reservoir in the spring of 1918, probably in May.

196 (417). **SANDWICH TERN.** *Sterna sandvicensis sandvicensis* Lath.

*Vict. Hist. of Bucks.* p. 150.

*Rare straggler.*

Mr. Heneage Cocks (*Zoologist*, 1895, p. 190) observed eight adult birds on the river opposite his house at Great Marlow on April 10, 1895.

In October 1886 a pair was shot on the Tring Reservoirs (*Vict. Hist. of Herts.* vol. i. p. 214).

197 (419). **COMMON TERN.** *Sterna hirundo hirundo* L.

*B. of Berks. and Bucks.* p. 147. *Vict. Hist. of Bucks.* p. 151.

*Not uncommon on passage.*

Seen in spring and autumn, and occasionally at other times of the year, on all larger sheets of water, especially the Thames and Tring Reservoirs.

Oldham, *in litt.*, writes: "Bird of passage, generally in small numbers, one to three or four, but occasionally in fair-sized flocks (twenty-eight on May 20, 1910) to mid-June, the latest date being June 15, 1913. Less frequent and never, in my experience, in large numbers, on return passage from end of first week in August to mid-September. These birds often stay only for a short time—a few hours or perhaps only minutes—to rest and feed before passing on. At times they pass without stopping at all, as Gulls so often do; for example, on August 8, 1915, three flew over without stopping, going a little S. of W."

198 (420). **ARCTIC TERN.** *Sterna paradisaea* Brünn.

*B. of Berks. and Bucks.* p. 148. *Vict. Hist. of Bucks.* p. 151.

*Rare visitor.*

According to Kennedy this Tern is "occasionally seen at the Marsworth and Wilstone Reservoirs and at other large sheets of water." "Many years ago Mr. H. Daly shot one of these birds in autumn, near Eton"; and in November 1865 "an Arctic Tern was obtained at Boveney Locks." Several are also stated to have been killed near Windsor, and one by Gould near Maidenhead in May 1866.

An adult female was shot at the Reservoirs by James Street on May 9, 1893, and is now in the Tring Museum. The specimen is certainly an Arctic Tern, though the tip of the bill (in the skin) is blackish, as in *Sterna hirundo*. One "is said to have been obtained" in the spring of 1886, but no proof of this exists.

199 (421). **LESSER TERN.** *Sterna albifrons albifrons* Pall.

*B. of Berks. and Bucks.* p. 149. *Vict. Hist. of Bucks.* p. 151.

*Rare, irregular visitor.*

In summer and autumn occasionally in small flocks on the Thames, specimens having been shot near Windsor and Eton, according to Kennedy, who also records one shot on the canal at Slapton, in May 1850. Adult birds were shot out of small flocks on the Tring Reservoirs May 8 and 20, 1893.

Near Tring four were observed at Wilstone Reservoir on September 4, 1910, by Mr. C. Oldham (*in litt.*).

200 (427). **BLACK-HEADED GULL.** *Larus ridibundus ridibundus* L.

*B. of Berks. and Bucks.* p. 151. *Vict. Hist. of Bucks.* p. 151.

*Common visitor at all seasons.*

Not unfrequently seen, chiefly in spring and autumn, but also at other seasons on the Tring and Halton Reservoirs, along the Thames and on other



waters. Mr. Oldham writes (*in litt.*): "I have notes of the occurrence in every month except June. As with other Gulls, parties often pass without alighting on the waters, but this species often stays for some days, especially in winter, picking up food on the banks and mud patches. There seems to be a regular passage in March and April (a flock of twenty-four at Wilstone Reservoir on April 29, 1917), and again in August and September. A party of thirty-six passed over Marsworth and Little Tring Reservoirs on November 4, 1917, but so large a flock at that time of year is, I think, very unusual."

In the Thames Valley it appears frequently, sometimes in considerable flocks, especially during floods in spring and autumn. Mr. A. H. Cocks reports flocks of about fifty or sixty at Skirmett on April 22nd, 1917, and about forty seen on plough land near Skirmett on January 28, 1918.

### 201 (430). COMMON GULL. *Larus canus canus* L.

*B. of Berks. and Bucks.* p. 152. *Vict. Hist. of Bucks.* p. 151.

*Irregular straggler, in fair numbers.*

Except *Larus ridibundus* this is evidently the least rare Gull visiting the county. It has not infrequently been observed on the Halton and Tring Reservoirs, and a specimen shot on October 20, 1892, is in the Tring Museum. Kennedy records it from Chesham, the Thames (near Windsor), Wycombe Rye, Fawley, and Chalvey (near Slough).

Mr. Oldham writes (*in litt.*): "I have notes of this Gull for every month in the year except June and July. It usually occurs singly or in parties of not more than half a dozen, but on September 30, 1917, a flock of thirteen immature birds was observed on Little Tring Reservoir. As a rule the passing Gulls do not stay on these waters for more than a few minutes, and very often they do not alight at all. Mature and immature birds are about equally numerous."

In the lower part of the Thames Valley it occurs not uncommonly (E. E. Pettitt and F. C. R. Jourdain).

### 202 (431). HERRING-GULL. *Larus argentatus argentatus* Pontopp.

*B. of Berks. and Bucks.* p. 135. *Vict. Hist. of Bucks.* p. 151.

*Rare visitor.*

Clark Kennedy mentions one caught on the river between Maidenhead and Windsor, January 25, 1855, and several seen between Surley and Eton in the winter of 1866-7. Among the large Sea-Gulls which now and then, chiefly after fogs or gales, are observed at the Tring Reservoirs, Herring-Gulls also apparently occur from time to time, but it is difficult to identify these birds with certainty at great distances, and no specimen exists in the Tring Museum. Mr. Oldham writes (*in litt.*): "Much less frequent at the reservoirs than *Larus canus*; in fact in eleven years I have only seen the species twice:

"On August 3, 1911, three adults passed over Wilstone Reservoir, without alighting. Their course was S.W., wind E.

"May 2, 1915, two immature birds passed over Wilstone without alighting."

In the Thames Valley it is not infrequently seen on the wing in small flocks.



203 (433). **LESSER BLACK-BACKED GULL.** *Larus fuscus affinis* Reinh.*Vict. Hist. of Bucks.* p. 151.*Rare visitor on migration.*

A young female was shot on the Tring Reservoirs by Lord Rothschild on August 20, 1894. Others are believed to have been seen in winter, but there is no other specimen to prove this, while Mr. Oldham has never observed the species in the winter. He says (*in litt.*): "Such evidence as I have seems to indicate a regular passage from S.W. to N.E. in spring, and in the reverse direction in autumn. These birds, like other Gulls, often drop down to the reservoirs, but do not alight, and after flying to and fro for a few minutes mount high in the air and continue their course. On August 30, 1908, a party of thirteen, mostly adults, dropped down to Little Tring Reservoir, but did not alight. Presently they soared to a great height, where they joined forces with another party of twelve, and all drifted away nearly due W., the wind being S.W. On September 4, 1910, a flock of between thirty and forty, mostly adult or nearly so, but a few brown birds among them, alighted on Wilstone Reservoir. They stayed for perhaps ten minutes, then rose high and passed away to S.W., the wind being N.

"September 18, 1910, a single adult bird was seen near Marsworth, flying high in a south-westerly direction.

"May 5, 1912, a party of fourteen adults dropped down to Wilstone Reservoir but did not alight, then rose high into the air and passed away to N.E., wind E.

"May 20, 1913, a single adult, Wilstone Reservoir.

"August 16, 1914, a single adult passed over reservoirs, going a little W. of South.

"August 26, 1917, two adults of pale British race, flying S.W., near Wilstone Reservoir."

An adult male, killed at Bletchley 20.iv.1910, is in the Bucks County Museum (E. Hollis, *in litt.*).

This species, as well as the Herring-Gull, occurs not infrequently on the wing in the Thames Valley, generally in small flocks (E. E. Pettitt and F. C. R. Jourdain).

204 (434). **GREAT BLACK-BACKED GULL.** *Larus marinus* L.*Vict. Hist. of Bucks.* p. 151.*Exceptional straggler.*

Lord Rothschild and the keeper, J. Street, believe that they saw this species on the reservoirs about 1890, but no specimens were obtained. Street also states he saw four on September 9, 1897, but no specimen was procured.

205 (437). **KITTIWAKE.** *Rissa tridactyla tridactyla* (L.).*B. of Berks. and Bucks.* p. 151. *Vict. Hist. of Bucks.* p. 151.*Rare straggler.*

On January 11, 1830, a Kittiwake was killed near Dinton Hall. Kennedy has recorded it from Datehet, the neighbourhood of Eton, and Chesham. Mr. A. F. Crossman reports two as shot "at Tring" in January 1885 (*Vict. Hist. of Herts.* vol. i. p. 215). Mr. A. H. Cocks reports an adult bird, too weak to fly far,

seen by him on the Thames about half a mile above Great Marlow, on February 16, 1894 (*in litt.*).

Charles Oldham writes (*in litt.*): "I have no evidence of any regular passage of this species, and my few notes refer to occurrences in winter, and I think the birds are storm-driven and always more or less exhausted."

"March 10, 1912, an adult on the bank of Wilstone Reservoir, obviously in state of exhaustion, and very loth to fly. It was at same place on March 17, and still reluctant to take wing."

"December 14, 1913, an adult, Little Tring Reservoir."

"December 20, 1914, an adult at Wilstone Reservoir; another adult, some days dead, floating on the water."

"February 14, 1915, an adult on bank at Startops End Reservoir; almost too exhausted to fly."

Hartert observed a single adult bird in December 1915, on Wilstone Reservoir.

206 (440). **POMATORHINE SKUA.** *Stercorarius pomarinus* (Temm.).

*B. of Berks. and Bucks.* p. 216. *Vict. Hist. of Bucks.* p. 151.

*Exceptional straggler.*

Clark Kennedy writes: "I was informed by Mr. Gardner, of Oxford Street, that a Skua of this species was sent to them for preservation by a gentleman resident in Buckinghamshire, on whose estate it was procured. The precise date, or further particulars, I was unable to ascertain. A second was taken some years since near Crendon; and Mr. Burgess told me of a third which was shot at Chesham, in November or December 1859. This last is in the collection of Mr. Lowndes."

[A young Skua, probably the Long-tailed Skua, *Stercorarius longicaudus* Vieill., stayed several days at the Tring Reservoirs, during the end of August 1919. It was very tame, and was closely observed and photographed by Mr. Oliver Pike. Being out of its element, it probably perished in some corner. (See *Brit. B.* xiii. p. 143).]

207 (445). **GUILLEMOT.** *Uria troille troille* (L.).

*B. of Berks. and Bucks.* p. 211. *Vict. Hist. of Bucks.* p. 151.

*Very rare straggler.*

G. B. Clarke records a male caught in the river at Fenny Stratford on November 13, 1852; another was seen near Simpson on November 14 of the same year (Morris's *Naturalist*, 1854, p. 224).

208 (448). **LITTLE AUK.** *Plotus alle* (L.)

*B. of Berks. and Bucks.* p. 212. *Vict. Hist. of Bucks.* p. 151.

*Accidental winter visitor.*

Bryant Burgess informed Kennedy that a Little Ank was taken on one of the reservoirs near Drayton Beauchamp in December 1841. Mr. T. Marshall, writing to the *Standard*, December 21, 1901, stated that he knew of another obtained in Bulstrode Park, Bucks.

One was found alive near Newport Pagnell on November 19, 1893 (W. E. Dawes, *Field*, December 9, 1893, p. 901).

Edwin Hollis informs us that one was taken alive at Quainton on February 2, 1912, and is now in the possession of Mr. Ashley, of Quainton. He also saw two others, obtained at Towersey about the same time, while being mounted at Weston's in Aylesbury. P. W. Horn also records one killed on the Chilterns near Ivinghoe, on February 4. This was a female, in very poor condition, and only weighing 3 oz. (*Zoologist*, 1912, p. 109).

In November 1917 there was another irruption of this species, and several specimens were picked up in Kent, Sussex, Hants, and on two occasions in Bucks. On November 11 one was discovered, still living, in Sir Thomas Barlow's garden near Wendover, but died on the following day; and another was picked up dead on the Halton (Weston Turville) Reservoir on November 17, which had evidently been dead for several days (*British Birds*, vol. xi. p. 190).

Mr. A. H. Cocks, who has had considerable experience of this species in Spitsbergen, saw one on the wing on the afternoon of December 8, 1919, at Skirmett, near Henley-on-Thames. It was flying westward quite strongly, and showed no sign of exhaustion. The place where it was observed is about three miles from the nearest part of the Thames (*in litt.*, December 9 and 18).

#### 209 (449). PUFFIN. *Fratercula arctica grabae* Brehm.

*B. of Berks. and Bucks.* p. 212. *Vict. Hist. of Bucks.* p. 151.

*Rare accidental visitor; four occurrences.*

One caught in a ploughed field on the Luton Road, near Aylesbury, after the great gale of October 14, 1881 (A. Heneage Cocks). H. Howard Vyse (*Field*, November 19, 1910, p. 955) records a second, caught at Langley, on November 15.

A third was caught at Oaken Grove, near the Oxford boundary, about November 19, 1914 (H. Noble, quoted by O. V. Aplin, *Zool.* 1915, p. 212).

On November 23, 1918, a female was found between the Waterworks and Aston Clinton, injured but still alive (E. Hartert, *Br. Birds*, xii. p. 191).

#### [LITTLE CRAKE. *Porzana parva* (Scop.).

A. F. Crossman states on the authority of the Hon. W. Rothschild that "a specimen is said to have been obtained at one of the Tring Reservoirs on January 5, 1887" (*Vict. Hist. of Herts.* vol. i. p. 212), but the specimen cannot be traced.]

#### 210 (455). SPOTTED CRAKE. *Porzana porzana* (L.).

*B. of Berks. and Bucks.* p. 99. *Vict. Hist. of Bucks.* p. 148.

*Autumn migrant.*

This species, living, like many Rails, in the densest vegetation near water and overgrown ditches, is not easily detected, and may therefore be less rare than is supposed to be the case, and there is no reason why it should not breed in Bucks, though no such instance is known to us. On the reservoirs we have no proof of its occurrence since 1895.

Clark Kennedy records specimens from Surley, Slough, Datchet, High Wycombe, and West Drayton (on August 27, 1860), as well as twice near Monkey

Island on the Thames. The latest occurrence known to us is one from Olney in November 1897, recorded by Mr. F. Anslow Sole (*Field*, January 15, 1898, p. 93).

211 (454). **LAND-RAIL.** *Crex crex* (L.).

*B. of Berks. and Bucks.* p. 99. *Vict. Hist. of Bucks.* p. 147.

*Summer resident, now not common.*

Arrives during first week of May and stays till September. Kennedy records a specimen which was picked up in a field on the banks of the Thames, near Eton, in very poor condition, on Christmas Day 1865. Another is reported as having been seen and heard (!) on January 25, 1882, between Beaconsfield and Dropmore (*Field*, January 28, 1882). Though it is known to occur not infrequently in winter, especially in Ireland and on the Outer Hebrides, such birds are probably for some reason unable to migrate, and in most cases are probably doomed, as the species winters in Africa and cannot live through a northern winter.

In former years it was much commoner in Bucks, though it is even now found in many suitable localities. Near the reservoirs Oldham and Hartert heard it in May, June, and July of 1910, 1911, 1913, 1915, 1916, 1917, and 1918.

In the Thames Valley, though formerly very numerous, it has now become very scarce, only a few pairs breeding here and there. Mr. Pettitt says that two or three pairs are generally to be met with near Wraybury, and also a pair at Medmenham.

212 (459). **WATER-RAIL.** *Rallus aquaticus aquaticus* L.

*B. of Berks. and Bucks.* p. 61. *Vict. Hist. of Bucks.* p. 148.

*Not uncommon winter visitor ; resident in very small numbers.*

Clark Kennedy points out that specimens of this species have been obtained at all times of the year, and that every year a few are killed on the river near Windsor. He states that the nest has been taken near Eton on more than one occasion, but gives no details. In the neighbourhood of the reservoirs it occurs not infrequently in autumn and winter, and specimens have been obtained as late as April 13, which would seem to point to breeding in the district, though definite proof is wanting.

We are indebted to Mr. E. E. Pettitt for details of nesting in the Thames Valley in 1896. On May 26 a man who was cleaning out a large osier bed near Wraybury cut out a nest with six eggs, and on June 1 came across a second nest containing ten somewhat incubated eggs, so that obviously two pairs were breeding here. Since that time the cover has not been so good and no other nests have been found. Apart from its very distinctive notes, which, however, are not familiar to most people, the presence of this secretive species in summer is not easily detected.

213 (460). **MOORHEN.** *Gallinula chloropus chloropus* (L.).

*B. of Berks. and Bucks.* p. 62. *Vict. Hist. of Bucks.* vol. i. p. 148.

*Common resident, widely distributed.*

Very common, even in small ponds in parks and gardens. Their numbers were considerably diminished after the hard frost in the winter of 1917.



214 (461). COOT. *Fulica atra atra* L.

*B. of Berks. and Bucks.* p. 61. *Vict. Hist. of Bucks.* p. vol. i. p. 148.

*Fairly numerous resident on inland waters, but rather local.*

Common on larger reservoirs, occasionally met with on ponds and still backwaters of rivers. Breeds in great numbers on the Tring and Halton (Weston Turville) Reservoirs, where their numbers are increased in winter.

In the south of the county Mr. E. E. Pettitt records it as nesting at Horton, Riekeys Park, and Burnham, but not numerous as a breeding species.

On the Thames it has only been known to nest very rarely. Mr. J. H. Carpenter recorded an instance of breeding near Marlow in 1899 (cf. *Field*, September 9, 1899): and on May 12, 1919, Mr. E. E. Pettitt found a nest with seven eggs on the river between Marlow and Henley.

[CAPERCAILLIE. *Tetrao urogallus urogallus* L.

*B. of Berks. and Bucks.* p. 182. *Vict. Hist. of Bucks.* vol. i. p. 147.

According to Kennedy, "in the autumn of 1855 a cock and hen were shot in the woods known as Burnham Beeches." The author concluded that it was most unlikely that they were "visitors from Scandinavia," and almost equally so that they could have flown from Scotland, so "that they must have escaped from confinement." Unfortunately the latter seems equally improbable, as Capercaillie are not usually kept in confinement.]

215 (463). BLACK GROUSE. *Lyrurus tetrix britannicus* With. and Lönnb.

*B. of Berks. and Bucks.* p. 56. *Field*, vol. xxii. 1863, p. 297. *Vict. Hist. of Bucks.* vol. i. p. 147.

*Rare straggler or introduced?*

Clark Kennedy informs us that five Black Grouse *from Holland* were turned out in 1815 on Hurtwood Heath between Dorking and Guildford in Surrey, and that some of the descendants of these birds strayed as far as Finchhampstead in Berkshire, and that they bred near Windsor, where some were also turned out a few years before 1868, but that "many have immigrated and are now located on Ascot Heath, Woking Common, Bagshot Heath, and other suitable localities." He also says that "a good many brace" were shot in 1867 in Berkshire, further that the last which came under his notice was a fine male killed on Hyde Heath, near Chesham, in 1852, and that this bird was then in the collection of Captain Fuller. In the *Field*, September 19, 1863, vol. xxii. p. 197, is the following letter: "Lord Curzon presents his compliments to the Editor of the *Field*, and begs to inform him that his keeper shot a very fine Blackcock in the woods near Penn House, Amersham. Lord Curzon is quite unaware from whence this bird could have come; he has been seen during the summer, and has been sent to the Earl Howe, at Gopsall, near Atherstone." Unfortunately Kennedy did not explain how it was ascertained that "many immigrated" into Berkshire, and it is now impossible to ascertain whether the Bucks. Blackcocks, shot near Chesham and Amersham, were descendants of the introduced stock or stray birds from elsewhere. If introduced from Holland they would be *Lyrurus tetrix tetrix*, if indigenous *L. tetrix britannicus* With. and Lönnberg (cf. *Brit. B.* vol. vi. p. 270). Kennedy's



statement that Blackgame were introduced from Holland is quite correct, but they were also indigenous in Surrey, and were present hundreds of years before any were introduced.

216 (466). **PHEASANT.** *Phasianus colchicus* L.

*B. of Berks. and Bucks.* p. 56. *Vict. Hist. of Bucks.* vol. i. p. 147.

*Common in wooded districts and parks.*

*Phasianus colchicus colchicus* was introduced about 900 years ago, but it is now generally hybridized with *P. colchicus torquatus*, which was introduced about 200 years ago and later. It is common in all wooded parts and parks of the county. Other subspecies of *P. colchicus* have also been introduced recently, and in addition *P. versicolor* has been turned down, and these birds have to some extent hybridized with the old stock.

217 (467). **COMMON PARTRIDGE.** *Perdix perdix perdix* (L.).

*B. of Berks. and Bucks.* p. 57. *Vict. Hist. of Bucks.* vol. i. p. 147.

*Numerous resident.*

Common everywhere in suitable localities.

218 (469). **RED-LEGGED PARTRIDGE.** *Alectoris rufa rufa* (L.).

*B. of Berks. and Bucks.* p. 57. *Vict. Hist. of Bucks.* vol. i. p. 147.

*Now locally common.*

Clark Kennedy said that the Red-leg was introduced into Windsor Park in the reign of King Charles II, but that all the descendants of the old stock are supposed to have perished. A century later it was successfully reintroduced into Suffolk, and subsequently into many other places, and is now well established in all midland and southern counties. It is now locally common in the county, though nowhere as numerous as the Common Partridge. "J. C. S. P.," in the *Field*, October 7, 1865, p. 256, reports four killed near Bicester in 1865, adding that he never heard of any before in the district. It is generally more fond of dry ground than of low-lying meadows, but this is not the case everywhere. Mr. A. H. Cocks remarks that when he first came to Skirmett quite half the stock of Partridges were Red-legged birds, but that since then the proportion of Grey Partridges has greatly increased, while the Red-legs have almost disappeared. In 1899 Mr. J. P. Athawes found a nest of this species with sixteen eggs on a straw-stack 18 feet from the ground at Loughton, near Bletchley (*Field*, July 22, 1899, p. 178).

219 (468). **QUAIL.** *Coturnix coturnix coturnix* (L.).

*B. of Berks. and Bucks.* p. 138. *Vict. Hist. of Bucks.* vol. i. p. 147.

*Now very rare summer resident.*

Formerly not rare, though even in 1868 Kennedy called it "not common." He then said that "the majority of the Quails which are obtained in Berkshire and Buckinghamshire are shot either in May or September." The shooting in May must have had a disastrous effect and is a thing almost incredible at the present time. In the Vale of Aylesbury Quails used to be fairly common about

half a century ago, and a few were seen and occasionally shot in September near the boundaries of Herts. until twenty-five or twenty-six years ago. Since then Hartert has only at long intervals heard Quails calling in the summer near Cheddington, Leighton Buzzard, and Ivinghoe. Mr. Oldham heard one in a field of oats at the foot of Ivinghoe Beacon on July 14, 1917. The same observer heard one calling in a field of growing corn close to Wilstone Reservoir, near Tring, May 25, 1919, and again in a field of oats at the foot of Ivinghoe Beacon, June 29 of the same year. At the foot of this Beacon a few Quails were met with when shooting about thirty years ago, as Hartert was told by Mr. A. W. Vaisey.

[The Rufous Tinamou mentioned by Allen as seen near Olney in Bucks. (*Field*, 1902, p. 288) was of course an escaped or introduced specimen.]

## AN ORNITHOLOGICAL BIBLIOGRAPHY OF BUCKINGHAMSHIRE AND THE TRING RESERVOIRS

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 1878. BLAKE, V. Arrival of Wryneck [at Slough] (*Field*, April 13, p. 453).  
 „ COCKS, A. H. Provincial Names in Berks. and Bucks. (*Zool.* p. 334).  
 „ CREWE, H. H. Albino Specimens of the Common Snipe and Wryneck (*t.c.* p. 29).  
 1879. CURTIS, E. Scoter on the Thames [near Windsor] (*Field*, March 29, p. 369), *Idem* (*Zool.* p. 220); Rare Birds in Berks. [Sheldrake on Thames] (*Field*, December 27, p. 853).  
 „ WHITE, H. Golden Oriole in Buckinghamshire [at Stoke Mandeville] (*t.c.* May 31, p. 625).  
 1880. BURNEY, H. Siskin nesting in Beds. [*errore* Bucks.] (*Zool.* p. 259); *Idem* by R. H. Mitford (*t.c.* p. 364; cf. *Vict. Hist. of Beds.* i. p. 112).  
 „ [Editorial] Dr. Lamb's "Ornithologia Bercheria" (*Zool.* pp. 313-25) [*partim*].  
 „ MARSHALL, T. Rough-legged Buzzard in Bucks. [High Wycombe] (*Field*, December 18, p. 905).  
 1881. CREWE, H. H. Storm-Petrel near Wendover (*Zool.* p. 68).  
 „ HARTING, J. E. Food of the Wood-Pigeon (*Field*, November 5, p. 678).  
 1882. APLIN, F. C. Honey-Buzzards in Bucks. [near Brill in September] (*Zool.* p. 116).  
 „ "KORAX." Corncrake calling in January [near Beaconsfield] (*Field*, January 28, p. 129).  
 1883. CREWE, G. A. Scaup-Duck inland [near 1 rayton Beauchamp] (*Field*, December 15, p. 809).  
 „ HIBBERT, L. Osprey shot near Slough [in Chalfont Park] (*t.c.* October 6, p. 490).  
 „ TRAVIS, T. Arrival of Waxwings [*partim*] (*t.c.* January 27, p. 131).  
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 1888. LITTLEBOY, J. E. Notes on Birds observed in Herts. during 1886 [with Notes on Reservoirs] (*Trans. Herts. Nat. Hist. Soc.* iv. pp. 161-8).  
 „ LILFORD, LORD. Magpies attacking a Weakly Donkey [at Doddershall Park] (*Zool.* p. 184).  
 „ MARSHALL, T. Crossbills in Bucks. [at Hughenden] (*Field*, December 29, p. 951).  
 „ ODLING, E. C. Hoopoe in Bucks. [at Wendover] (*t.c.* April 14, p. 536).  
 „ PARROTT, F. H. Starling Nesting in November [at Aylesbury] (*Zool.* p. 33).  
 1889. APLIN, O. V. The Birds of Oxfordshire, pp. viii, 217, 8vo, Oxford, 1889 [*partim*].  
 „ TOMALIN, W. Hoopoe in Buckinghamshire [Lavender Park Farm] (*Field*, November 30, p. 777).  
 1890. APLIN, O. V. On Distribution and Period of Sojourn in British Isles of the Spotted Crake [*partim*] (*Zool.* p. 407).  
 „ KNAPP, J. M. Velvet Scoter Inland [at Linfield] (*Field*, November 1, p. 668).  
 „ LITTLEBOY, J. E. Notes on Birds observed in Hertfordshire in 1887, and on the Birds frequenting the Tring Reservoirs (*Trans. Herts. Nat. Hist. Soc.* v. 1887-9, pp. 76-88).  
 „ VYSE, H. H. Unspotted Eggs of the Spotted Flycatcher (*Field*, August 16, p. 250, and *Zool.* p. 352).



1891. COCKS, A. H. Smews in Bucks. and Oxon. (*Zool.* p. 153); Destruction of Kingfishers (*t.c.* p. 154).
- „ MARSHALL, T. Bee-Eater in Leicestershire [and Golden Oriole near Aylesbury, 1880] (*Field*, May 16, p. 738).
1892. APLIN, O. V. On the Distribution of the Cirl-Bunting in Great Britain [*partim*] (*Zool.* p. 174).
- „ VYSE, H. H. Ruddy Sheldrake in Bucks. [reared in captivity] (*t.c.* p. 359).
- „ YOUNG, J. Reminiscences of the Kite in Bucks. (*t.c.* p. 232).
1893. DAWES, W. J. Little Auk Inland [near Newport Pagnell] (*Field*, December 9, p. 901).
1894. APLIN, O. V. Whimbrel in the Midlands [in N.-W. Bucks in May] (*Zool.* p. 266).
- „ BARNETT, C. J. Little Owl in Bucks. [at Turville] (*Field*, May 26, p. 735).
- „ LEWIS, H. Notes on Birds observed in Herts. during 1892 [incl. Reservoirs] (*Trans. Herts. Nat. Hist. Soc.* vii. pp. 161-7).
- „ MARSHALL, T. Hawfinches in Bucks. (*t.c.* January 27, p. 127).
- 1894-5. ROTHSCHILD, HON. W. The White Swallows of Aylesbury (*Novitates Zoologicae*, i. p. 667, and ii. p. 484).
1895. COCKS, A. H. Sandwich-Terns on the Upper Thames [Great Marlow] (*Zool.* p. 190).
1896. LEWIS, H. Notes on Birds observed in Herts. during 1894 [with Notes on Reservoirs] (*Trans. Herts. Nat. Hist. Soc.* viii. pp. 147-52).
1897. DE CASTRO, D. Terns on the Thames [Magna Charta I.] (*Field*, August 14, p. 307).
- „ MARSHALL, T. Little Owl [at Fingest] in Bucks. (*t.c.* January 30, p. 135).
- „ WALSHE, P. Great Plover in Bucks. (*Nat. Journ.*). (Not seen.)
1898. A. A[LLEN]. Californian Quail in Bucks. [at Newport Pagnell] (*Field*, January 22, p. 124).
- „ CROSSMAN, A. F. Notes on Birds observed in Herts. during 1896 [with Notes on Reservoirs!] (*Trans. Herts. Nat. Hist. Soc.* 1898, pp. 148-60).
- „ MARSHALL, T. Crossbills in Bucks. [between Penn and Wycombe] (*t.c.* December 3, p. 897); Dipper in Hants. [also in Bucks. 1894] (*loc. cit.*).
- „ SOLE, F. ANSLOW. Spotted Crake in Bucks. [at Olney] (*t.c.* January 15, p. 93).
1899. ATHAWES, J. P. Partridge's Nest in Straw-stack [at Loughton] (*Field*, July 22, p. 178).
- „ CARPENTER, J. H. Coots on the Thames [near Marlow] (*Field*, September 9, p. 478).
- „ REID, SIR H. RAE. Night-Heron in Bucks. [at Taplow] (*t.c.* August 26, p. 394).
- „ WEBB, W. M. A Guide to the Museum of Eton College [Appendix, List of Birds, pp. i-iv], Eton College, 1899.
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- „ — A List of the Birds of Hertfordshire [many notes on Reservoirs] (*t.c.* pp. 84-102).
- „ MARSHALL, T. The Little Auk [in Bulstrode Park, Bucks.] (*Standard*, December 21).
- „ ROTHSCHILD, HON. N. C. [Exhibition of Baer's Pochard shot at Tring, November 1901] (*Bull. B.O.C.* xii. p. 25) (cf. H. Saunders, *Brit. Birds* (Mag.), i. p. 14, and Hon. W. Rothschild, *t.c.* p. 63).
1902. ALLEN, A. Rufous Tinamu in Bucks. [near Olney] (*Field*, March 1, p. 288).
1903. APLIN, O. V. Notes on Oxfordshire Ornithology by the late C. E. Stubbs [*partim*] (*Zool.* pp. 444-53).

1903. EMSON, C. H. Snow-Bunting on Chiltern Hills [on Ivinghoe Beacon] (*Field*, November 14, p. 844).
- „ CROSSMAN. Notes on Birds observed in Herts. during 1900 [Reservoirs!] (*Trans. Herts. Nat. Hist. Soc.* xi. pp. 47-52).
1904. COCKS, A. H. Birds of Oxfordshire or Buckinghamshire ? (*Zool.* p. 34) ; *Idem*, by O. V. Aplin (*t.c.* p. 75).
1905. HARTERT, E., and ROTHSCHILD, HON. W. Birds [of Bucks.] (*Victoria History of County of Bucks*, i. pp. 128-52 ; 4to, London).
1906. BICKERTON. Notes on Birds observed in Herts. during 1903 [Reservoirs!] (*Trans. Herts. Nat. Hist. Soc.* xii. pp. 125-33).
- „ DURHAM, E. B. Bramblings in Bucks. [at Chesham Bois] (*Field*, December 1, p. 948).
- „ FARWELL, W. Bramblings flocking in Winter [at Burnham Beeches] (*t.c.* February 3, p. 182).
- „ KERR, G. W. The Birds of the District of Staines, four papers [*partim*] (*Zool.* pp. 179-84, 230-4, 307-10, 386-9).
- „ LEE, H. BOSWELL. Black Tern near Amersham (*Field*, August 4, p. 239).
- „ MACPHERSON, A. H. Late Singing of Willow-Warbler [in August] (*t.c.* August 25, p. 342).
- „ NOBLE, H. Birds [of Berks.] (*Victoria History of Berkshire*, i. pp. 140-66), 4to, London. [*Partim*].
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- „ MACKENZIE, W. D. Peregrine Falcon in Oxfordshire [in Fawley Park] (*Field*, February 23, p. 307).
1908. BICKERTON, Notes on Birds observed in Herts. during 1905 [Reservoirs] (*Trans. Herts. Nat. Hist. Soc.* xiii. pp. 49-63).
- „ CROUCH, L. W. Large Clutch of Eggs of the Great Crested Grebe [seven eggs] (*Brit. Birds*, i. p. 327).
- „ KERR, G. W. The Birds of the District of Staines (*Zool.* pp. 137-43).
- „ MONCKTON, F. A. Corn-Bunting singing in November [near Eton] (*Field*, November 14, p. 888).
- „ PROCTOR, MAJOR F. W. The Lesser Redpoll as a Breeding Species in Berks. [*partim*] (*Brit. Birds*, i. p. 312).
- „ VYSE, H. H. Stone-Curlew in November [at Burnham Beeches] (*Field*, November 14, p. 888).
1909. "J. T. A." Summer Birds in North Bucks. (*Field*, May 1, p. 763) ; Scarcity of Nightingales (*t.c.* May 22, p. 890).
- „ KERR, G. W. Marsh-Warbler [breeding] in Bucks. (*Zool.* p. 397) ; cf. *Brit. Birds*, iii. p. 232.
- „ ROTHSCHILD, HON. L. W. Unusual Birds in Hertfordshire [Long-tailed Duck, Pallas' Sand-Grouse, etc.] [*partim*] (*Brit. Birds*, ii. p. 309).
- „ SMITH, J. BEDDALL. Irruption of Crossbills [Bucks.] (*op. cit.* iii. p. 228).
- „ VAUGHAN, H. Green Sandpiper in Bucks. in January (*Field*, January 23, p. 157).
1910. NOBLE, H. Irruption of Crossbills [Bucks.] (*Brit. Birds*, iii. p. 303) ; *Idem* by C. Oldham (*t.c.* p. 409).
- „ OLDHAM, C. Common Scoter and other Ducks in Herts. and Bucks. (*t.c.* iii. p. 414).
- „ VYSE, H. H. Puffin taken in Bucks. [at Langley] (*Field*, November 19, p. 955).
1911. ALLEN, A. Little Bittern in Bucks. [near Olney] (*Field*, August 19, p. 474) ; . . . The Great Shearwater Inland [*P. major* killed by telegraph wires at Olney] (*t.c.* October 28, 968).

1911. APLIN, O. V. Peregrine Falcon in the S. Midlands [near Buckingham] (*Zool.* pp. 7-8).  
 „ “H. M. B.” Arrival of the Wryneck [March 13, Eton] (*Field*, March 18, p. 538).  
 „ DE GRUCHY, G. F. B. Supposed Occurrence of the Whinehat in Winter [? Stonechat] (*t.c.* February 4, p. 230).  
 „ HOLLIS, E. Nutcracker in Bucks [near Aylesbury] (*Zool.* p. 386); Nutcracker near Aylesbury (*Field*, October 14, p. 877); Slender-billed Nutcracker in Bucks. (*Brit. Birds*, v. p. 167).  
 „ VYSE, H. H. Hen-Harrier and Little Owl in Bucks. [at Langley and Fulmer] (*Field*, December 2 and 23, pp. 1234 and 1394); *Idem* by A. H. Cocks, “R. B. B.,” and “Rara Avis” (*t.c.* December 9 and 16, pp. 1289, 1350).  
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 „ DOWSON, E. M. Buzzard at Stoke Poges (*Field*, April 19, p. 772).  
 „ DURHAM, E. B. Redwing in September [at Chesham Bois] (*t.c.* September 27, p. 681).  
 „ OLDHAM, C. Red-necked Grebe in Hertfordshire [twice seen on Reservoirs, 1910 and 1913] (*Brit. Birds*, vi. p. 374); Common Scoters in Summer in Hertfordshire and Buckinghamshire [Reservoirs, July] (*t.c.* vii. p. 119).  
 „ STEELE-ELLIOTT, J. Hobby in Bucks. [at Lavendon] (*Zool.* p. 465).  
 1914. COCKS, A. H. Stone-Curlew breeding in Buckinghamshire (*Brit. Birds*, viii. p. 173).  
 „ HOLLIS, E. Stone-Curlew breeding in Buckinghamshire [on Chilterns] (*t.c.* viii. p. 121).  
 „ NOBLE, H. Stone-Curlew breeding in Buckinghamshire [near Fawley Court] (*t.c.* viii. p. 173).  
 „ ROTHSCHILD, HON. W. Kite in Buckinghamshire [near Wendover, December 1913] (*op. cit.* vii. p. 299).  
 1915. BICKERTON, W. Notes on Birds observed in Herts. during 1912 and 1913 [incl. Reservoirs!] (*Trans. Herts. Nat. Hist. Soc.* xv. pp. 155-66, 209-22).  
 „ HARTERT, E. Early Nesting of Reed-Warbler [May 16] (*Brit. Birds*, ix. p. 48).  
 „ HETHERINGTON, W. C. Infertile Eggs in Nests of Whitethroat (*t.c.* p. 71).  
 „ OLDHAM, C. Black Redstart in Hertfordshire [by Tring Reservoir] (*t.c.* p. 185).  
 1916. COCKS, A. H. Snowy Owl in Bucks. [in July 1912] (*Zool.* p. 313; cf. *Brit. Birds*, x. p. 122); Yellow-hammer's Nest in Rick (*Zool.* p. 352); House-Martins and House-Sparrows (*t.c.* p. 357).  
 „ GAZLEY, H. S. The Poohard in Bucks. (*Wild Life*, viii. p. 162).  
 „ HANNETT, C. E. J. [Letter on Breeding of Hoopoe at Taplow] (*Selborne Mag.* p. 98); cf. *Brit. Birds*, x. p. 122.  
 „ KERR, G. W. The Lesser Redpoll in the Thames Valley (*Wild Life*, viii. p. 94).  
 „ PETTITT, E. E. One Cuckoo—and others [eleven eggs from one female in a season] (*Wild Life*, vii. pp. 56-60, 92-7).  
 1917. BICKERTON, W. Notes on Birds observed in Herts. during 1914 and 1915 [incl. Reservoirs!] (*Trans. Herts. Nat. Hist. Soc.* xvi. pp. 93-105, 141-54).  
 „ COCKS, A. H. Black-headed Gulls in Bucks [at Skinnett, April] (*Field*, May 5, p. 663).





*Phot. by O. G. Pike.*

Grasshopper-Warbler feeding young, Marsworth Reservoir.







*Phot. by O. G. Pike*

Black-necked Grebe on nest, Marsworth Reservoir.



1917. OLDHAM, C. Blue-headed Wagtail in Hertfordshire [at Tring Reservoirs] (*Brit. Birds*, xi. p. 20).
- „ PETTITT, E. E. Blue Eggs of Spotted Flycatcher; Late Breeding of Dabchick (*Wild Life*, ix. pp. 12, 267); two notes.
- „ PRIESTLEY, R. C. Wrynecks [nesting notes at High Wycombe] (*t.c.* p. 268).
1918. JOURDAIN, REV. F. C. R. Little Auks in Kent, Sussex, Bucks. . . . etc [two occurrences, November 1917] (*Brit. Birds*, xi. p. 190).
- „ OLDHAM, C. [On the Breeding of the Black-necked Grebe on the Tring Reservoirs] (*Bull. B.O.C.* xxxix. pp. 28-34).
- „ — Dusky Redshanks in Hertfordshire [Tring Reservoirs, August 25] (*Brit. Birds*, xii. p. 117).
1919. [EDITORS.] Breeding of the Black-necked Grebe in Hertfordshire (*Brit. Birds*, xii. pp. 211-13).
- „ HARTERT, DR. E. Puffin in Buckinghamshire [near Aston Clinton] (*t.c.* p. 191).
- „ MAYALL, A. Large Clutches of Chaffinch's Eggs (*t.c.* p. 80).
- „ PIKE, OLIVER G. The Black-necked Grebe a new Nesting Bird for England [with nine excellent photos, taken on Tring Reservoirs] (*Country Life*, xlvii. pp. 293-7, September 6, 1919).
- „ — The Black-necked Grebe [on the Tring Reservoirs], with seven plates (*Brit. Birds*, xiii. pp. 146-54).
- „ — Probable Long-tailed Skua in Hertfordshire [on Tring Reservoirs] (*Brit. Birds*, xiii. p. 143).
1920. COCKS, A. HENEAGE. Little Auk in Buckinghamshire [seen at Skirmett, December 8] (*Brit. Birds* xiii. p. 246).
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## SOME AFRICAN ANTHRIBIDAE.

BY DR. KARL JORDAN.

1. *Mecocerus albiceps* spec. nov.

♀. *M. fasciculato* Kolbe (1895) subsimilis, rostro cum capite vitta alba signato, elytris area albo tessellata dorsali communi magna in medio valde constricta. Rostrum latum deplanatum, dorso bicarinatum, basi sulco brevi mediano instructum. Pronotum sparsim granulatum; carina dorsali recta in medio levissime interrupta, versus latera angulata, carina laterali alta. Elytra pone basin gibbosa, seriatim punctata, striis 1<sup>a</sup> et 2<sup>a</sup> parum impressis.

Long. 12 mm.; lat. 5.5 mm.

Hab. Nguelo, Usambara; 1 ♀.

In the style of colouring the species agrees with *Physopterus melanoleucus* Jord. (1913). The rostrum is broad, and bears dorsally on each side of the flattened median area a rather broad carina which is slightly bent outward in the middle and is distant from eye. At the base there is a short median groove, and another shorter and more rounded groove is situated beyond the centre, where the carinae widen and disappear; between the second groove and the apical margin a slight median carina; between the dorsal carina and the raised edge of the antennal groove the rostrum is impressed, but there is no sulcus along the carina. Frons broad, being anteriorly at its narrowest point half as broad as the rostrum is long, measured in the middle. The occiput brown, the white stripe tripartite. Antenna pubescent white, club with the exception of the base of segment 9 rufous brown; segment II much shorter than III (measurements 7 and 10), IX in length like III, VIII and X like II, and XI a little longer than X.

Pronotum much rubbed, with indications of an ochraceous median vitta; at the sides a large basal ochraceous spot; laterally and along the carina dispersed granules, on the disc a shallow depression; carina with a small forward angle nearer the sides than middle; lateral carina very prominent in dorsal aspect.

Elytra with the base very distinctly marginate; a large patch of white spots extends from the subbasal humps to the beginning of the apical declivity, in middle confined to the sutural interspace, anteriorly reaching to the third row and posteriorly to the fifth; a white spot above shoulder and a few dots here and there; the rows of punctures not impressed, with the exception of the first and second; base and sides spotted with ochraceous.

Pubescence of underside greyish white, side of metasternite ochraceous, tip of metepimerum white; mesosternal process broader than long. Tibiae rufous brown, grey near base and beyond middle; first and last tarsal segments grey with rufous-brown tips, second segment with few grey hair-scales; first foretarsal segment longer than fourth.

2. *Mecocerus balteatus* spec. nov.

♀. Niger, subtiliter brunneo pubescens; elytris, metasterno abdomineque pube cinerea densissime tectis, balteo lato nigro cinctis.

Hab. Benito, Spanish Guinea; 1 ♀.

Near *M. oculus* Jord. (1895).

Head, rostrum, upper- and underside of prothorax, the extreme base of the elytra, mesosternum, apex of metasternum, and base of first abdominal sternite black clothed with a mummy-brown pubescence which does not conceal the dark colour of the derm; rest of body covered with a dense ashy-grey pubescence which has a faint luteous tint; on the elytra a transverse black band, 3.5 mm. wide near suture, narrowing at the sides, continuous with the transverse band of the underside, slightly brownish in sutural half; the narrow basal band widened at the shoulders. Legs black, with thin grey pubescence, which is denser on the tarsi.

### 3. *Mecocerus demissus* spec. nov.

♀. Niger, omnino schistaceo-griseo pubescens, elytris fascia transversa nigra notatis.

*Hab.* Gaboon (A. Mocquerys), 1 ♀, type; Benito, Spanish Guinea, 1 ♀. Likewise a near ally of *M. oculus*.

Uniformly slate-grey, with the exception of the brown club of the antenna and a black median band on the elytra. This band is a little more than 1 mm. wide at the side; it narrows slightly above and does not quite reach the suture.

In the second specimen the band is broader and extends across the suture, but is much shaded with slate-grey and only its anterior boundary is well defined, while posteriorly the band fades away.

Possibly both this form and the preceding one may ultimately prove to be colour varieties of *M. oculus*. Several of the African *Mecoceri* closely resemble certain Longicorns (*e.g.* *Aemocera*), and among mimetic species one must always expect to meet with polymorphism.

### 4. *Mecocerus modestus* spec. nov.

♂♀. Signatura elytrorum *M. annulipedi* Karsch (1882) simillimus, sed constructione *M. clathrati* Jord. (1903).

Long. (cap. excl.) 8–10 mm.

*Hab.* Johann-Albrechtshöhe, Cameroons (L. Conradt), 1 pair, type ♂; Cameroons, 1 ♂ and 3 ♀♀; Old Calabar, 1 ♂.

Perhaps a colour-variety of *M. clathratus*, but agreeing on the upper surface much better with *M. annulipes* and even *M. barombinus* Kolbe (1895). The head and rostrum bear the same deep and wide median groove as in *M. clathratus*, the rostrum has the same length, being shorter than in *M. annulipes*, and the velvety spot on the metasternum of the ♂ is as large as in *M. clathratus*. The second tarsal segment and the apex of the first are black, not white as in *M. annulipes*.

The upperside is dull greyish drab with small greyish white spots: on the pronotum a dot on the disc on each side of the middle and about three indistinct ones on the sides, the grey pubescence being also slightly condensed in front of the scutellum and at the lateral angles; on the elytrum a spot behind scutellum, another in first interstice further back, one in front of and three behind basal callosity of which two in third interstice, one behind shoulder-angle, a slightly transverse spot before middle at side-margin, three before apical declivity con-



fluent, forming a short transverse bar across interstices 3, 4, and 5, about six small spots on apical declivity, a few minute dots or traces of them here and there in basal three-fourths.

Underside rather more grey than upper, sterna with ill-defined lateral whitish spots, and the upper posterior angles of the abdominal segments likewise whitish.

#### 5. *Physopterus cortex* spec. nov.

♀. Color *Ph. melanoleuci* Jord. (1913); magis robustus, capite cum rostro latiore, antennarum scrobi multo majore, margine superiore ejus fere ad oculum continuato; capite inter oculos carina mediana instructo; antennis prothoracis basin fere attingentibus, articulis  $1^{\circ}$ – $4^{\circ}$  longitudine aequalibus,  $9^{\circ}$  latitudine duplo longiore, duobus sequentibus simul sumptis longitudine aequali,  $10^{\circ}$  multo latiore quam longiore; pronoto tuberculato, carina in medio interrupta atque antrorsum flexa; elytris leviter fasciculatis pone basin gibbosis; prosterno laevi.

Long. 12 mm.; lat. 5.5 mm.

Hab. Usambara; 1 ♀.

A broad stripe, clay colour variegated with grey, extends from the apex of the proboscis to the base of the pronotum; apical area of elytra similarly coloured; scutellum and sutural area from base to the beginning of the apical declivity greyish white, this area narrow at base, reaching sixth interspace behind subbasal hump, narrowing abruptly before middle of elytra, and posteriorly reaching into third interspace, the area appearing sinuate or constricted; sides of occiput, pronotum and elytra brown; colour much less contrasting than in *Ph. melanoleucus*. Underside grey, with inconspicuous brown lateral spots on abdomen. Femora grey, brown at apex, tibiae grey and brown with three indistinct brown spots, tarsi greyish brown. Head and rostrum much broader than in *Ph. melanoleucus*; a distinct median carina between the eyes. Rostrum appearing less strongly widened at apex on account of the great width of the basal three-fifths; median channel deep and narrow at base; dorso-lateral carina very prominent, being a direct continuation of the rim of the eye, curved, the two carinae not parallel, but first convergent and then slightly divergent; upper margin of antennal groove curved and nearly extending to the eye.

Pronotum granulate, impressed before the scutellum and on the disc, with a transverse row of four humps, of which the lateral ones are the most conspicuous, being slightly penicillate; depression in front of these humps without a raised median line; carina as in *Ph. melanoleucus*, curved forward in middle and interrupted.

Prosternum with some granules anteriorly on the sides, otherwise smooth, intercoxal process broad, also in mesosternum, where it is half as broad again as long. First foretarsal segment as long as fourth.

The club of the antenna is slenderer than in the allied species, segment IX being as long as X and XI together; X is half as broad again as long.

#### 6. *Physopterus emmides* spec. nov.

♀. Niger, supra albo-griseo et russo variegatus, capite inter oculos griseo, elytris ante et post medium densius griscentibus, his arcis ad suturam coniunc-

tis, antice ad scutellum continuatis; subtus cum pedibus griseis, tibiarum dimidio basali supra plus minusve rufo-brunneo.

Rostrum supra planatum, bicarinatum, sulco profundo mediano instructum, lateribus impressum atque praeter carinam profunde sulcatum, sulco sub-oculari etiam profundo. Antenna prothoracis basin paulo superans, articulo 3<sup>io</sup> secundo longiore, clava tenui, 10° latitudine fere dimidio longiore. Pronotum convexum, leviter quadri-impressum, carina dorsali fere recta medio levissime interrupta, versus latera paululo convexa. Elytra basi marginata, ad suturam parum deplanata, gibbositate postbasali distincta non-penicillata, interspatio 3<sup>io</sup> pone medium caeteris magis convexo, dilatato.

Long. 12 mm.; lat. 5.5 mm.

*Hab.* Mundane, Cameroons (R. Rohde); 1 ♀.

The grey pubescence of the upperside is densest on the frons, in the middle of the pronotum, and, on the elytra, in between and behind the subbasal humps and behind the middle, but is nowhere so conspicuous as in *Ph. melanoleucus*, and numerous small grey speckles are present on the russet portions of the upperside.

The rostrum very strongly dilated at the apex; the median sulcus deep, continued on to the frons, but here shallow, not extending to the middle of the rostrum, a narrower, more shallow and shorter sulcus beyond middle replaced on widened apex by a raised line. The carinae broad, not sharp, particularly broad at the eye, accompanied laterally for some distance by a deep groove which is placed almost underneath the carina; sides of rostrum concave; cariniform margin of antennal groove curved, directed towards the underside of the head, joining the anterior margin of the deep, curved, genal groove. Frons at its narrowest point only as wide as the second antennal segment is long; occiput russet, centrally variegated with grey. Lengths of antennal segments II and III and VIII to XI are respectively 7, 10, 8, 10, 7, 9. Pronotum without conspicuous granules and without humps; on the disc four shallow impressions, of which the two anterior ones are the deepest. Elytra without tufts; the rows of punctures impressed, the dorsal interspaces slightly convex, the third, which is broad, more distinctly raised, especially behind the middle. Mesosternal process broad, apically dilated. First foretarsal segment one-fourth longer than last (exclusive of claws).

#### 7. *Xylinades fustis* spec. nov.

♀. *X. lanugicorni* colore et statura similis; antennis decem-articulatis, articulis 10° et 11° in unum confusis.

*Hab.* Benito, Spanish Guinea; 1 ♀.

The black median patch of the elytrum is larger than in *X. lanugicornis* Dalm. (1833), joining the two limbal spots. The tomentum at the apical sutural angle is rather long, forming a small tuft. The outer and under sides of the mid- and hindtibiae bear the same minute grey pubescence which is found on the upperside of the femora and tarsi. The anal sternite is shorter than in the ♀ of *X. lanugicornis* and has more numerous large punctures. The pronotum is not so distinctly depressed before and behind the centre. The chief distinction is found in the antenna, of which the club is shorter and consists of two segments only, segment X being so completely united with XI that no suture is visible.

8. *Cylindroides ventralis* spec. nov.

♂♀. Niger, albo pubescens, lateribus pronoti late ochraceo-fulvis, elytris macula diffusa basali communi ac fascia communi ante apicem declivem sita brunneo-ochraceis, hac fascia antice diffusa lateribus antrorsum continuata postice linea nigrescente in utroque elytro convexa terminata. Pronotum postice in medio depressum. Pygidium leviter convexum, sulco mediano instructum. Abdomen ♂ longitudinaliter depressum, parte depressa brunneo hirsuta, metasterno macula mediana hirsuta eodem colore.

*Hab.* Warri, Niger, ii. 1896, iv. 1897 (Dr. F. Roth), 2 ♂♂, type; Benito, Spanish Guinea, 1 ♀; Gaboon, 1 ♂ (A. Mocquers).

The brown colouring on the upper surface is variable in extent. The pronotum may be described as being clay-brown with a white median stripe which widens strongly in front. The transverse band placed before the apical declivity of the elytra is more or less sharply defined posteriorly, but quite diffuse anteriorly, being limbally either separated from or connected with the clayish limbal area which extends from the shoulder backwards. The tibiae bear two brown spots, one at the base, the other in the middle; the foretarsus is brown.

The pronotum is much less depressed centrally than in the other known species, and the middle line not at all raised in the depression. The underside of the ♂ is characteristic, the longitudinal central depression of the abdomen as well as a rounded central space on the metasternum being clothed with stiff dark brown hair; the margin of the penultimate abdominal segment is not elevate in the depression. The first tarsal segment is shorter than in *C. albo-plagiatus* Fairm. (1885).

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## NEW GEOMETRIDAE.

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

## SUBFAM. HEMITHEINAE.

1. *Dysphania translucida turbatrix* subsp. nov.

♂♀, 82–88 mm. Thorax above with the yellow anterior patch very broadly interrupted by a blue-black band, leaving posteriorly only a narrow, broken edging of yellow scaling. Abdominal yellow belts narrow.

*Forewing* with the white markings restricted, the subbasal patch almost obsolete (dusted over with dark scales), the central band narrowed, the extracellular spots wanting, the submarginals more or less reduced and containing little or no yellow scaling.—*Hindwing* with cell-mark small, dark border broader than in *t. translucida*, behind  $M^1$  commonly reaching almost to the cell; the contained yellow spots variable, but on an average considerably smaller than in *t. translucida*; those on either side of  $R^3$  and that before  $R^1$  commonly dusted over or subobsolete.

Solomon Islands: Choiseul, north side, December 1903, a series, including the type ♂; Vella Lavella, March 1908. All in coll. Tring Museum, collected by A. S. Meek.

2. *Dysphania translucida floridensis* subsp. nov.

Like extreme forms of the preceding, but with the whole of the hindwing unclouded between  $M^2$  and  $SM^2$ . On the forewing the central band is purer white, rather broad in cell, very strongly constricted at  $M^2$ .

Solomon Islands: Florida Island, January 1901 (A. S. Meek). Type in coll. Tring Museum.

Pending exact anatomical investigation, I now treat *translucida* Montrz. (1856), *tentans* Walk. (1864), and *tyrianthina* Butl. (1882) as forms of a single species, leaving open the question whether they shall be merged with the yellow Moluccan *numana* Cram. As a rule, the *tyrianthina* group (*tyrianthina* Butl., *fulvilauta* Warr., *semifulva* Warr., and the new forms) can be distinguished by the restricted yellow in front of thorax—but this character is shared by *schoutensis* Joicey and Talbot (1916), which geographically belongs to the *tentans* series, and very occasionally even extreme forms of *tentans* ab. *velata* Bastelb. show signs of transition towards the same peculiarity; the *translucida* group (*t. translucida* only) by the clean white areas, the broad (commonly confluent) yellow markings of the hindwing, and tendency to develop yellow scaling distally in the submarginal spots of the forewing—but the *subalbata* form of “*tentans*” tends to approach this in the ♀. The *tyrianthina* group is generally also noteworthy for the loss of the dark patch in the middle of the hindwing between  $M^2$  and  $SM^2$ , which seems pretty constant in the other forms; but this patch develops in the new form *turbatrix*, commonly appears (though reduced) in *semifulva* Warr., and is well developed (though differently shaped—long and narrow, not confluent with the abdominal patch) in the type specimen only of *fulvilauta* Warr.



3. *Metallochloa misera* sp. nov.

♂ ♀, 20–22 mm. Face grey-green. Palpus in ♂ less than  $1\frac{1}{2}$ ,\* with third joint minute, in ♀  $2\frac{1}{4}$ , with third joint almost equal to second; above grey-green with a few blackish scales, beneath whitish. Crown green, narrowly white between antennae. Thorax and base of abdomen above grey-green, beneath whitish; crests moderate, red-brown mixed with black. Legs whitish; hind-tibia in ♂ with the pencil rather strong, all the spurs short except the inner proximal.

Wings shaped as in typical *Hemithea*, in ♀ rather broader, yet not quite so broad as in *M. grisea* Prout (NOVITATES ZOOLOGICAE, xxii. 318). *Forewing* with  $SC^1$  free,  $R^1$  connate or stalked,  $M^1$  connate or stalked; grey-green; costal edge spotted, whitish ochreous and black; lines white, irregular, in part ill defined; antemedian from one-third costa, somewhat oblique outward, then sinuous; postmedian from beyond two-thirds costa, incurved at radials, then rather strongly outbent, angled inward on submedian fold (here slightly thickened) and more weakly outward on  $SM^2$ , reaching hindmargin at about four-fifths; terminal line scarcely darkened, interrupted by whitish dots at veins; fringe grey-green.—*Hindwing* with antemedian line wanting, postmedian well expressed; very slight indications of dark cell-mark; termen and fringe as on forewing.

Underside whitish; forewing with slight flush in middle and with costal edge spotted.

Bingerville, Ivory Coast, August 16–18, 1915, type ♂, May and June 1–7, 1915, 2 ♀♀ (G. Melou). In coll. Tring Museum. A ♂ from Bopoto, Upper Congo, May 1903 (Kenred Smith), too poor to describe, has long stood in the same collection.

Near *grisea* Prout, but differently coloured, postmedian line more angulated on fold, etc.

4. *Chlorissa allochroma* sp. nov.

♀, 24 mm. Palpus  $2\frac{1}{2}$ , second joint with suberect scales above, third joint strongly elongate; red above, whitish beneath. Vertex and thorax concolorous with wings; abdomen very slightly crested anteriorly, posteriorly paler.

*Forewing* broader than in *solidaria* Guen., termen rather straight and not very oblique anteriorly, much more oblique and slightly waved from  $M^1$ ;  $SC^1$  connate with  $SC^{2+5}$ , not touching C,  $R^1$  from stalk of  $SC^{2+5}$ ,  $DC^3$  strongly oblique posteriorly,  $M^1$  shortly stalked; light cinnamon-rufous, irrorated and strigulated with white as in *solidaria*; costal margin more olive-brownish, darkening apically; lines thick, brown, slightly irrorated with black; antemedian oblique outward from before one-third costa, rather strongly sinuous, the inward curves being at M and  $SM^2$ ; postmedian from two-thirds costa to hindmargin rather near tornus (median area consequently rather broad), angled outward on  $R^1$ , incurved between radials and more deeply between  $M^1$  and  $SM^2$ ; antemedian proximally (very narrowly) and postmedian distally edged with white; terminal dark line indicated in anterior part only; termen minutely dotted with white at vein-ends;

\* In this article I have adopted Meyrick's convenient terminology, length of palpus being given in terms of diameter of eye, that of antennal ciliation in terms of diameter of shaft, that of tarsus in terms of length of tibia.



fringe reddish, chequered with whitish opposite the veins, especially in posterior part.—*Hindwing* fairly broad, but with abdominal margin long; termen slightly waved, bent minutely at  $R^1$  and more markedly at  $R^2$ ; concolorous with forewing; antemedian line replaced by an elongate cell-mark; the rest as on forewing.

Underside dirty white, the forewing flushed with reddish and with some smoky apical clouding; markings obsolete; terminal line of hindwing rather strong from apex to  $R^1$ , accompanied on wing-margin by very slight narrow dark shading.

Bingerville, Ivory Coast, 1915 (G. Melou). Type in coll. Tring Museum.

May be provisionally placed in the vicinity of *solidaria*, in spite of its broader wings, more sinuous postmedian line, and entirely different colour.

#### 5. *Prasinocyma eichhorni* sp. nov.

♀, 35 mm. Closely similar to *perpolluta* Prout (NOVITATES ZOOLOGICAE, xx. 430), differing as follows:

Metathorax and abdomen entirely without the yellow dorsal line, the abdomen with some ill-defined purple-brown dorsal markings about the fourth and fifth segments.

*Forewing* with termen slightly more curved; costal margin purplish chocolate, at base deepening towards Indian purple, only the extreme edge narrowly white; terminal line stronger; fringe pale chocolate, not yellow.—*Hindwing* with the angle at  $R^2$  rather pronounced; termen and fringe as on forewing.

Forewing beneath suffused anteriorly with purple-grey; both wings with fringe proximally nearly of the ground-colour, only slightly suffused, distally nearly as above, though greyer.

Hydrographer Mountains, 2,500 feet, British New Guinea, April 1908 (Eichhorn brothers). 2 ♀♀ in coll. Tring Museum.

#### 6. *Comostolopsis stillata phylarcha* subsp. nov.

♀, 14–15 mm. Smaller than the corresponding sex of *s. stillata* Feld. from S. Africa.

*Forewing* with all the red-brown spots well developed; the red-brown border, which in *s. stillata* consists of a mere thread, widened into a band averaging .5 mm., broadest towards apex, its proximal edge crenulate.—*Hindwing* with corresponding distinctions, the cell-spot, in particular, enlarged.

Bingerville, Ivory Coast (G. Melou), type ♀ and another; Takwa, Gold Coast (R. E. James). All in coll. Tring Museum.

#### 7. *Comostola ocellulata* sp. nov.

♂, 23–26 mm. In shape, ground-colour, and markings, similar to *mundata* Warr. but larger, the ground-colour sometimes slightly more bluish, the hindwing slightly less narrow.

*Forewing* with DC characteristic; costal margin more or less strongly rosy at extreme edge, then narrowly pale with dark irroration, on under-surface rather broadly infuscated proximally; cell-spot small, round, brighter red than

in *mundata*; lines of white dots rather well developed, terminal red line very slender, slightly interrupted.—*Hindwing* similar, except costally.

Arizan, Kagi district, Central Formosa, September 1906, July—August 1908, a short series in coll. Tring Museum, the type August 1908; also in coll. British Museum and coll. Joicey. Rantaizan, Formosa, May 1909 (a discoloured example, aberrant in the larger—though equally round—cell-spots) in coll. Tring Museum.

This is no doubt the *subtiliaria* of Bastelberger (*Iris*, xxii. 173), but is very distinct from *nympha* Butl. and the accepted *subtiliaria* in the straight termen of forewing, rosy costa, lack of red dots at outer edge of postmedian dots, etc.

#### SUBFAM. STERRHINAE.

##### 8. *Rhodostrophia calabra cypria* subsp. nov.

♂♀. *Forewing* with cell-dot well developed, though less large than in *c. tabidaria*; antemedian line generally thread-like or obsolescent; postmedian band narrowed, measuring only about 1 mm.; submarginal shade nearly always present, broad, but not very strong, separated from termen (as in *c. tabidaria*) by a thread of the ground-colour.—*Hindwing* with cell-dot obsolete; postmedian band more or less narrowed; submarginal shade fairly well developed towards tornus, weakening anteriorly. Underside in general more blurred than in the other races.

Cyprus: Aghirda, May 7–14, 1916 (G. F. Wilson), including the type; Athanassa, on the plains, 465 feet, April 30–May 6, 1916 (G. F. Wilson); Troödos, June 24, 1916 (G. F. Wilson), July 14, 1911 (J. A. Bucknill); all in coll. Tring Museum.

Like *R. calabraria* everywhere, this race is very variable in colour, etc., but it seldom shows the bright coloration of the forms from S. and S.E. Europe, and scarcely ever the division of the postmedian band into two lines, as in those from Spain and France.

##### 9. *Rhodostrophia calabra transcaucasica* subsp. nov.

♀. In general almost as brightly coloured as *c. calabraria* from S. and S.E. Europe, the outer pink shade, as in that, touching the termen, the postmedian band nearly solid, not very broad, but rarely narrowed as in *c. cypria*; both wings with cell-dots sharply expressed, though not so large as in *c. tabidaria*.

Transcaucasia: Borjom. 6 ♀♀ in coll. Tring Museum.

##### 10. *Organopoda olivescens orbiculata* subsp. nov.

♀, 34 mm. Larger than *o. olivescens* Warr. (NOVITATES ZOOLOGICAE, iii. 374) from North Queensland.

*Forewing* with postmedian line more diffuse, rather more proximally placed.—*Hindwing* with the cell-dot slightly enlarged, containing a few whitish scales, and enclosed in a round white spot which has a diameter of nearly 1 mm.

Mount Goliath, Central Dutch New Guinea, 6,000–7,000 feet, February 1911 (A. S. Meek). 2 ♀♀ in coll. Tring Museum.

11. *Semaepus orbifera* sp. nov.

♂, 25 mm. Head, thorax, and base of abdomen above chocolate-brown, abdomen becoming paler posteriorly, with narrow whitish posterior edges to the segments; underside mostly whitish, of palpus more ochreous, coxae and forefemur tinged with ochreous and reddish. Antennal ciliation about 1. Hindleg with tufts of hair partly dark smoky, partly dull ochreous, tarsus completely aborted, a large spreading pencil of ochreous to whitish hair.

*Forewing* not very broad; SC<sup>2</sup> from cell; chocolate with some sparse whitish irroration; lines dirty white, irrorated—except in dots on the veins—with olive-grey; antemedian from one-fourth costa to one-third hindmargin, slightly angulated outward on M and SM<sup>2</sup> and marked by a pale spot on SC; postmedian from three-fourths costa to beyond two-thirds hindmargin, arising from a small pale spot at costa, very slightly excurved anteriorly, finely lunulate-dentate throughout, the teeth pointing inward on the veins; cell-mark elongate, slightly angled outward at origin of R<sup>2</sup>, white, edged with some grey scales, enclosed in a large circular whitish patch of nearly 2 mm. diameter; termen with slight indications of a dark line, interrupted by white dots at the veins.—*Hindwing* not very broad; termen rounded; similar to forewing but without the first line.

Underside much paler, with the cell-mark and postmedian line indicated; cell-mark of hindwing with rather more extended dark bordering than above.

St. Jean de Maroni, French Guiana. Type in coll. Tring Museum.

12. *Semaepus simplicilinea* Prout.

♂, 25 mm. Closely similar to *mitranaria* Walk. and *geminilinea* Prout (NOVITATES ZOOLOGICAE, xxiii. 382).

*Forewing* with ground-colour nearly as in *geminilinea*, but slightly brighter ochreous, the dark irroration rather more reddish; costal region and veins not appreciably darkened; median line single, as in *mitranaria*; postmedian approaching the subapical more closely than in *geminilinea*, and differing from that of both the allies in being rather strongly incurved between the radials.—*Hindwing* coloured nearly as in *geminilinea*, but with the antemedian straight as in *mitranaria*; the ochreous, blackish-edged cell-mark considerably smaller than in either of the allies.

Underside similar to that of *mitranaria* but slightly darker; cell-mark of hindwing reduced as above.

San Ernesto, Bolivia (68° W., 15° S.), 1,000 m., August–September 1900 (Simons). Type in coll. Tring Museum, determined by Warren as *mitranaria*. A slightly larger, more reddish-ochreous example from Pozuzo, Huanuco, Peru, 800–1,000 m. (W. Hoffmanns) in the same collection.

13. *Lipotaxia rubicunda* (Warr.) ab. *irregularis* ab. nov.

♂, 20 mm. Ground-colour much lighter than in the name-type (NOVITATES ZOOLOGICAE, xii. 324), only becoming more reddish on forewing towards apex, at termen, and in the vicinity of a curved dark line which—as in *segmentata* Warr. (NOVITATES ZOOLOGICAE, xiv. 220)—runs from base of M to about two-thirds hindmargin; terminal patch small, dusky, ill-defined.

St. Jean de Maroni. 2 ♂♂ in coll. Tring Museum.

Possibly a separate species though occurring together with typical *rubicunda*. Of two worn specimens from San Esteban, Venezuela, in the Tring collection, one appears to be referable to the name-type, the other to ab. *irregularis*.

#### 14. *Lipotaxia perpulverosa* sp. nov.

♂, 21 mm. Closely akin to *L. rubicunda* Warr., perhaps a subspecies. Head and body nearly as in the darkest examples of that species, abdomen above noticeably infuscated.

*Forewing* with darker irroration than in *rubicunda*, the costal margin broadly infuscated; markings nearly as in *rubicunda*, the light apical and tornal patches rather more strongly irrorated, connected by more definite mid-terminal shading than in *rubicunda*; a large greyish patch on hindmargin, shaped as in *segmentata* Warr. but much less conspicuous.—*Hindwing* appearing rather fuller than in *rubicunda*, the abdominal margin being relatively less elongate; much more strongly irrorated than in *rubicunda*; a minute ocellated cell-mark discernible; the interrupted subterminal line very fine, close to termen throughout, the apical and the (obsolescent) tornal patch consequently minute—narrower and shorter even than in *segmentata*.

Underside paler than in *rubicunda*, especially on the hindwing; the dark terminal shades weak, that of the hindwing narrow, rufescent rather than smoky and only developed apically.

Rio Ucayali, Peruvian Amazons. Type in coll. Dognin. Also in coll. British Museum from Chaquimayo, S.E. Peru, 2,500–3,000 feet, June–July 1910 (H. & C. Watkins).

#### 15. *Trygodes dissuasa* sp. nov.

♂, 35 mm. Superficially scarcely distinguishable from small, well-irrorated, weakly-marked forms of *spoliataria* Mösch. (*Verh. Zool.-bot. Ges. Wien*, xxxi. 407) = *columbaris* Butl. (*Tr. Ent. Soc. Lond.* 1881, p. 347) (Venezuela—Surinam and Brazilian Amazons), of which it may well be a western representative, though having clearly attained specific rank. Antenna, as in *spoliataria*,\* with short lamellate teeth beneath and shortish fascicles of cilia. Midfemur glabrous, wanting the long, dense hair-tuft of *spoliataria*.

*Forewing* with the green cell-marks reduced, consisting of a not very well defined roundish one at DC<sup>1</sup> and a smaller, very indistinct one at DC<sup>2</sup>.—*Hindwing* with the postmedian line almost obsolete, the green cell-mark fairly distinct, circular, lacking the small anterior projection of *spoliataria*.

Quevedo, W. Ecuador (v. Buchwald). Type in coll. Tring Museum.

#### 16. *Ptochophyle nebulifera* sp. nov.

♂♀, 22 mm. Face cream-colour, upper edge vinaceous. Palpus vinaceous on outer side. Vertex and antennal shaft cream-colour, slightly marked with dull vinaceous. Thorax and abdomen cream-colour, tinged with Naples yellow.

*Forewing* broad, apex minutely produced, termen strongly curved from SC<sup>2</sup>, appearing gibbous in middle; areole fairly long, SC<sup>1</sup> shortly stalked beyond

\* Möschler calls them pectinate, which is inaccurate.



it; pale Naples yellow to cream-colour, with irrorations and cloudings of olive-grey to smoke-grey; these occupy, in varying intensity, almost the whole of the wings except a thick, interrupted submarginal line, which consists of more or less confluent paired spots between  $SC^2$  and  $R^1$ , between  $R^2$  and  $M^1$  (the anterior of this pair slightly farther from termen), and narrower spots between  $M^1$  and tornus; the cloudings less dense towards base and in region of postmedian line than elsewhere; a minute black cell-dot; fringe pale.—*Hindwing* subquadrate, but with the angle in middle rather more rounded off than in *innotata* Warr. (NOVITATES ZOOLOGICAE, iii. 294), anal angle slightly produced;  $M^1$  not or barely stalked; colours as on forewing, but with the ground-colour distinct at base, in a conspicuous and rather broad postmedian band and a less conspicuous antemedian; subterminal row of spots more complete; cell-dot white; sometimes a darkened patch developed at abdominal margin between postmedian and subterminal bands.

Underside much less clouded; forewing with vinaceous costal shade, expanding between  $SC^1$  and  $SC^2$  in their proximal part, and with vague vinaceous shading in cell.

British New Guinea: Haïdana, Collingwood Bay, April 1907 (A. S. Meek), type ♂ and a ♀; Hydrographer Mountains, 2,500 feet, April–May 1918 (Eichhorn Brothers), 2 ♂♂; all in coll. Tring Museum.

#### 17. *Cosymbia maderensis azorensis* subsp. nov.

♂♀, 22–25 mm. Considerably smaller and (especially in the ♂) decidedly broader-winged than *m. maderensis* B.-Bak. (*Tr. Ent. Soc. Lond.* 1891, p. 216). Reddish irroration generally denser, giving to the insect a much warmer tone.

*Forewing* with first line often well developed, strongly incurved anteriorly; median shade slightly less oblique than in *m. maderensis*, more reddish, commonly very thick and strong; postmedian row of dots often connected by a complete line, both above and beneath; cell-dot small, only very slenderly black-ringed; terminal dots rarely strong.—*Hindwing* with corresponding distinctions.

Azores, a good series collected by Ogilvie Grant, recorded by Warren (NOVITATES ZOOLOGICAE, xii. 441) as *pupillaria* Hb., and mentioned by me in Seitz (*Macrolep.* iv. 150) under *maderensis* but not fully worked out; type ♂ “above Calheta S. Jorge, 200 feet, May 7, 1907.” The true *pupillaria* only occurred at San Pedro, Santa Maria, 2 ♂♂, May 2, 1903, in a small, deeply-coloured form which will probably deserve naming as a local race, in spite of the extreme variability of *pupillaria* everywhere.

#### 18. *Anisodes (Pisoraca) iners* sp. nov.

♂, 25 mm. Face whitish, upper edge buff. Vertex and antennal shaft pale cream-buff. Palpus with third joint long; whitish, above and on outer side marked with dull red. Thorax, abdomen, and legs pale cream-buff, the inner side of foreleg mostly dull dark reddish. Hindtibia rather rough-scaled, the proximal spur well developed.

*Forewing* rather elongate, apex not acute, termen subcrenulate; areole long,  $SC^1$  from before its extremity; pale cream-buff, costally somewhat darker; slight scattered dark irroration; a black dot on C near base; an antemedian series on SC, M, and  $SM^2$  before one-third and a narrow dot on cell-fold rather



farther from the base ; a black cell-dot, followed by moderately thick buff median shade, which curves inward very slightly behind middle ; a curved row of small black postmedian vein-dots 2 or 3 mm. from termen ; small interneural brown (buff partly overlaid with black) subterminal spots, namely a weak subcostal, a stronger pair between the radials, one between the medians, and two almost confluent cut by submedian fold ; conspicuous black interneural dots on termen and minuter dots at vein-ends on base of fringe.—*Hindwing* with termen subcrenulate, the teeth at  $R^1$  and  $R^3$  strengthened ;  $M^1$  separate ; similar to forewing, without the subbasal and the first antemedian dot ; the black cell-mark larger, somewhat elongate ; the median shade faint.

Underside with the ground-colour somewhat paler still, but with a great part of the forewing (proximally and costally) flushed with pink ; both wings with feeble cell-mark and postmedian and terminal dots ; forewing in addition with a pinkish median shade and subterminal spots.

La Oroya, Rio Inambari, Peru, 3,100 feet, September 1904, dry season (G. Ockenden). Type in coll. Tring Museum.

The smallest American *Pisoraca* known to me.

#### 19. *Anisodes* (*Pisoraca*) *oöthesia* sp. nov.

♂, 28–32 mm. Face brown above, whitish below. Vertex white. Occiput brownish. Palpus slender, with third joint moderately long ; first and second joints whitish beneath. Thorax and abdomen above pale grey, beneath whitish. Legs more brown ; hindtibia with moderate proximal spur.

*Forewing* not broad, termen waved, tornus not strong ; whitish, irrorated with light grey-brown, more densely at base of costa ; lines grey-brown, not very strong, usually more or less thickened at costa ; antemedian from two-sevenths costa, acutely bent outward in cell and again in submedian area ; median and postmedian dentate outward on the veins ; median well beyond cell-spot, slightly oblique inward to SC, then oblique outward to  $R^1$ , thence about parallel with termen, a little incurved between  $M^2$  and  $SM^2$  ; postmedian finer, nearly parallel with median, but curved instead of angled anteriorly ; double subterminal shade strong, enclosing a row of irregular white subterminal spots ; cell-spot small, black, somewhat elongate ; terminal line black, fine but scarcely interrupted, thickened into dots between the veins ; fringe with minute brown dots at vein-ends.—*Hindwing* not broad, termen markedly crenulate, the teeth at  $R^1$  and (especially)  $R^3$  strong ;  $SC^1$ – $R^1$  connate or short-stalked,  $M^1$  well separate ; marked nearly as forewing, the cell-mark minutely pale-centred.

Forewing beneath white distally and along hindmargin, with rosy suffusions from base to postmedian line ; postmedian and proximal subterminal shade well developed ; terminal line and dots brown. Hindwing beneath almost unmarked.

Huancabamba, Cerro de Pasco, E. Peru (E. Böttger). 6 ♂♂ in coll. Tring Museum.

#### 20. *Anisodes* (*Pisoraca*) *sypharioides* sp. nov.

♂, 32–38 mm. Head and body concolorous with wings, only the extreme anterior edge of vertex and inner edge of antennal shaft somewhat whitened.

Third joint of palpus elongate, but not quite as long as second ; upper and outer sides marked with red.

*Forewing* not very broad, apex rather acute, termen waved ; areole well developed ;  $SC^2$  from or from just before its apex ; ochraceous-buff with very fine rufous irroration ; antemedian and median lines rather thick, but faint, the former from one-fourth costa oblique outward, sharply angulated in cell, then waved, with a slight indentation on M and a deeper one on  $SM^2$ , slight dots developed on  $SC^1$ , M, and  $SM^2$  ; median denticulate, exteriorly somewhat ex-curved, rather remote from cell-mark, posteriorly somewhat incurved, reaching hindmargin scarcely beyond middle ; postmedian consisting of a row of distinct blackish-red vein-dots, placed nearly as in *sypharia* Guen. (Oberthür, fig. 3360) ; cell-dot small, white, very finely black-ringed ; termen with distinct interneural dots ; fringe slightly paler, except against the terminal dots.—*Hindwing* with termen crenulate ;  $M^1$  widely separate from  $R^3$  ; concolorous with forewing, in proximal part very slightly paler ; antemedian fine, curved ; median sinuous, a little beyond cell-mark ; cell-mark large, black, with minute white pupil ; the rest as on forewing.

Underside paler, posterior part of forewing and almost entire hindwing inclining to whitish ochreous ; cell-marks and the markings beyond present, the terminal dots prolonged into dashes.

Santo Domingo, Carabaya, S.E. Peru, 6,000 ft., January 1901, wet season (G. R. Ockenden). Type in coll. Tring Museum. Also from Cushi, E. Peru (W. Hoffmanns), coll. Tring Museum, and from Loja, Ecuador, coll. Dognin.

Has been misidentified with *sypharia* Guen., which has a different hindleg, white vertex, unmarked underside, and other distinctions.

## 21. *Anisodes (Pisoraca) endospila* sp. nov.

♂, 36 mm. Closely similar to *rufistigma* Warr. (NOVITATES ZOOLOGICAE, xi. 510), but larger and rather lighter, the ochreous cloudings on the pale ground-colour being less strong. Face with a narrow but rather sharply defined dark reddish band at upper edge. Metathorax with a pair of sharp black spots.

*Forewing* with apex appearing slightly more acute than in *rufistigma*, the termen being straight and strongly oblique ; costal margin slightly darkened proximally ; lines finer, fairly well expressed ; cell-ring darker, rather more elongate and (like  $DC^3$ ) oblique ; subterminal reddish spots before  $SC^5$ ,  $R^2$  and  $R^3$  strong.—*Hindwing* with termen almost straight from the rounded apex to the tail at  $R^2$ , whereas in *rufistigma* there is an appreciable tooth at  $SC^2$  and a pronounced one at  $R^1$  ; costal area pale, with the markings more or less obsolete ; cell-ring as on forewing or slightly larger ; median shade thickening and blackening at abdominal margin.

Forewing beneath with the rufous proximal clouding more transverse, its strongest part suggesting an oblique diffuse antemedian line (in *rufistigma* mainly longitudinal, occupying the greater part of the cell) ; median shade obsolescent before  $SC^5$  ; subterminal spot in front of  $SC^5$  obsolescent ; cell-mark blackish.

Carabaya, S.E. Peru (G. R. Ockenden) : Oconeque, 7,000 ft., dry season, July 1904 (type) ; Agualani, 9,000 ft., wet season, October 1905 ; Santo Domingo, 6,500 ft., dry season, October 1902 (smaller—33 mm.).

The type, otherwise in beautiful condition, has lost its abdomen, but the other examples show this to be irregularly spotted dorsally with reddish, which is not the case in *rufistigma*.

## 22. *Anisodes (Pisoraca) zeuctospila* sp. nov.

♂ ♀, 27-29 mm. Face and palpus reddish above, whitish below. Palpus with second joint in ♂ somewhat roughened above, not reaching beyond frons, in ♀ rather longer and smoother; third joint in ♂ moderate, in ♀ a little longer. Head, thorax, and abdomen concolorous with wings. Hindtibia in ♂ rather long, with coarse projecting sex-scales on inner side as far as the single proximal spur.

*Forewing* broad, apex blunt, termen curved, slightly waved; buff (pale cream-buff, with rather copious pinkish-buff irroration); costal edges irrorated with blackish; lines pinkish-buff; antemedian rather thick but weak, excurved in anterior half, a small indentation at submedian fold; median shade rather beyond middle, not very strong, somewhat dentate, somewhat incurved between radials and more deeply between  $M^1$  and  $SM^2$ ; cell-mark rather weak, forming a thick dash, midway between antemedian and median lines; postmedian line midway between median shade and termen, nearly parallel with former, finer, more dentate, angulated inward near costa; subterminal shades obsolescent, but with characteristic inter-radial spots almost as black as in *bipunctata* Warr. (NOVITATES ZOOLOGICAE, xi. 27), larger, confluent with a thick, equally black streak along  $R^2$  to termen; termen with small black interneural dots and more minute, less black ones at the vein-ends; fringe pale in distal half.—*Hindwing* broad, termen slightly crenulate, a rather stronger but still not prominent tooth at  $R^1$ ;  $R^3-M^1$  almost connate; first line nearer base than on forewing; median shade almost obsolete (traceable at abdominal margin), the dentate postmedian appearing as a continuation of median of forewing; a small angulated white cell-mark, with broad black circumscription; subterminal shade obsolescent; termen and fringe as on forewing.

Forewing beneath with costal margin irrorated or suffused (in proximal part broadly) with vinaceous; some vinaceous suffusion in cell; cell-mark and the markings beyond reproduced in vinaceous; posterior margin pale. Hindwing pale, the postmedian line indicated, at least at costa; distal area with some vinaceous irroration; terminal dots vinaceous.

Fonte Boa, Upper Amazons (S. M. Klages), August 1907 (type ♂), May 1906 and July 1907 (♀♀), in coll. Tring Museum.

I have also before me a ♀ which may easily prove to represent an aberration or local race of the same species from Suapure, Venezuela.

## 23. *Anisodes (Pisoraca) calama* sp. nov.

♂, 25 mm. Palpus with third joint shortish-moderate. Hindtibia rather thick, especially in proximal part, which is clothed with rather coarse reddish-tined sex-scales; proximal spur long, distal pair shortish but unequal.

Close to *stramineata* Warr. (NOVITATES ZOOLOGICAE, vii. 145). Ground-colour more yellowish, both wings with the reddish scales rather more sparse, but mostly tipped with black, giving the insect a much more freckled appearance.

Markings the same, but rather sharper, median shade appearing more dentate, postmedian with the teeth accentuated by black dots at the extremities; sub-terminal shades of forewing with more noticeable dark spots at radials and medians. Forewing beneath much more sharply and brightly marked than in *stramineata*.

Calama, Rio Madeira, below Rio Machado, August—October 1907 (W. Hoffmanns). Type in coll. Tring Museum.

24. *Anisodes (Pisoraca) difficilis* sp. nov.

♂♀, 28–31 mm. Like the preceding species, but larger, slightly yellower still. Hindfemur of ♂ with tuft of whitish and pale ochreous hairs in distal part, opposed to a dense pale-ochreous sex-tuft on proximal part of tibia; hindtibia whitish, proximal spur long, distal pair shortish but unequal.

Upper Amazons: S. Antonio de Javary, May 1907 (S. M. Klages), type ♂; Fonte Boa and Rio Chucurras (Rio Palcazu), ♀♀; in coll. Tring Museum.

Probably this or the preceding may be a subspecies of *stramineata* Warr., but as the ♂ of the latter is still unknown it is impossible to form a judgment. I cannot at present distinguish the two new species by their markings, unless perhaps the median shade of forewing in *difficilis* is more deeply bent at the fold and the costal markings more darkened, *i.e.* with denser irroration.

25. *Anisodes (Pisoraca) insitiva* sp. nov.

♂♀, 28 mm. Face above fawn-colour somewhat mixed with grey, beneath whitish. Palpus with second joint reaching well beyond frons, third joint long (little shorter than second); dull dark red, beneath whitish buff. Vertex and antennal shaft a little paler than wings. Thorax and abdomen concolorous with wings, the abdomen becoming a little paler at extremity. Foreleg mixed with red on coxa, the tibia and tarsus infuscated above; hindtibia with the proximal spur long.

*Forewing* with termen slightly waved; areole wanting; dull fawn-colour, with weak but rather copious darker irroration; costal margin irrorated with dark grey; first line indicated by dark dots on costa (at 3 mm.) and on veins, with a rather stronger, more distally placed dot on cell-fold (at 4 mm.); a moderately large black dot on DC<sup>2</sup>, with some dark scales behind it suggesting the circumscription of an elongate ocelloid mark; median shade very weak, sinuous, in its anterior half midway between cell-dot and postmedian, then curving proximad; postmedian line chiefly indicated by dark vein-dots, strongest in anterior half, those on SC<sup>2+3</sup> (at their bifurcation) and R<sup>2</sup> largest and farther from termen, the rest at about 1.5 mm. from termen; termen with black inter-neural dots; base of fringe with minute dark dots.—*Hindwing* with termen appreciably subcrenulate, rather strongly convex in anterior part; cell-spot large, whitish, black-edged, strongly recalling that of *obliviaria* Walk. (= *suspiciaria* Snell., *Tijd. Ent.* xxiv. 80, t. 8, f. 6–6c, syn. nov.); median shade almost entirely obsolete; the rest as on forewing.

Underside paler, the forewing posteriorly and almost the whole hindwing nearly white; forewing with slight fuscous suffusion at base of costa and in cell; both wings with moderately thick dark cell-mark, extending nearly the



entire length of  $DC^{2+3}$ , and with the postmedian and terminal dots present, the latter elongate, especially on the hindwing, where they are connected by an extremely fine line.

S. India: Palni Hills (W. H. Campbell), type ♂ in coll. L. B. Prout; Nilgiris (G. F. Hampson), in coll. British Museum (found among "*pallida* Moore," which represented a heterogeneous mixture) and coll. Tring Museum.

Here also belongs the worn *Anisodes* recorded by me (*Ent. Mitt. Deutsch. Ent. Mus.* iii. 244) as "*Pisoraca* sp." (p. 42) from Kosempo, Formosa; the loss of one of the spurs of the hindtibia must have been due to accident or a unique sport. The species is not like any other known in the subgenus *Pisoraca*, its superficial resemblance being to small examples of *obliviaria* Walk., which belongs to the subgenus *Perixera* (= *Phrissosceles*).

#### 26. *Anisodes* (*Pisoraca*) *mesotoma* sp. nov.

♂♀, 28 mm. Face buff-pink above, whitish below. Palpus  $1\frac{1}{2}$ , with third joint in both sexes slightly deflexed, considerably shorter than second; deep red, beneath whitish buff. Head, thorax, and abdomen concolorous with wings. Fore and middle legs in part reddened; hindtibia in ♂ long and slender, the single proximal spur long and slender.

*Forewing* with areole well developed; cream-buff with rather sparse but coarse vinaceous (slightly rufescent) irroration; cell-dot rather small; lines vinaceous; antemedian zigzag, extremely ill-expressed, but marked with some fine, black-mixed dots on the veins; median better developed and more concise than in most *Pisoraca*, only a little thickened and dentate-edged, gently curved near costa and very slightly incurved in posterior part, placed little beyond the cell-dot; postmedian moderately distinct between the radials (where it shows some tendency to form a pair of small confluent spots), and between  $M^1$  and hindmargin (where it is somewhat sinuous and irregular, bent at fold), slightly indicated in a subcostal spot, otherwise obsolete; proximal subterminal shade indicated by a few small spots, at least between  $R^1$  and  $R^2$  and before and behind  $M^2$ ; distal subterminal shade scarcely indicated; interneural dots at termen and very minute vein-dots at base of fringe.—*Hindwing* with termen faintly waved; similarly marked to forewing, but with the cell-spot forming a small white, dark-edged ocellus, and the postmedian line rather finer and weaker but less interrupted; median line at least as firm as on forewing, rather straight across middle of wing, a little curved anteriorly.

Forewing beneath paler, partly whitish, the costal region proximally with pink suffusion; markings (except first line) present, pinkish, the postmedian line fine but fairly complete. Hindwing whitish, feebly marked.

Hainan: Henron, June 1904, type ♂; Youboi, June 1904, allotype ♀. Lower Burma, a weakly marked ♀. All in coll. Tring Museum.

#### 27. *Anisodes* *tribeles* sp. nov.

♂♀, 24–27 mm. Face red above, becoming pale to whitish below. Palpus in ♂ over  $1\frac{1}{2}$ , in ♀ about 2, in both sexes with third joint little shorter than second; red above, white or whitish beneath. Vertex and proximal part of antennal shaft dirty white. Thorax and abdomen concolorous with wings. Foreleg and middle femur in part reddened; femora almost glabrous, hindtibia in ♂ not



quite as long as femur, with three crowded spurs, all generally well developed, the most proximally placed shorter than the other two (in Hainan and Formosan specimens sometimes quite short).

*Forewing* rather short and broad, termen smooth, slightly curved, arcole well developed,  $SC^2$  from its apex or little beyond; cream-buff, coarsely irrorated throughout with vinaceous rufous; lines rufous, mixed with grey, antemedian generally weak, placed well before one-third, somewhat curved, sometimes with three small dark vein-dots; cell-spot not minute, not darker than the lines; median shade weak at costa, otherwise well expressed, anteriorly placed at three-fifths wing-length or beyond, behind middle incurved: postmedian weak or obsolete, but always marked with dark vein-dots, midway between median shade and termen or slightly nearer the latter, slightly oblique outward from costa, incurved between radials and very slightly behind  $M^1$ ; termen with weak interneural dots; fringe pale, least so proximally, with very minute rufous dots touching the vein-ends.—*Hindwing* rather broad, termen nearly smooth, convex, especially between  $SC^2$  and  $M^1$ ; first line usually indicated by minute vein-dots; cell-dot very small, white, narrowly dark-ringed; median shade close beyond it, straightish or gently curved; the rest as on forewing.

Underside paler, especially the hindwing; forewing somewhat flushed, except at hindmargin; median shade (at least on forewing) and postmedian dots (on both wings) indicated.

Sudest Island, April 1898 (A. S. Meek), a short series, including the type, in coll. Tring Museum. Also from Hainan and Formosa (Takow), doubtless also in many other localities, though hitherto overlooked.

Exceedingly like some forms of *compacta* Warr. (NOVITATES ZOOLOGICAE, v. 426), which is a true "*Pisoraca*," otherwise scarcely distinguishable; third joint of palpus a trifle longer, at least in ♂, expanse generally less, upperside rather duller, less weakly marked, underside paler, less glossy, the markings better expressed; apparently less variable, or at least I have seen no forms with the black circumscription of the cell-dots materially enlarged or with any additional cloudings, such as sometimes occur in *compacta*.

## 28. *Anisodes viator* sp. nov.

♂, 31–36 mm. Like *prunelliaria* H.-Sch. (*Samml. Aussereur. Schmett.* i. t. 59, f. 329) in colour and markings, but considerably smaller, the wings relatively shorter and broader. Hindleg of ♂ nearly smooth, except for a small femoro-tibial hair-pencil (in *prunelliaria* the femur is hairy, the pencil perhaps stronger). Abdomen less pale, with the dorsal dots at base weaker (less mixed with black). Wings on an average rather deeper in colour, on account of the denser red irroration.—*Forewing* without definite red patches at base; the red markings more mixed with black; median shade often nearer to the cell-spot.—*Hindwing* and underside with corresponding distinctions.

Carabaya, S.E. Peru: La Oroya, Rio Huacamayo, Tinguri, and Santo Domingo (G. Ockenden), in coll. Tring Museum, the type from La Oroya, September 1904, dry season. Also from San Antonio, W. Colombia, 5,800 ft., November–December 1907 (M. G. Palmer), in coll. L. B. Prout et coll. Dognin; and 1 ♂ from Chulumani, Bolivia, January 1901, wet season (Simons), in coll. Tring Museum.

29. *Anisodes stigmatilinea* sp. nov.

♂♀, 30–32 mm. Similar to *urcearia* Guen., but readily distinguished as follows:

Hindleg of ♂ with strong hair-pencil arising from femoro-tibial joint and extending fully one-half the length of tibia. First abdominal tergite with a pair of black dots at its posterior end (the dot at anterior end of second tergite also strong, the subsequent ones weakening). Wings relatively less broad; irroration stronger, dots on the antemedian and postmedian lines stronger, that of the postmedian on  $R^2$  more displaced proximally; median line rather sharper, marked distally with rather noticeable dark dashes on  $R^1$ ,  $R^2$ , and  $M^1$ ; cell-rings rather more elongate.

Santo Domingo, Carabaya, S.E. Peru, 6,000–6,500 ft., November 1902, wet season (Ockenden). Type ♂ and two ♀♀ in coll. Tring Museum.

30. *Anisodes pilibrachia* sp. nov.

♂♀, 22–27 mm. Almost exactly like *ampligutta* Warr. (NOVITATES ZOOLOGICAE, iii. 376; Timor, Queensland, Louisiades, etc.), replacing it in New Guinea, the Solomons, etc. Distinguished by the ♂ foreleg which is quite normal in *ampligutta*, but in the new species has the tibia and first joint of tarsus densely clothed with felt-like hair. Third joint of palpus in ♂ slightly less elongate. Ground-colour a little whiter, the thick shadowy lines consequently standing out more sharply and giving to the insect a more variegated appearance; median shade in general even more acutely dentate; cell-mark of the hindwing subject to the same dimorphism—wholly black or only narrowly black-edged.

British New Guinea: Upper Aroa River and Milne Bay. Dampier Island. Solomons: Bougainville (type in coll. Tring Museum), Choiseul, Vella Lavella, Guizo, Kulambangra, Rendova, Isabel, Guadalcanar, S. Christoval.

It is interesting that the two allies occur together on Dampier Island.

31. *Anisodes* (*Stibarostoma*) *turneri* nom. nov.

*Anisodes pallida* Turn., *Proc. Linn. Soc. N.S. Wales*, xxxii. 691 (1908) (nec Moore).

I have already pointed out (*Ent. Mitt. Deutsch. Ent. Mus.* iii. 244) that this interesting species has been misidentified. As it has never been named, I have pleasure in dedicating it to Dr. Turner, whose able revision of the subfamily has first made known its distinctive structure. The type will be from Queensland, presumably in his collection. It also inhabits New Guinea, Rook Island, and the Solomons.

32. *Anisodes* (*Perixera*) *argentosa* nom. nov.

*Anisodes monetaria* var. A. Guen., *Spec. Gén. Léop.* ix. 418 (1858); Oberth., *Et. Léop.* xii. fig. 3363 (1916) (Borneo).

This is clearly a valid species, not a form of *monetaria*. In *monetaria*, except occasionally in the Ceylon form, the areole seems to be invariably wanting (India, Malay Peninsula, Borneo); in every example of *argentosa* which I have seen (Travancore, Khasis, Penang, Singapore, Borneo) a small areole is present. Moreover, the distinctions, though slight, are sufficiently constant, notwith-

standing the variability of *monetaria*, and to the practised eye confusion is impossible. The silvery spangle of the hindwing, so inconstant in *monetaria*, is invariably large in *argentosa*. The following are undoubtedly mere aberrations of *monetaria*: *hyperythra* Swinh., *argentispila* Warr., *pleniluna* Warr., *areolaria* Guen. The race from the Moluccas, New Guinea and its satellite islands, the Solomons and N. Queensland, is also variable, but I think tenable under the name of *Anisodes monetaria ceramis* Meyr. (*Tr. Ent. Soc. Lond.* 1886, p. 209). To which race (if either) *homostola* Meyr. (*Tr. Ent. Soc. Lond.* 1897, p. 72; Talaut) belongs it is impossible to judge on a single specimen, though its specific identification is clear enough. Another single specimen, *inornata* Warr. (NOVITATES ZOOLOGICAE, iv. 216; Banda Islands), seems to be a mere aberration of *m. ceramis*, and is superficially a good deal like *homostola*.

### 33. *Anisodes* (*Perixera*) *flavispila* subsp. nov.

♂♀. The white-grey ground-colour less tinged with brownish than in the North Indian *flavispila* Warr. (NOVITATES ZOOLOGICAE, iii. 372)—which also extends to Hainan—the discal ring of the hindwing only about one-half the size, on underside generally wanting, never strong; forewing beneath with the cell-mark reduced in size.

Milne Bay, British New Guinea, November 1898–February 1899 (A. S. Meek), 4 ♂♂, 2 ♀♀ in coll. Tring Museum, including the type ♂. Also from Humboldt Bay (Dutch New Guinea) and Fergusson Island, the latter mentioned by Warren in describing the species.

### 34. *Odontoptila elaeoides* sp. nov.

♂♀, 13–14 mm. Head black, the palpus beneath reddish ochreous. Antennal ciliation of ♂ long. Thorax and abdomen olive, paler and more ochreous beneath. Legs pale, the anterior pair more reddish, and on the upper and inner sides spotted with black; hindtarsus of ♂ slender, about one-half the length of the thickened tibia.

*Forewing* olive; lines dark grey, the postmedian best developed, slender; antemedian excurved in cell, incurved behind; median arising beyond three-fifths costa, incurved behind middle; postmedian parallel with termen except posteriorly, where it bends almost to tornus, ending in a small dark tornal spot; terminal line fine, slightly interrupted at the veins; fringe ochreous, dark-spotted opposite the veins, especially near apex and at R<sup>3</sup> and M<sup>1</sup>.—*Hindwing* with termen toothed at R<sup>1</sup> and feebly at R<sup>3</sup>, smooth posteriorly; as forewing, but with first line wanting and tornal spot rather ill-defined.

Underside reddish, the forewing smoky in cell and a part of disc, the hindwing paler at abdominal margin; median and postmedian dark lines well developed, especially the latter; forewing with tornal spot well developed.

St. Jean de Maroni, French Guiana. Type ♂ and 2 ♀♀ in coll. Tring Museum.

Much smaller and darker than *subviridis* Warr. (NOVITATES ZOOLOGICAE, xi. 43) and *mimica* Dogn. (*Ann. Soc. Ent. Belg.* xlv. 343), the two species to which it comes nearest in shape, colour, and markings; excisions in termen more shallow, especially in the ♂; ♂ hindtarsus much shorter (in *subviridis* about as long as tibia). Rather recalls "*Ptychopoda*" *lignicolor* Warr. (NOVITATES

ZOOLOGICAE, xi. 41), which has still smoother margins, SC<sup>2</sup> of hindwing more shortly stalked and the ♂ hindtarsus aborted, but which may possibly also have to be referred to this genus, with which it agrees in the double areole, etc.; its ♀ is unknown and may prove to have a two-spurred hindtibia, while that of *Odontoptila* has all the spurs well developed.

### 35. *Scopula* (Pylarge) *plionocentra* sp. nov.

♂♀, 18–22 mm. Face black. Palpus blackish, beneath pale. Antenna in ♂ with the joints projecting, ciliate in long fascicles (about 2). Vertex, thorax, and abdomen concolorous with wings, collar more ochreous. Foreleg mostly blackened on upper and inner sides; hindleg in ♂ rather long, the tibia slender, with two long spurs, tarsus not abbreviated.

*Forewing* fairly broad, apex rather blunt, termen smooth, gently and regularly curved, little oblique anteriorly, more so posteriorly; pale ochreous whitish with a tinge of flesh-colour; a few scattered black scales in places; cell-dot small, sharply black; lines greyer, rather diffuse and shadowy; antemedian from about one-third costa, excurved in cell, then very oblique inward to one-fourth hindmargin; median shade from costa well beyond middle (sometimes at almost two-thirds), excurved well beyond cell-dot, slightly incurved at fold, reaching hindmargin about middle; postmedian line indicated by minute black vein-dots placed on the proximal edge of the first subterminal shade, that on R<sup>2</sup> rather strongly displaced proximad; pale subterminal shade sinuous, with the inward curves at the radials and at the fold, placed between two feeble greyish shades of about equal width and shape; termen with minute black interneural dots.—*Hindwing* with costa rather straight nearly to apex, termen gently rounded; first line wanting; median shade just proximal to the sharp black cell-dot, slightly curving round it; a postmedian shade-line in addition to the two subterminal ones, separated from them by a narrow pale space; terminal dots as on forewing.

Underside rather glossy, forewing strongly suffused in proximal half; both wings with black cell-dot and pale subterminal with dark border on either side; terminal dots indicated.

Warri (Niger), 1897 (Dr. Roth), the type ♂ dated September, in coll. Tring Museum; also from Agberi (Niger), Abanga River (Gaboon), Masindi and Busiro (Uganda).

Misidentified by Warren (NOVITATES ZOOLOGICAE, v. 242) as *minorata* Bdv. (*Faune Ent. Madag.* 115) and made the type of a superfluous genus.

### 36. *Scopula* *insincera* sp. nov.

♂, 22 mm. Closely similar to *sincera* Warr. (NOVITATES ZOOLOGICAE, viii. 208). Antennal shaft thicker, more strongly dentate, with longer fascicles of cilia (about 2). **Hindtibia not dilated**, little longer than femur; tarsus slender, **longer than tibia**.

*Forewing* slightly less pure white (more creamy), subcostally with some fine black irroration, which is wanting in *sincera*; lines more direct, all nearly parallel with termen, the first rather far from base, strongly oblique, the last farther from termen than in *sincera*; terminal dots virtually wanting.—



*Hindwing* with a few scattered black scales; postmedian line more sinuous; last line placed farther from termen; terminal dots obsolete.

Forewing beneath brown, only remaining whitish behind fold, in two narrow outer bands (distally to postmedian and between subterminals) and on fringe. Hindwing beneath with feeble postmedian line, two weak macular subterminals and traces of terminal (strongest between the veins).

Johannesburg (E. A. Bacot), type in coll. L. B. Prout; also a ♂ from Transkei (Miss F. Barrett) in coll. British Museum; the latter a sport with  $SC^2-R^1$  of hindwing stalked for about one-third of their length (normally in this species and *sincera* about connate or barely stalked).

### 37. *Scopula euphemia* sp. nov.

♂♀, 16–19 mm. Face and palpus black. Vertex whitish. Antennal joints slightly projecting, ciliation little over 1. Collar tinged with ochreous. Thorax and abdomen whitish. Hindtibia of ♂ little elongate, somewhat thickened and flattened, fringed on upperside, tarsus little shorter than tibia.

*Forewing* rather narrow, costa very slightly curved, termen rather strongly oblique, smooth, gently curved; white, sprinkled with scattered black scales; lines light brown, rather thick; antemedian very weak and diffuse, apparently sharply angled outward near the cell-dot; cell-dot strong, deep black; median shade strongly oblique from middle of hindmargin to  $SC^5$  near postmedian, obsolete anteriorly; postmedian line parallel with termen, 1.5 or 2 mm. therefrom, lunulate-dentate, the teeth directed distad and blackened; subterminal shades feebly indicated; a fine slight brown line on termen, marked with black inter-neural dots; fringe white, with some minute and sparse black irroration beyond middle.—*Hindwing* not broad, termen little convex, very slightly prominent (through a change of direction) about  $R^1$ ; first line wanting, the other markings continued, more proximally placed, the median shade preceding the cell-dot.

Underside similar, the forewing more suffused costally as far as the cell-dot; teeth of postmedian line less black than above.

S. Nigeria: Warri, August–October 1897 (Dr. Roth), type ♂ (worn) and two ♀♀ (good); Ilesha (Capt. Humfrey), a worn ♀. All in coll. Tring Museum.

### 38. *Scopula erinaria isolata* subsp. nov.

♂, 25–26 mm. *Forewing* with the median line fine, passing midway between the cell-dot and the postmedian (in *e. erinaria* Swinh., *Tr. Ent. Soc. Lond.* 1904, p. 553, thicker, closely approximated or appressed to the postmedian); shade beyond postmedian rather strong. *Hindwing* with median shade well proximal to the cell-dot.

Transkei, Cape Colony (Miss F. Barrett). Type in coll. Tring Museum.

The hindtibia may be slightly thicker than in *e. erinaria*.

### 39. *Scopula supina* sp. nov.

♂♀, 22–27 mm. Face red-brown, in part or almost wholly overlaid with blackish. Palpus red-brown or blackish above, paler beneath. Vertex and antennal shaft proximally slightly paler than the body, occiput narrowly black-edged behind; antennal ciliation over 1. Thorax and abdomen flesh-colour,



the abdomen with (generally indistinct) darker dorsal spots. Hindtibia in ♂ moderately long, dilated, with strong hair-pencil, the tarsus about three-fourths.

*Forewing* rather broad, apex acute or even minutely produced, termen smooth, straightish and little oblique anteriorly, somewhat more oblique posteriorly; flesh-colour, with slight and irregular dark irroration; lines greyish-fleshy, extremely oblique; antemedian indistinct, acutely angulated in cell near the cell-dot; cell-dot rather small, black; median shade rarely thick, slightly dentate outward on the veins, running from middle of hindmargin in the direction of apex (or costa close thereto), but strongly angled at  $R^1$ ; postmedian slender and weak, but accompanied by slightly elongate dark dots on the veins, parallel with median, thus almost reaching the termen at  $R^1$ , but retracted anteriorly; subterminal shades moderate or rather strong, the proximal parallel with postmedian, the distal with termen, the pale space between interrupted where they meet about the radials; termen with interneural black dots.—*Hindwing* with costal margin fairly long, apical region well rounded, termen smooth, little convex, the bend at  $R^1$  inappreciable; markings of forewing (except first line) continued, the median shade generally thick, proximal to the cell-dot, anteriorly weak or obsolescent, postmedian line farther from termen, pale subterminal line complete, though anteriorly narrow.

Underside paler and more weakly marked, especially the hindwing.

Unyoro and Uganda, a good series (chiefly ♂♂) from various localities, mostly collected by Dr. Ansoorge, the type ♂ from Kiorbezi, January 4, 1898. Also from Songive River, Lake Nyassa. Also (mostly ♂♂) in a generally smaller and more deeply coloured form, which will perhaps require a subspecific name, from Ivory Coast and Nigeria; the ♀ seems, however, to be in general more deeply coloured than the ♂ in this species.

This is the *Emmiltis* (?) *minorata* of Swinhoe (*Tr. Ent. Soc.* London, 1904, p. 558), an equally unfortunate determination with that of Warren mentioned under *S. plionocentra* above. The present species is recognisable at a glance by its shape and extraordinarily oblique postmedian line, which looks as though it ran to the termen, the terminal dot between  $SC^5$  and  $R^1$  forming a direct continuation of the postmedian dots.

#### 40. *Scopula penricei* sp. nov.

♂, 30 mm.; ♀, 28 mm. Nearest *sanguinisecta* Warr. (NOVITATES ZOOLOGICAE, iv. 53), differing as follows:

Face and palpus red-brown, merely irrorated with black, the palpus scarcely pale beneath. *Forewing* with termen slightly more irregular, the bend (or change of direction) about  $R^2-M^1$  being more appreciable; lines browner (less grey), the first two weak, noticeably incurved in submedian area; antemedian even more acutely angulated subcostally; postmedian making a rather wide sweep anteriorly and with a minute tooth outward between  $SC^4$  and  $SC^5$ ; the markings beyond blue-grey, consisting of an elongate curved mark between the radials and a double spot between  $M^2$  and  $SM^2$ ; nearer the termen a pair of more or less developed blackish dots at  $R^1$  and another pair at fold; fringe more variegated, dark-dotted opposite the veins.—*Hindwing* with termen slightly more waved, the angle at  $R^1$  rather more pronounced; median line more waved;

postmedian rather straight, somewhat farther from termen, at least in middle of wing; fringe as on forewing.

Underside more fleshy; forewing without grey cloudings, both wings, on the other hand, with some conspicuous scattered black scales, especially on anterior parts of forewing.

Angola: Chella Mountains, April 1900 (Penrice), type ♂ and allotype ♀ in coll. Tring Museum.

Warren (NOVITATES ZOOLOGICAE, viii. 208) did not discriminate this from true *sanguinisecta*. The leg-structure of the ♂ seems to agree pretty closely—hindtarsus about as long as the tibia, which is thickened, with hair-pencil, perhaps less strongly than in *sanguinisecta*, but slightly damaged.

#### 41. *Scopula oliveta* sp. nov.

♂, 24 mm. Face black. Palpus small, black, pale beneath. Vertex white. Antennal shaft proximally dotted with black; ciliation 1. Collar ochreous brown. Thorax and abdomen whitish. Fore and middle legs infuscated on inner side.

*Forewing* rather broad, costa gently arched, apex fairly pronounced, termen very faintly waved, more oblique behind  $R^1$  than anteriorly;  $R^2$  from before middle of DC; white, in places with very faint olive-green tinge; a black cell-dot; light olive-green postmedian markings, consisting of a small and weak dash in front of  $SC^2$ , an oblong patch 2 mm. in length behind  $SC^2$ , crossing well beyond  $R^1$  and proximally touching the succeeding patch at  $R^2$ , and a somewhat pear-shaped patch between  $R^2$  and hindmargin, its broad and rounded end anterior, its greatest width (about  $R^2-M^1$ ) 2.5 mm., at hindmargin about .5 mm., here proximally edged with some dark scales: indications of a narrow, paler olive-green, subterminal shade, angled inward about  $R^2$ , and becoming more distinct near tornus; a terminal row of interneural black crescents or flattened triangles; fringe shaded with olive-green.—*Hindwing* with termen weakly bent at  $R^1$ ; cell-dot larger than on forewing; similar markings beyond, the postmedian patches a little farther from termen, the subterminal shade slightly broader, more distinct anteriorly than posteriorly.

Forewing beneath with the cell-dot obsolescent, the postmedian patches shadowy, grey, the entire area proximal to this, excepting the hindmargin, suffused with rosy grey, the subterminal shade obsolete; fringe whiter. Hindwing beneath unmarked, except for the cell-dot and terminal triangular dots.

San Jacinthe Valley, Theophilo Ottoni, Minas Gerães, spring 1908 (F. Birch). Type in coll. Tring Museum.

A ♂ from Espirito Santo in coll. British Museum has the antennal ciliation over 1, the hindtibia little thickened, but with the hair-pencils present, hindtarsus about 1. I have seen a further example in the Oxford Museum.

#### 42. *Scopula polyterpes* sp. nov.

♂, 20 mm. Face and outer side of palpus black. Vertex and antennal shaft white; ciliation about 1. Collar brown. Thorax and abdomen dirty white with some dark irroration, the abdomen with faint broad cloudy belts

dorsally. Foreleg infuscated on upper and inner sides; midtibia slightly infuscated; hindtibia dilated, with strong hair-pencil, the tarsus almost 1.

*Forewing* with termen smooth, gently curved; dirty white with a tinge of pinkish buff, the distal area predominantly ceru drab, the whole with sparse dark irroration; cell-dot black; lines brown; antemedian slight, commencing in a fine, extremely oblique blackish line at one-fourth costa, forming a small spot at SC 3 mm. from base, excurved in cell, then oblique inward, inbent behind M and rather irregular; median arising from a small dark spot beyond midcosta, first running towards cell-dot, then oblique outward, acutely angled outward at  $R^1$ , then approximately parallel with termen, but lunulate-dentate, sinuate inward between radials and between  $M^2$  and  $SM^2$ ; postmedian fine, similarly formed to median, accentuated by some small black dots on veins and a small black mark on radial sinus; subterminal line whitish, lunulate-dentate, projecting inward and thickened between radials and filled-in proximally with slight paired dark spots in front of this and near tornus; terminal dots sharp, black, very slightly elongate, very slightly connected by a fine grey line; fringe brownish.—*Hindwing* with termen rounded, extremely weakly suberennulate, the projection at  $R^3$  scarcely noticeable; proximally rather more coloured than forewing, especially in vicinity of median line, where there is some cinnamon suffusion; cell-mark enlarged into an irregular ocellus of about .5 mm. diameter; first line wanting; median line strong, incurved proximally to cell-mark, acutely angled outward on base of  $M^1$ ; postmedian line and distal area nearly as in forewing, the paired dark spots near tornus proximally to subterminal line more strongly developed.

Both wings beneath (especially the forewing) more infuscated, and with fine blackish cell-dot and dark median and postmedian lines; subterminal line and dark spots proximal thereto obsolescent on forewing, distinct on hindwing.

Porten, Hainan, July 1904. Type in coll. Tring Museum.

### 43. *Scopula praesignipuncta* sp. nov.

♀, 20 mm. Similar to *sybillaria* Swinh. (*Tr. Ent. Soc. Lond.* 1902, p. 658), but altogether more sharply marked.

*Forewing* with antemedian line well developed, rather regularly curved, the proximal area with rather strong dark irroration; cell-dot round, relatively extremely large; dark shading beyond postmedian rather strong, the pale subterminal line thick, with a longer proximal projection between the radials than in *sybillaria* and a rather ample one at tornus; terminal dots strong.—*Hindwing* with the markings similar but not quite so strong, excepting the cell-spot, which is fully as large as on forewing and slightly elongate along the discocellulars.

Underside with pale band between cell-dot and postmedian line rather noticeable.

Ryukyu Islands, June–August. Type in coll. Tring Museum.

### 44. *Scopula ophthalmica* sp. nov.

♂♀, 20–21 mm. Face black. Palpus black, narrowly pale beneath. Crown white. Antennal shaft white, tinged with brown; joints slightly projecting,

ciliation in ♂ strong, rather over 1, in ♀ vestigial. Collar light brown. Thorax and abdomen white, dorsally tinged with brown except at ends of abdominal segments. Hindtibia in ♂ thickened, a fringe of projecting scales on upperside proximally, a thin hair-pencil on upperside from femoro-tibial joint, a stronger pencil beneath; hindtarsus in ♂ slender, over one-half. Wings slightly less broad than in *fibulata* Guen.

*Forewing* white, with brownish cloudings and fine irroration; lines brownish; antemedian at one-fourth, oblique and slightly thickened from costa, angled subcostally and again on M and SM<sup>2</sup>, between these two veins incurved and slight; cell-dot black, surrounded by a small, not very distinct, brownish ring; median line formed as in *fibulata* but rather less thick, placed rather more distally to the cell-dot; postmedian formed nearly as in *fibulata*, but with the tooth at SC<sup>5</sup> slighter, that at R<sup>1</sup> rather longer and more acute; distal area with shadings nearly as in *fibulata*, the thick proximal projection of the white subterminal line at the radials rather longer, that at the fold rather more angular and less compact; terminal dark line broken into interneural dots and not running round apex; fringe white, feebly dark-speckled.—*Hindwing* much less dusted than in *fibulata*; markings similar; proximal line more slender; white subterminal corresponding to that of forewing, the dark spots in its proximal side less confluent than in *fibulata*.

Both wings beneath glossy, almost unmarked, the forewing strongly tinged with brown-grey except at hindmargin, the hindwing white.

Bonthain, Celebes, 3,000—7,000 ft., August 1896 (W. Doherty). 4 ♂♂, 1 ♀ in coll. Tring Museum.

Possibly a local race of *ocellata* Warr. (NOVITATES ZOOLOGICAE, vi. 33) from Sambawa, but the ♂ antennal joints appear to project slightly less and the hindtarsus may be a trifle longer.

#### 45. *Scopula pseudophema* sp. nov.

♂♀, 20–21 mm. Head and body concolorous with wings, the face mixed with dark fuscous in upper part, the palpus mostly dark fuscous on outer side, the abdomen with a row of blackish dorsal spots. Antennal ciliation in ♂ fine, little longer than diameter of shaft. Hindtibia in ♂ moderately dilated, fringed above and with a strong hair-pencil from femoro-tibial joint, tarsus a little over one-half.

*Forewing* rather broad, termen smooth, anteriorly straightish, then curving and becoming more oblique; whitish ochreous, in places tinged with rather deeper ochreous; black irroration minute and not copious; lines fine and feeble, formed of pink scales with a slight black admixture, almost or quite obsolete at extreme costa; antemedian from one-third costa, about vertical to middle of cell, then oblique inward and sinuous to about one-fourth hindmargin; cell-dot small, black; median line beyond, angulated outward on R<sup>1</sup>, then oblique inward and sinuous to middle of hindmargin, the deepest curve being inward between M<sup>2</sup> and SM<sup>2</sup>; postmedian about 2 mm. from termen, punctuated with black dots or outward teeth on the veins, from M<sup>2</sup> to hindmargin (and sometimes also more weakly anteriorly) overlaid with black scales, on R<sup>1</sup> angulated outward, incurved rather deeply between radials and very slightly between M<sup>1</sup> and SM<sup>2</sup>; distal subterminal line somewhat similar to postmedian but weaker, only black-



mixed in posterior half; proximal subterminal represented by pink, strongly black-irrorated spots except between the radials, the anterior two small and round, sometimes weak, the two between  $R^1$  and  $M^2$  elongate, those behind  $M^2$  rather more proximal, subconfluent, smaller before than behind the fold, the general arrangement strongly recalling the Palearctic species *Ptychopoda dimidiata* Hufn.; termen with large black interneural dots; fringe almost unmarked.—*Hindwing* with termen rounded; markings similar to those of forewing, antemedian line wanting, median proximal to the cell-dot.

Underside weakly marked, cell-dots, terminal dots, and on forewing also the postmedian line and succeeding spots more or less well developed.

Tambura, Southern Bahr-el-Ghazal, type ♂ in coll. Tring Museum. Binger-ville, Ivory Coast, July 28–31 (G. Melon), a ♀ in coll. Tring Museum. Sierra Leone (A. Bacot), a more reddish ab. (♀) in coll. L. B. Prout.

#### 46. *Scopula subpulchellata* sp. nov.

♂♀, 22–26 mm. Rather larger and paler than the Hainan forms of *pulchellata* Fab. (= *addictaria* Walk.). Hindtibia in ♂ less strongly fringed above than in *pulchellata*, the hair-pencil whitish (not ochreous, as in that species), the tarsus a trifle longer.

*Forewing* with antemedian line more uniformly expressed (in *pulchellata* commonly accentuated between M and SM, and often with minute blackish dot near hindmargin, which is wanting in *subpulchellata*); discal ocellus larger but rather vague, nearly always blind; the characteristic markings distally to the postmedian feebly developed.—*Hindwing* scarcely distinguishable from that of pale *pulchellata*, the postmedian line on an average less sinuate between the radials.

Underside more weakly marked than in *pulchellata*.

Hainan: Manchoy, June 1902, type and others; Secha, May 1902; Hoihow, May 1902; Cheng-Mai, July 1902 and August 1904; Porten, July 1904; Taipinshi, June 1906; a good series in coll. Tring Museum.

Mr. Burrows has kindly examined the genitalia of three males of *subpulchellata* and two of *pulchellata*, and finds that they differ greatly. In the new species the valves are fairly symmetrical, while in *pulchellata* the asymmetry is very marked indeed; in the former the socii are long, in the latter represented by short horny processes; the penis also differs widely. Indeed, *subpulchellata* genitalia come much nearer in all respects to *misera subincta* Warr. (NOVITATES ZOOLOGICAE, iii. 372) from Tenimber, though the cerata are stouter and bowed, and are more equal in length.

#### 47. *Scopula graphidata* sp. nov.

♂, 27 mm. Larger than *perlineata* Walk. (*List Lep. Ins.* xxiii. 775). Ground-colour slightly whiter, but with a sparse, minute black irroration in places which gives to it a slightly rougher aspect.

*Forewing* with antemedian line better developed, marked with dark dots on the veins; median line angled outward on SM<sup>2</sup>; postmedian fine, well expressed throughout (brown, finely overlaid with blackish), with much deeper bays inward at the folds, the proximal end of these more blackened than in *perlineata*; proximal subterminal shade thickened in the bays of the postmedian; terminal



dots strong, elongate.—*Hindwing* with angle at  $R^1$  rather pronounced ; cell-dot small ; postmedian line nearly as on forewing ; terminal marks strong, elongate, almost confluent, the fine lunules of the posterior half giving to the wing-margin a more crenulate aspect than in *perlineata* ; fringe more distinctly dotted at vein-ends, the dot opposite  $R^1$  conspicuous.

Underside more strongly marked than in *perlineata*.

Celebes (W. Doherty). 2 ♂♂ in coll. Tring Museum.

Presumably represents *perlineata* Walk. and *spilodorsata* Warr. (NOVITATES ZOOLOGICAE, ii. 93) in Celebes, but provisionally I regard the three as distinct species.

#### 48. *Scopula ochricrinita* sp. nov.

♂, 29–31 mm. Closely related to *extimaria* Walk. (*List Lep. Ins.* xxiii. 782). Smaller. Hindtibial tuft ochreous and whitish-ochreous, without smoky admixture ; hindtarsus still shorter (one-fifth or less ; in *extimaria* about one-fourth). Abdomen with the dorsal dots small.

*Forewing* with the black scales sparser than in *extimaria* ; no black subcostal antemedian dot ; cell-spot forming a weak greyish oval mark instead of the black dot of *extimaria* ; postmedian with the black marks usually smaller and weaker ; terminal dots smaller, beneath weaker (but here showing more tendency to be connected by a greyish line).—*Hindwing* with all the black dots of *extimaria* present, but reduced in size.

Khasia Hills, Assam, February 1894 (type), March 1894 (2 ♂♂), October 1893 (1 ♂, Cherrapunji), in coll. Tring Museum. Also a few other specimens in different collections.

It should be added that *stigmata* Moore, sunk by Hampson to *extimaria*, is a good species, or at the least a very distinct race, more nearly agreeing with the new species in the cell-mark of the forewing above and in the continuous terminal line beneath, but with blacker tibial tuft than in *extimaria*, tarsus still less abbreviated, large blotches distally to postmedian of forewing, etc. Hampson's description of *extimaria* (*Faun. Ind. Moths*, iii. 427) was evidently drawn up mainly from *stigmata*.

#### 49. *Scopula anatreces* sp. nov.

♂, 35 mm. Face brown-black. Palpus blackish, narrowly pale beneath. Vertex and antennal shaft whitish brown, about 12 of the proximal joints of the antenna (after the first 2 or 3) each with a distinct black dot ; joints somewhat projecting, bearing strong fascicles of cilia. Collar ochreous-brown. Thorax and abdomen whitish brown, abdomen with a few black dorsal dots. Fore and middle legs partly brown ; hindleg whitish, the tibia dilated and somewhat elongate, with light ochreous-brown hair-pencil, the tarsus almost one-half.

*Forewing* very slightly narrower than in most of the *moorei* group, termen oblique ; whitish brown, with sparse and minute black speckles ; cell-dot small, grey, faintly and narrowly surrounded with brownish shading ; lines light brown ; antemedian very fine and slight, but marked with black dots on the veins ; median thicker, but weak, dentate, slightly more oblique than termen from middle of hindmargin to  $R^1$  midway between cell-dot and termen, thence very slightly oblique inward to costa ; postmedian fine, not strong, in part faintly

edged proximally with grey, between the radials with thick black conjoined lunules, behind  $M^2$  with three slighter ones; this line is slightly oblique inward; from costa to cellule 7, acutely toothed outward on  $SC^3$  and especially on  $R^1$ , more minutely on  $R^2$  and  $M^1$ , these teeth punctuated with minute black dots; a ferruginous distal edging to the black radial lunules, succeeded by two short thick ferruginous interneural streaks; faint traces of similar pattern behind  $M^2$ ; subterminal shades very faint; termen with strong black interneural dots; fringe with slight blackish dots at vein-ends.—*Hindwing* with termen faintly subcrenulate, with a slight but appreciable angle at  $R^1$ ; antemedian line wanting, median shade continued, straightish, just proximal to the cell-dot, which is black and less small than on forewing; postmedian line continued, lunulate-dentate, more direct than on forewing, the blackenings and the ferruginous markings beyond obsolete, except at extreme abdominal margin; the rest nearly as on forewing, the pale subterminal line apparently deeply incurved between the radials.

Underside with cell-dots and terminal dots black, median shade and postmedian line well expressed, black-grey, the postmedian on both wings rather strongly inbent between the radials; forewing proximally suffused, its hindmargin and the hindwing whiter.

Arizan, Formosa, September 1906, type in coll. Tring Museum. Other examples from the same locality and of the same date in coll. Wileman (3 ♂♂) et coll. British Museum (2 ♂♂).

Hitherto confused with *S. moorei orientalis* Prout (*Ent. Mitt. Deutsch. Ent. Mus.* iii. 241). Hindtarsus rather longer, hindwing slightly more angled, cell-spot of forewing concise, of hindwing black, postmedian line more deeply inbent between the radials, terminal line less continuous, fringe-dots obsolescent, median shade on forewing more dentate, on hindwing straighter, underside more strongly marked. It is just possible that it may prove a remarkable dimorph of *punctatissima* Bastelb. (*Ent. Rundsch.* xxviii. 23 = *quadrifasciata* Wilem., *Ent.* xlviii. 80, syn. nov.); ♂ antenna the same, tarsus apparently rather shorter, wings rather narrower, paler, antemedian line more expressed, postmedian of hindwing more distally placed, cell-spot of hindwing quite different.

#### 50. *Scopula ochrifrons* sp. nov.

♂, 30–32 mm. Face, vertex, and front of thorax clear light ochreous; collar deep ochreous; palpus bright ochreous, mixed above with blackish. Antennal shaft blackish, at extreme base ochreous; ciliation long. Thorax, abdomen, and legs white; foreleg infuscated on upper and inner sides; hindtibia greatly thickened, with strong hair-pencil; tarsus abbreviated (about one-fourth).

*Forewing* pure white; costal edge very narrowly tinged with black; veins finely reddish grey, as in *radiata* Warr. (*NOVITATES ZOOLOGICAE*, iv. 434); first line obsolete; median line grey, more or less weak, rather thicker than postmedian, rather near the latter, especially at  $R^1$ , where it is somewhat bent; postmedian fine, grey, 2 mm. from termen, almost parallel therewith, inappreciably incurved behind  $M^2$ , curved in front of  $R^1$  but almost obsolete anteriorly; terminal line faint; fringe white.—*Hindwing* weakly angled at  $R^1$ ; lines of forewing continued.

Underside white; forewing with costal margin infuscated, the dark shade broad at base, narrowing distally, a scarcely appreciable rosy-grey flush in cell.

E. Peru: Pozuzo, type (in coll. Tring Museum) and others; Huancabamba, Cerro de Pasco; La Merced, Chanchamayo. E. Bolivia: Charuplaya; Chulumani.

Intermediate between *deiliniata* Warr. (NOVITATES ZOOLOGICAE, iv. 433) and *radiata* Warr., both of which, however, have the face black. Size of the former, and with similar lines, though the postmedian is in general rather nearer to the termen and the two subterminal shades (often developed in *deiliniata*) are always wanting; forewing much less flushed beneath, more blackened at costa. Pure white colour and darkened veins as in *radiata*. *S. leuculata* Snell. (*Tijdschr. v. Ent.* xvii. 59, t. 4, f. 8 = ? *nigricosta* Dogn., *Hét. Nouv. Amér. Sud.* iv. 8), which I have not seen, agrees in the ochreous head but has no markings.

#### 51. *Scopula contramutata* sp. nov.

♂♀, 21–24 mm. Smaller than *immutata* Linn. Antennal ciliation of ♂ similar. Hindtarsus of ♂ relatively somewhat longer (about two-thirds). The characteristic wing-form of *immutata* somewhat more accentuated (hindwing fully rounded apically, straightish from before  $R^1$  to  $R^3$ , slightly bent at  $R^3$ , again straightish to near tornus). Both wings in ♂ on an average more ochreous than in *immutata*, the lines fairly thick, the dentate form of the postmedian and its inward curve between the radials always well noticeable; forewing beneath less uniformly infuscated than is usual in *immutata*, the markings consequently standing out more distinctly. ♀ very like a diminutive *immutata* ♀, the postmedian line (as in ♂) characteristically dentate and incurved.

Chabarovsk, Ussuri Railway, June 4–22, July 14 and 30, August 9 and 19, 1910 (E. Borsow), 8 ♂♂ and 1 ♀ in coll. Tring Museum.

This is presumably the (hitherto unknown to me) Amurland "*immutata*" of Staudinger and Rebel and may possibly be a subspecies, but I strongly incline to regard it as distinct.

#### 52. *Scopula nitidissima* sp. nov.

♂, 34–37 mm. Larger than *pallida* Warr. (*Proc. Zool. Soc. Lond.* 1888, p. 322), purer white and even more glossy. Lines almost entirely obsolete, the postmedian faintly discernible and sometimes the median and the proximal subterminal; cell-dots as in *pallida*, terminal dots entirely wanting, or at most with a few very minute anterior ones discernible with the lens.

Kashmir Valley, 7,000 ft., July–August 1903 (Colonel Ward), type in coll. Tring Museum. Also 4 ♂♂ from Kulu, 1883 (Young).

I scarcely think this can be a form of *pallida*, as Colonel Ward took both together without intermediates; but in any case it is worthy of a separate name. Unless the antennal ciliation be slightly longer and the hindtibial hair-pencil slightly less strong, I can find no structural distinction; hindtarsus as long as tibia.

#### 53. *Scopula okinawensis* sp. nov.

♂, 28 mm. Face black. Palpus mixed with black above and on outer side. Vertex white. Collar ochreous. Thorax and abdomen white.

*Forewing* rather broad, termen smooth, slightly bowed; white, with extremely fine grey irroration; costal edge tinged with buff, at least proximally; lines grey; antemedian fine, obsolete anteriorly, straightish from SC nearly 5 mm. from base to hindmargin 3 mm. from base; cell-dot minute, blackish; median shade weak, not very thick, obsolete anteriorly, straightish (the posterior inward curve extremely slight) from SC at three-fifths wing-length to hindmargin rather beyond middle; postmedian better expressed, waved, in posterior half parallel with termen (2 mm. therefrom), between the radials very weakly incurved, anteriorly curving gently away from apex; subterminal white line rather more sinuous, hardly defined except by the absence of grey dusting; termen with blackish interneural dashes; fringe white.—*Hindwing* with termen moderately bent at  $R^3$ , tornus pronounced; first line wanting; median shade very weak, sinuous, proximal to the minute cell-dot; postmedian slightly farther from termen than on forewing, especially in middle, but bending slightly towards tornus behind fold; distal area as on forewing.

Forewing beneath with costal margin more broadly and brightly ochreous; otherwise somewhat suffused as far as the median shade, except at hindmargin; cell-dot indicated; postmedian line well expressed, slightly thicker and browner than above; terminal dashes well developed, slightly connected by a fine and weak line. Hindwing beneath white, with minute cell-dot and fine, not very strong outer line, this occupying the position of the proximal subterminal shade above, i.e. only about 1.5 mm. from termen; terminal line nearly as on forewing.

Okinawa, May 1904. Type in coll. Tring Museum.

#### 54. *Scopula flavifurcata* sp. nov.

♂♀, 24–26 mm. Face black. Palpus black, pale beneath. Antennal ciliation in ♂ apparently not long (damaged). Vertex, thorax, and abdomen pale yellowish, body beneath paler; collar ochreous. Fore and middle legs somewhat infuscated on upper and inner sides; hindtibia in ♂ with moderately strong hair-pencil, tarsus little abbreviated (almost three-fourths).

*Forewing* with apex minutely produced, termen more oblique in posterior than in anterior half, very slightly waved; cream-colour with a tinge of buff and with minute dark irroration (mostly quite sparse, in costal region somewhat more copious); cell-dot small, blackish; lines buff, rather thick; antemedian rather before one-third, rather ill-defined, somewhat excurved in cell; median from costa somewhat beyond middle, curved and rather ill-defined anteriorly, passing close beyond cell-dot and thence parallel with termen; postmedian midway between median and termen, little incurved at radials but with ill-defined proximal teeth, slightly incurved at fold; subterminal shades obsolescent; terminal dots minute and not intense; fringe concolorous.—*Hindwing* with termen bent at  $R^3$ ; cell-dot rather sharper than on forewing; antemedian line wanting; median just proximal to cell-dot, little curved; postmedian farther from termen than on forewing, more incurved between radials; proximal subterminal shade better developed than on forewing; terminal dots almost obsolete.

Forewing beneath somewhat suffused, especially costally; minute cell-dot present; median and postmedian lines well developed, smoky, the postmedian rather more proximal than above. Hindwing beneath paler, the cell-dot and lines very feeble.



Subathu, July 1889 (type), August and June 1889 (2 ♀♀), the last-named an aberration of more pinkish-buff tone, more recalling *furfurata* Warr. (NOVITATES ZOOLOGICAE, iv. 218), under which name Warren misidentified these examples.

55. *Scopula proterocelis* sp. nov.

♂, 22 mm. Face and upperside of palpus blackish.~ Crown and antennal shaft yellow; antenna minutely ciliated. Collar ochreous-yellow. Thorax and abdomen yellow, paler beneath.

*Forewing* yellow, with very sparse minute dark specks (invisible to the naked eye); cell-mark brown-grey, slightly elongate; an irregular, not very strong, brown-grey postmedian line, feeble at costa and between  $R^3$  and  $SM^2$ , rather deeply indented and slightly thickened between the radials, incurved between  $M^1$  and  $SM^2$ ; rather distinct dark interneural dots at termen, connected by a line of a slightly deeper yellow than the ground-colour; fringe bright yellow.——*Hindwing* with termen slightly bent at  $R^3$ ; postmedian line obsolete; cell-mark accompanied distally by a red-grey spot resembling that of *straminea* Feld. (*Reise Novara, Lep. Het.* t. 128, f. 33), but rather more anteriorly placed (between  $SC^2$  and  $R^3$ —in *straminea* from  $R^1$  to the medians); terminal dots moderately expressed anteriorly, becoming obsolescent posteriorly.

Underside paler, both wings with brown-grey cell-dash, sinuous postmedian line (that of hindwing the weaker), and slight grey terminal line bearing indistinct interneural dots.

Ilesha, N. Nigeria (Capt. Humfrey). Type in coll. Tring Museum.

At first sight remarkably similar to *straminea* Feld., which lacks the terminal dots, has the postmedian line much less irregular above, obsolete beneath, etc.

56. *Scopula rectisecta* sp. nov.

♂, 30 mm. Face and upperside of palpus black. Vertex and shaft of antenna orange-ochreous; antennal joints little projecting, ciliation rather over 1. Thorax, abdomen, and legs pale yellowish; forefemur darkened above; hindtibia rather long, strongly dilated, with hair-pencil, tarsus less than one-half.

*Forewing* moderately broad, costa somewhat arched posteriorly, termen smooth, very gently curved; smooth yellow, without irroration; costal edge narrowly golden; markings golden-yellow; antemedian line obsolescent, discernible from  $M$  (just beyond origin of  $M^2$ ) to hindmargin; cell-mark elongate, not strong; postmedian line straight, about 3 mm. from termen, not appreciably nearer thereto at  $R^1$  than posteriorly, obsolescent costally; no definite terminal line, the ground-colour here slightly deepened; fringe deep golden.——*Hindwing* almost inappreciably bent at  $R^3$ ; cell-mark indicated; postmedian line continued, complete, almost as straight as on forewing, reaching abdominal margin 2 mm. from torus; fringe deep golden.

Underside paler, unmarked; costal edge and fringes nearly as above.

Bitje, Ja River, Cameroons (Bates). Type in coll. L. B. Prout, paratype (rather smaller, worn) in coll. Joicey.

Intermediate in size and markings between *transsecta* Warr. (NOVITATES ZOOLOGICAE, v. 241) and *laevipennis* Warr. (NOVITATES ZOOLOGICAE, iv. 42), postmedian line straighter than in the latter, less oblique than in the former.



57. *Scopula coagulata* sp. nov.

♂, 24 mm. Face black. Palpus black, narrowly pale beneath. Vertex and antenna cream-colour; antennal joints slightly projecting, fascicles of cilia rather long (about 2). Collar ochreous. Thorax and abdomen cream-colour, above clouded with buff-yellow, the abdomen in addition with some minute and sparse blackish irroration. Legs nearly as in the following species.

*Forewing* slightly narrower than in *butyrosa* Warr. (*Proc. Zool. Soc. Lond.*, 1893, p. 362), termen scarcely waved, very gently curved; cream-colour, somewhat clouded with buff or buff-yellow and with sparse black irroration; lines buff; antemedian slightly oblique outward from one-third costa, bent in cell, falling almost vertically on hindmargin at nearly two-fifths; cell-dot black, placed on a small roundish buff cloud; median from well beyond middle of costa, excurved (on  $R^1$  almost angled) far beyond cell-dot, then running inward to fold at middle of wing, finally almost vertical to hindmargin but somewhat dentate; postmedian arising from a thickened spot on costa before three-fourths, lunulate-dentate and highly irregular, forming an outward projection at  $SC^2$  and  $R^1$ , deeply incurved between the radials and again rather deeply at fold, the outward teeth accentuated by small black vein-dots; subterminal shades interrupted, especially the proximal, which is almost entirely wanting opposite the inward curves of the postmedian; terminal black dots small but distinct in anterior half, very minute in posterior; fringe concolorous.—*Hindwing* with termen very feebly bent at  $R^1$ ; first line wanting; median curving proximally round the cell-dot, somewhat angled outward at M; cell-dot sharply black, not surrounded with buff; postmedian similar to that of forewing, but with the irregularities less extreme and the dark vein-dots obsolescent; proximal subterminal complete, stronger than distal, and following the same course as postmedian; terminal black dots small, but the series complete.

Underside whitish, the forewing costally more shaded with buff and in cell with vague reddish-smoky suffusion; cell-dots present; forewing also with postmedian line (most distinct anteriorly), a slight thickening at its origin, as above, and a suggestion of a similar mark indicating the origin of the median; terminal dots feeble.

♀ similar but larger, the black central dot of forewing above weak or almost wanting, leaving the roundish buff patch more noticeable than in the ♂.

Khasia Hills, Assam (native collector). Type ♂ and 2 ♀♀ in coll. Tring Museum.

Warren labelled the ♂ *inangulata*, but it is very different from that species except in the general course of the postmedian line.

58. *Scopula sublutescens* sp. nov.

♂, 20 mm. Face brown-black, narrowly pale below. Palpus brown-black above, pale beneath. Vertex and antenna cream-colour; ciliation fairly close and even, scarcely over 1. Collar ochreous. Thorax and abdomen whitish cream-colour, the thorax with some slightly darker admixture. Forefemur and tibia infuscated on upper and inner sides; middle leg more slightly infuscated; hindtibia somewhat long, dilated, with long pale hair-pencil; hindtarsus about one-half.

*Forewing* with termen smooth, almost straight; whitish cream-colour, without black irroration (a few very minute fuscous dots in region of C discernible with strong lens); lines rather thick and vague, darker cream-colour, inclining to buff-yellow, wavy, all approximately parallel with termen; antemedian from beyond hindmargin, apparently angled in cell, but obsolete anteriorly; median from about middle of hindmargin, very slightly more oblique; postmedian rather finer than the others; both subterminals developed, the pale line between them rather thick, weakly sinuous; no cell-dot; terminal dots extremely minute, scarcely traceable except in anterior part; fringe cream-colour, unmarked.—*Hindwing* with termen very weakly bent at  $R^3$ ; markings of forewing continued, except the antemedian.

Forewing beneath with vague reddish-smoky suffusions, except at hindmargin and on subterminal line; proximal part with some slightly darker irroration; a fine postmedian line and minute terminal dots faintly discernible. Hindwing beneath whitish, unmarked.

Khasia Hills, Assam (native collector). 2 ♂♂ in coll. Tring Museum.

#### 59. *Scopula internata praeuptorum* subsp. nov.

♂♀, 25–30 mm. On an average considerably larger than *i. internata* Guen. from South Africa. Ground-colour less ochreous, in the ♂ generally fleshy-grey, in the ♀ generally dark grey or ochreous-grey, in both sexes very variable.

*Forewing* with strong black dots on the fringe opposite the veins; the blotch at tornus rarely well developed, in this case oftener dark grey than reddish.—*Hindwing* with termen appearing slightly more irregular than in *i. internata*, though this is in part an optical illusion due to the presence of a strong black fringe-dot opposite the very slight angle at  $R^3$ ; fringe otherwise dotted as on forewing.

Escarpment, British E. Africa, 6,500–9,000 ft., January to March 1901 (W. Doherty). A very long series in coll. Tring Museum.

#### 60. *Scopula perfilata* (Warr. MS.) sp. nov.

♂♀, 21–24 mm. Face black. Palpus blackish-fuscous above, light ochreous beneath. Tongue strong. Vertex white. Antennal shaft whitish ochreous, the minute serrations beyond the middle darker; ciliation in ♂ nearly 2. Collar ochreous. Thorax and abdomen whitish ochreous, the latter above with rather strong blackish irroration, which usually condenses into more or less conspicuous mediodorsal spots. Foreleg rather strongly, middle leg less strongly, infuscated on inner side; hindtibia of ♂ dilated, not markedly elongate, with a long pencil of whitish-ochreous hairs, hindtarsus rather over two-thirds.

*Forewing* rather elongate, termen bowed, little oblique anteriorly; whitish ochreous, with moderate blackish irroration; lines light brownish; antemedian weak, sometimes almost obsolete, strongly oblique outward from one-fourth hindmargin, acutely angled in cell, scarcely traceable anteriorly, sometimes marked with blackish dots on  $SM^2$ , M, and SC; cell-dots small but sharply black; median shade strongly oblique outward from middle of hindmargin, vaguely defined distally, but generally appearing to throw out strong teeth on the veins, strongly curved or angled in radial region, where it is far distal to the

cell-dot ; postmedian very near termen (2.5 mm. at costa, well within 2 mm. in most of its course), chiefly expressed by blackish dots or minute dashes on the veins, that on  $R^1$  displaced distally (1 mm. from termen), that on  $R^2$  more proximal ; subterminal shades present but vague ; terminal interneural dots (or short dashes) strong ; fringe somewhat irrorated, especially opposite the veins.—*Hindwing* with costa relatively rather long, termen rounded, tornus prominent ; median shade thick, incurved round the cell-dot, sometimes also with slight extension round cell-dot distally ; postmedian about 2.5 mm. from termen, incurved between radials, accentuated by distal teeth on the veins ; subterminal shades well developed ; termen and fringe as on forewing.

Underside without ochreous tinge ; forewing, except at hindmargin and sometimes distal margin, with rather strong smoky suffusion, hindwing whitish ; both with postmedian line and cell-dot well developed, terminal dots more or less connected (at least on forewing) by a fine line ; fringes whitish, not or scarcely irrorated.

Java : Bandong (type and others), Arjuno, Pengalengan (Preanger), a series in coll. Tring Museum ; Sindanglaya, June 23, 1910, Nongkodjadja, July 7, 1910 (E. A. Cockayne), 2 ♀♀ in coll. L. B. Prout, kindly presented by the captor, but hitherto awaiting determination.

Distinguishable at a glance from *consimilata* Warr. (NOVITATES ZOOLOGICAE, iii. 313) by the narrower wings, which rather approach in shape those of the African *sublobata* Warr. (NOVITATES ZOOLOGICAE, v. 19 = *khakiata* Warr., NOVITATES ZOOLOGICAE, xii. 389).

#### 61. *Scopula paradela* sp. nov.

♂♀, 27–29 mm. Larger than *delospila* Warr. (NOVITATES ZOOLOGICAE, xiv. 140). Antenna of ♂ with similarly projecting joints and long ciliation. Hindtarsus considerably longer (over three-fourths ; in *delospila* about one-half—Warren must have mismeasured). Abdomen without the minute blackish or fuscous dorsal dots which are commonly developed in *delospila*. Ground-colour slightly more creamy, without the slight violet-grey reflections of *delospila*.

*Forewing* slightly broader than in *delospila* ; black basal dot behind M (omitted in Warren's description) wanting ; antemedian line complete though not strong, not black-dotted on veins ; median shade less deeply incurved behind middle ; postmedian rather near termen, less inbent at  $R^2$  ; fringe in proximal half more evenly irrorated, not developing definite dots at ends of veins.—*Hindwing* with cell-dot larger than in average *delospila* ; fringe as on forewing.

Biagi, Mambare River, British New Guinea, 5,000 ft., February–March 1906 (A. S. Meek). Type ♂ and 3 ♀♀ in coll. Tring Museum.

#### 62. *Scopula homaema* sp. nov.

♂♀, 23–26 mm. Akin to the preceding, but scarcely a subspecies. Hindtarsus of ♂ scarcely three-fourths. Wings slightly broader still. Whiter, with sparse irroration.

*Forewing* with antemedian line rather more tremulous ; postmedian more deeply lunulate-dentate, the projection at  $R^1$  appearing less acute (the anterior part being less oblique inward), the inward curves between the radials and at

the fold, on the other hand, rather deeper; terminal dots elongate; fringe proximally less irrorated, but with appreciable dark dots opposite the veins.—*Hindwing* with postmedian line correspondingly formed; proximal subterminal shade markedly crenulate; fringe as on forewing.

Solomon Islands (A. S. Meek): Isabel, June—July 1901, type ♂; Treasury Island, Choiseul, Vella Lavella, Kulambangra, single ♀♀; all in coll. Tring Museum. Also in coll. British Museum from Alu, Solomon Islands, misidentified as *perlineata* Walk. by Butler (MS.), as *undilinea* Warr. by Hampson (MS.).

### 63. *Scopula saphes* sp. nov.

♂♀, 21–24 mm. Face black. Palpus black, pale beneath. Vertex white. Antenna of ♂ subdentate, with fascicles of rather long cilia (about  $2\frac{1}{2}$ ). Collar dull ochreous. Thorax and abdomen concolorous with wings. Legs mostly pale; foreleg partly infuscated; hindtibia of ♂ dilated, somewhat elongate, with long white hair-pencil and proximally fringed with white above, tarsus a little over one-half.

*Forewing* rather broad, costa scarcely arched anteriorly, markedly so posteriorly, termen smooth, very gently curved; similar in colour to *amala* Meyr., but slightly more olive-tinged, the blackish irroration less extremely sparse, the markings olive-grey rather than ochreous; cell-dot larger than in *amala*, terminal dots strong though small; first line strongly curved near costa, median line thick, strongly excurved in anterior part, incurved behind cell; postmedian denticulate, slightly incurved between the radials and posteriorly; pale subterminal line rather thick, widening between the radials and near tornus, the greyish shades which border it broad, fairly well developed, especially in the ♀.—*Hindwing* with termen rather strongly bent at  $R^3$ , markings as on forewing but first line wanting, median shade curving round proximal side of cell-dot, sometimes partly surrounding it.

Forewing beneath pale greyish, hindwing whiter; both with sharp cell-dot, postmedian line and terminal dots; median and subterminal markings also traceable.

British New Guinea: Upper Aroa River, end of June 1903 (A. S. Meek), 3 ♂♂ (including type), 1 ♀; Hydrographer Mountains, 2,500 ft., January and April 1918 (Eichhorn brothers), 1 ♂, 1 ♀.

### 64. *Scopula heba* sp. nov.

♂♀, 16–18 mm. Smaller than *amala* Meyr. (*Tr. Ent. Soc. Lond.* 1886, p. 207).\*

*Forewing* with the lines finer, especially the postmedian, which is also less wavy; median line rather more oblique than postmedian (in *amala* the two are parallel).—*Hindwing* with termen less noticeably bent at  $R^3$  than in *amala*; lines finer, postmedian less incurved between the radials.

Solomon Islands: Arawa, Bougainville (type) to Guadalcanar. Also from St. Aignan, Woodlark, and Rossel Islands. A fine series in coll. Tring Museum.

\* Meyrick's measurements must have been made on the continental method—from tip to tip in set specimens.



65. *Scopula inactuosa* sp. nov.

♂♀, 15–19 mm. Similar to *actuaria* Walk. Hindleg in ♂ with the knee-pencil more conspicuous—apparently longer, oftener drawn out from the abdominal cavity. Wings more glossy, on an average more weakly marked.

*Forewing* with apex a little more rounded, termen rather less oblique; postmedian line thicker, less angulated subcostally, not punctuated with black dots on the veins.—*Hindwing* with postmedian line similarly thickened.

Forewing beneath with dark glossy suffusion, which is rarely noticeable in *actuaria*.

Lesser Sunda Islands, probably everywhere from Sambawa to Tenimber (Sambawa, Sumba, Alor, Timor, Wetter, Dammer, Tenimber, in coll. Tring Museum, the type from Tambora, Sambawa, 2,500–4,000 ft., April to May 1898, (W. Doherty). Also from Key Islands, Toekan Besi, and, I think, Saleyer.

On the Sunda Islands name-typical *actuaria* does not occur, but is represented by subsp. *nigranalis* Warr. (NOVITATES ZOOLOGICAE, iii. 378 = *parumnotata* Warr., NOVITATES ZOOLOGICAE, v. 19, syn. nov.), which in weakly marked examples almost loses the characteristic dark posterior spot of the postmedian line, while in some examples of *a. actuaria* from Borneo this spot begins to manifest itself, so that the races cannot be regarded as very sharply defined.

66. *Scopula serena* sp. nov.

♂♀, 16–18 mm. In structure, shape, and markings scarcely distinguishable from *lechrioloma* Turn. (*Proc. Linn. Soc. N.S. Wales*, xxxii. 658), from Queensland. The wings sometimes not quite as narrow, but rather variable.

*Forewing* slightly less white, more inclining to flesh-colour, sometimes even assuming the pinkish-buff tinge of the *minorata* group; irroration in general rather less sparse than in *lechrioloma*; antemedian line present, though weak; the other lines more retracted near costa, the median usually rather more oblique than the rest; terminal dots generally stronger than in *lechrioloma*.—*Hindwing* concolorous with forewing and with similar development of the terminal dots.

Forewing beneath (as also in *lechrioloma*) slightly infuscated, hindwing beneath whitish, sometimes with the lines fairly well developed.

Freetown, Sierra Leone, 1914 (A. Bacot); type and others in coll. L. B. Prout. Also from Ashanti, Niger, Angola, Unyoro, Kavirondo, British East Africa, Nyassaland, Rhodes, Natal, Madagascar, Seychelles, in various collections.

Mr. Bacot bred the species *ex ovo*, the imagines emerging in February 1915. The larva is extraordinarily long and thin, indeed thread-like, blackish brown with some paler brown mottlings, and with the head, thorax, legs, anal end, and prolegs almost entirely of the paler brown. That of *lactaria* Walk., which was bred by Mr. Bacot at the same time, is much less extreme in shape and is green in colour.

67. *Scopula campbellii* sp. nov.

♂♀, 21–23 mm. Akin to *asplataria* Moore, easily distinguishable as follows: Hindtibia of ♂ rather less thick, the tarsus rather longer (slightly over one-half).

*Forewing* with ground-colour paler, in the ♂ with very little, in the ♀ with



moderately copious (though very fine), dark irroration; cell-dot distinct, though very small; median line rather more oblique than termen; postmedian rather more markedly crenulate; proximal subterminal nearer to the postmedian than on hindwing.—*Hindwing* with median line more proximal; a cell-dot as on forewing; postmedian less incurved between the radials (crenulate as on forewing).

Forewing beneath with strong smoky suffusion, leaving hindmargin and a thick subterminal line and generally also a band between the median and postmedian lines whitish.

Palni Hills, S. India (W. H. Campbell). A short series in coll. L. B. Prout, including the type. Also in coll. British Museum.

#### 68. *Scopula pseudodoxa* sp. nov.

♂♀, 15–18 mm. Similar in structure, coloration, and markings to *countularia* Warr. (NOVITATES ZOOLOGICAE, v. 18), and the species which I identify as *thysanopus* Turn. (*Proc. Linn. Soc. N.S. Wales*, xxxii. 663), all three being perhaps races of a single widely-distributed species. Build rather more robust than in *countularia*, apex of forewing slightly less rounded, scaling less glossy, ground-colour sometimes paler, markings less uniform, the median line often weaker, the space between this and the postmedian often extended, postmedian in general somewhat more sinuous, proximal subterminal shade showing more tendency to break up into spots. Forewing beneath more or less markedly infuscated, which is not the case in *countularia*.

Woodlark Island, March—April 1897, type and others in coll. Tring Museum; St. Aignan; Sudest, April 1898. All collected by A. S. Meek.

I strongly suspect this is the New Guinea "*homodoxa*" of Meyrick, but as one of the most important structural characters he gives (*Tr. Ent. Soc. Lond.* 1886, p. 208) is "*hindtarsus* one-third" and this was evidently drawn from the Tonga and Fiji relative, his name must be restricted to that species.

#### 69. *Scopula paradeipharis* sp. nov.

♂♀, 15–18 mm. Face and upperside of palpus black. Vertex whitish buff. Antenna with the proximal segments dotted with black above; ciliation in ♂ even, little over 1. Thorax and abdomen pale pinkish buff above, whiter beneath. Hindtibia in ♂ rather elongate, dilated, with strong whitish hair-pencil; tarsus scarcely one-fifth.

*Forewing* of medium breadth, costa gently arched posteriorly, termen smooth, very slightly curved, moderately oblique; pinkish buff, sprinkled with a very few minute black scales; costal margin paler; lines darker, less pinkish, weak or obsolescent at costal margin, in part pale-edged (slightly reminiscent of the New-World genus *Scelolophia*); antemedian fine, at about one-third, bent in cell; median generally firm, little thickened, bent near costa, slightly incurved in submedian area, occasionally touching, but usually farther beyond, the minute black cell-dot; postmedian fine, excurved near costa, twice sinuate inward; subterminal whitish, sinuous, accompanied proximally and distally by moderate shades; terminal dots minute; fringe almost unmarked.—*Hindwing* with termen smooth, rounded; first line wanting; median sometimes weak, generally proximal to, occasionally touching, the minute black cell-dot; the rest as on forewing.

Underside whitish, rather glossy, the forewing tinged with cream-buff and with the costal margin brighter; unmarked, or (the forewing only) with the faintest possible indication of greyish lines.

Bingerville, Ivory Coast, 1915 (G. Melou), a long series in coll. Tring Museum, including the type. Sédhiou, Senegal, 1917 (H. Castell), a short series in the same collection.

Probably widely distributed in Africa, representing the *inficita* group of the Indo-Australian Region. A worn ♂ from Kilwa, German East Africa, shows the same structure, and a ♀ from Mayotte, Comoro Islands, the same facies; other worn material is more doubtful.

The much shorter ♂ hindtarsus affords a ready distinction from *adelpharia* Püng.

#### 70. *Scopula tumiditibia* (Warr. MS.) sp. nov.

♂♀, 19 mm. Face black, pale at lower edge. Palpus mixed with black above. Vertex whitish buff. Antennal joints in ♂ slightly projecting, ciliation 2. Thorax and abdomen concolorous with wings. Foreleg as far as first joint of tarsus darkened on inner side; hindtibia in ♂ enormously developed, about as long as abdomen, strongly dilated and with a long ochreous-tinged hair-pencil which reaches to the end of the extremely short tarsus.

*Forewing* rather narrow, termen smooth, very gently curved; pale cream-buff, clouded with pinkish buff and with some irregular black irroration; lines marked with stronger irroration; antemedian weak, oblique from one-third hindmargin, angled in cell; median weak, excurved beyond the black cell-dot, deeply incurved behind  $M^1$ ; postmedian irregular, lunulate-dentate, incurved between the radials and behind  $M^1$ , thickened at these points, especially about  $R^2$ ; subterminal shades weak; termen with sharp triangular black interneural dots; fringe almost unmarked.—*Hindwing* relatively large, at least in the ♂; termen smooth, rather full, especially about  $R^3-M^1$ ; cell-dot in ♂ larger than on forewing, paler in centre; first line wanting; median shade diffuse, curving inside cell-dot; the rest as on forewing.

Christmas Island (C. W. Andrews), in various collections; the type ♂ (March 1898) in coll. Tring Museum.

Misidentified by Hampson (Andrews's *Monograph of Christmas Island*, p. 71) as *optivata* Walk. I see no special resemblance; apart from the remarkable ♂ hindtibia it differs in the narrower forewing, less fleshy colour, strong postmedian markings at  $R^2$ , large cell-spots of ♂ (especially on hindwing), and other points.

#### 71. *Scopula latitans* (Warr. MS.) nom. nov.

*Accidalia reconditaria* Snell., *Tijdschr. v. Ent.* xv. 76. t. 6. f. 8, 9 (1872) (nec Walk. 1861), (Lower Guinea).

*Emmiltis latitans* Warr. MS., in coll. Tring Museum.

Mr. Warren seems to have suppressed his *latitans* in favour of *reconditaria* Snell., which he has clearly identified correctly; but as the last-mentioned name is preoccupied, I propose to substitute that of *latitans*.

## ADDENDA.

During the months which have elapsed between my handing in the above paper and its being found possible to send it to press, several further novelties have been worked out, and in order to bring my work as nearly as possible up-to-date the following descriptions are added.

## SUBFAM. HEMITHEINAE.

1. *Comibaena multigruma* sp. nov.

♀, 29 mm. Face green, finely edged with white. Palpus white, mottled with seal-brown at the ends of the first and second joints and on the third. Crown green, with narrow white anterior edge. Thorax above green, with a cream-whitish anterior band; beneath white. Abdomen above green in middle, with large anterior and posterior seal-brown blotches; beneath white. Legs white, with some blackish and seal-brown spots and dots, particularly at the knees and on the whole of the foretibial tuft.

*Forewing* broad, with termen strongly curved behind middle;  $SC^1$  rather long-stalked,  $SC^2$  arising beyond  $SC^3$ ,  $R^1$  free, closely approximated, for a very short distance, to the subcostal stalk, then curving away; bright green, as in the allies; costal margin broadly whitish; markings seal-brown; cell-dot small; a small blotch (rather more chocolate than the rest) near hindmargin 2 or 3 mm. from base, not reaching M (resolvable with lens into separate though dense irroration); a large, irregular distal blotch from tornus to  $R^1$ , nearly 3 mm. in width at hindmargin, its proximal edge deeply indented at  $M^2$  and excavated between  $M^1$  and  $R^3$ , where its boundary-line describes a weakly M-shaped figure, its distal edge quitting the termen in front of  $M^2$ , indented between  $M^1$  and  $R^3$ ; termen with seal-brown interneural dots; fringe mostly dark, varying in intensity.—*Hindwing* with termen rather fully rounded; a small cell-dot; a large apical blotch, proximally sinuate behind  $R^1$ , its posterior boundary reaching  $R^3$  proximally but receding somewhat distally, two small orange spots enclosed close to termen before and behind  $SC^2$ ; a very small dark tornal spot; terminal dots strongly elongate into dashes in anterior half; fringe as on forewing.

Underside whitish green, rather brighter at base of forewing, the cell-dots present; shadowy reflections of the dark blotches of upperside; fringe paler than above.

Hydrographer Mountains, 2,500 ft., British New Guinea, February 1918 (Eiehorn brothers). Type in coll. Tring Museum.

2. *Neromia* (?) *propinquilinea* sp. nov.

♀, 27–32 mm. Face red. Palpus fully one, third joint distinct, not minute; reddish, beneath pale. Tongue well developed. Crown green, narrowly white in front. Antenna lamellate, with curved teeth nearly as long as diameter of shaft. Thorax and abdomen above green, with a white (in places yellow-tinged) ridge from metathorax to the whitish anal extremity; beneath whitish. Foreleg reddish.

*Forewing* with termen less straight than in most *Neromia*, being curved or

almost bent in middle, more oblique posteriorly than anteriorly;  $DC^3$  rather deeply angled inward;  $M^1$  just separate; bright light-green with some scattered metallic blue scales and with fine, moderately distinct, mostly elongate, transverse whitish strigulation; veins slightly yellowish green; costal edge whitish, separated from the ground-colour by a line of yellow; lines whitish; antemedian fine, subobsolete, from before one-fourth costa to before one-third hindmargin, very slightly incurved behind  $M$ ; postmedian at scarcely three-fifths, thus more proximally placed than usual, nearly straight or slightly wavy, with faint suggestion of outward teeth at the veins, at least at  $R^1$  and  $M^2$ ; fringe yellowish white.—*Hindwing* with termen rather full, slightly bent about  $R^1$ ;  $SC^2$  very shortly stalked or just separate,  $M^1$  just separate; first line wanting; second little beyond middle of wing, straightish from costa about to  $R^2$ , then very slightly curved, then again straightish; fringe yellowish white.

Underside much paler, whitish blue-green, unmarked; costal margin of forewing buff, of hindwing whitish; terminal line and fringe of both wings whitish.

Sédhiou, Senegal, July 5–12 (type), March 25–27, May 21, 1917 (H. Castell). All in coll. Tring Museum.

On both wings a very faint and minute reddish cell-dot is discernible with the lens, placed on  $DC^3$  well behind the origin of  $R^2$  and suggesting together with the white dorsal ridge of abdomen a definite affinity with the *rubripunctilla* group of *Neromia*. The ♀ antenna being formed nearly as that of the ♂ of *clavicornis* Prout (NOVITATES ZOOLOGICAE, xxii. 319), that of the ♂ will probably prove well pectinate, and the new species will link up *Neromia* with *Neurotoca* in exactly the same way in which some species of *Omphax* link that genus with *Heterorachis*. The angulation of  $DC^3$  is rather suggestive of *Neurotoca*, but is perhaps not more extreme than in certain examples of *Neromia picticosta*, *cohaerens* or *impostura*.

### 3. *Microloxia polemia* sp. nov.

♀, 21–22 mm. Face red. Palpus fully 2, second joint with less strongly projecting scales above than in *herbaria* Hb., third joint about as long as second; reddish above. Tongue developed. Antenna with joints scarcely projecting, ciliation minute. Vertex green, very narrowly white-edged in front. Thorax and abdomen above green, becoming paler posteriorly; beneath whitish. Foreleg mostly reddish on inner side.

*Forewing* broad, costa very gently curved, termen oblique, straightish to  $R^1$ , then very slightly curved (about as in *Syndromodes cellulata* Warr.);  $SC^1$  anastomosing with C,  $R^1$  barely stalked,  $R^2$  rather extremely placed,  $M^1$  connate; green, nearly as in *Chlorissa cloraria* Hb. or slightly deeper; costal edge ochreous; lines whitish, extremely fine and feeble, sometimes not traceable; antemedian apparently about parallel with termen, not discernible in front of cell; postmedian farther from termen than in *herbaria advolata*, slightly bent inward in front of  $R^2$  and more markedly behind  $M^1$ ; fringe concolorous in proximal half, with a very fine whitish line at base, whitish green in distal half, separated from ground-colour by a fine white line.—*Hindwing* with termen rounded;  $SC^2$  stalked,  $M^1$  stalked; concolorous with forewing, the lines obsolete.

Underside paler green, unicolorous.



Kut-al-Amara, August 7 (type and another) and August 9, 1918, in coll. L. B. Prout, kindly presented by the captor, Mr. P. A. Buxton.

Rather broader winged than *halimaria* Chrét., to which possibly it is more nearly related than to *herbaria*.

#### SUBFAM. STERRHINAE.

##### 4. *Anisodes* (*Pisoraca*) *poeciloptera* sp. nov.

♂♀, 36-45 mm. Closely akin to *lutearia* Dewitz (*Verh. Leop.-Car. Akad.* xlii. 84, t. 3, f. 17); sometimes almost identical in coloration, much more variable, oftener more rufescent, the dark cloudings commonly stronger and more extended. Hindfemur of ♂ clothed with curled hair, as in *lutearia*. Wings on an average slightly broader.

*Forewing* with costal margin almost as strongly darkened as in *leonaria* Walk. (*List Lep. Ins.* xxii. 635), which is distinguishable, *inter alia*, by the glabrous ♂ hindfemur; black dots on antemedian shade generally poorly developed; median shade not projecting distally at  $R^1$ , on the other hand almost or quite meeting the postmedian shade at  $R^3$ , with the consequence that a regular oval pale patch stands out prominently between the dark costal margin,  $R^3$ , the median and postmedian shades, providing a ready means for picking out *poeciloptera* from its allies by eye; distal cloudings at the radials and between  $M^1$  and hindmargin commonly strong, though never obliterating the subterminal and usually leaving a pale terminal spot in front of  $SM^2$ .—*Hindwing* with the median shade thick, almost or quite confluent with the postmedian about  $R^3$  and  $M^1$ ; distal cloudings stronger than in *lutearia*, especially between  $M^1$  and abdominal margin.

Underside also variable, but in general less irregularly mottled and irrorated than in *lutearia*, the generality of forms being rather uniform ochreous or orange-ochreous as far as the postmedian, and with diffuse rather ill-defined redder cloudings distally.

Ivory Coast: Bingerville (G. Melou), a long series, including the type; Nigeria: Lagos, Warri, Degama.

Described from extensive material in coll. Tring Museum, but no doubt generally distributed in collections; hitherto assumed to be aberrant forms of *lutearia*.

##### 5. *Anisodes* (*Pisoraca*) *dewitzi* sp. nov.

*Ephyra lutearia* ♀ Dewitz, *Verh. Leop.-Car. Akad.* xlii. 84, t. 3, f. 21 (1881) (nec ♂).

♂♀, 32-38 mm. Again close to *lutearia* and with similar ♂ hindfemur. Ground-colour browner (less yellowish).

*Forewing* with costal margin on an average rather more heavily dusted than in *lutearia*, yet not presenting the darkened appearance of *poeciloptera*; markings nearly as in *lutearia*, median shade generally more slender, its teeth at  $R^3$  and  $M^1$  weaker, the pale band beyond consequently appearing less interrupted; postmedian line of dots rather more incurved between the radials and especially posteriorly; distal cloudings at the radials always weak, those posteriorly to  $M^1$  on the contrary often (as in Dewitz's figure) very strong, sometimes nearly black.—*Hindwing* with corresponding distinctions.



Underside much as in the generality of *pocilloptera*, on an average more reddish, the reddish distal cloudings more strongly pale-mottled in their outer part.

Ivory Coast : Bingerville (G. Melou), including the type ; Nigeria : Warri, Degama ; Gaboon : Lambarené, on the Ogove River ; Upper Congo : Yakusu.

Described from a good series in coll. Tring Museum. Differences in the shape of uncus, of tegumen, of valve, and its armature confirm the validity of the species in this group.

As ab. (?) **transmuta** ab. nov. I describe a colour-form in which both wings have a paler ground-colour, generally with a fleshy tinge, and all the markings are olive-green. Bingerville, both sexes, including the type ; Warri, 2 ♀♀. Genitalia not yet studied, but as some nearly typical examples show a tinge of greenish in the markings, I do not think this can be more than an aberration.

#### 6. *Anisodes paratropa* sp. nov.

♀, 46 mm. Differs from the *lutearia* group in having the termen of both wings deeply crenulate, with pointed teeth at the vein-ends, that at R<sup>2</sup> (especially on hindwing) considerably shortened. In the absence of the ♂ it is not even certain that it belongs to the same structure group.

Wings broad.—*Forewing* deep fleshy, with olive-grey irroration ; costal margin more densely irrorated, markings about as in *dewitzi*, olive-grey ; ante-median not very deeply curved outward in cell, bearing black dots on SC and SM<sup>2</sup> but scarcely on M ; cell-mark narrower than in *dewitzi* ; median shade rather more vertical anteriorly, the proximal curve behind M<sup>1</sup> very abrupt ; distal shades rather vague, the posterior not stronger than the radial.—*Hindwing* similar ; the white, dark-edged cell-mark rather more elongate than in the *lutearia* group.

Underside paler than in the *lutearia* group ; the forewing except behind fold, the hindwing scarcely except in distal area, with pinkish irroration or minute strigulation ; cell-mark indicated, especially on forewing ; median shade indicated on forewing only ; both wings with pinkish postmedian line, accentuated by darker dots on the veins.

Nguelo, Usambara (Dr. Kummer). Type in coll. Tring Museum.

#### 7. *Anisodes* (*Brachycola*) *jocosa clara* subsp. nov.

♂♀. Differs from the other eastern forms (*j. fimbripedata* Warr., NOVITATES ZOOLOGICAE, ix. 355, and *glycydora* Turn., *Proc. Linn. Soc. N.S. Wales*, xxxii. 684) in having the dark irroration finer and sparser, the dark shading which accompanies the zigzag median line almost entirely obsolete, the two costal spots of this line sharply black ; the subterminal dots behind SC<sup>4</sup>, the two between the radials and the one between the medians sharply expressed. In all these respects nearer *j. jocosa* Warr., from Assam, from which—like all the eastern races—it differs in its rather lighter ground-colour and in having the median line of both wings more distally placed, the cell-dot of forewing smaller and the cell-ring of hindwing larger, more narrowly margined with black.

New Guinea, Admiralty, Vulean, Rook, Trobriand, and Fergusson Islands. Type ♂ from Upper Aroa River, British New Guinea, March 1903 (A. S. Meek), in coll. Tring Museum.

8. *Anisodes (Brachycola) cora* sp. nov.

♂, 36 mm. Close to *niveopuncta* Warr. (NOVITATES ZOOLOGICAE, iv. 48). Body and wings above paler, less fleshy-tinged.—*Forewing* with markings more strongly expressed; cell-dot enlarged into a small elongate ring, having a few pale scales in its centre; median shade more deeply dentate, especially on  $R^3$  and  $M^1$ .—*Hindwing* with the termen slightly more crenulate than in *niveopuncta*; markings corresponding to those of forewing, the cell-spot formed as in many *niveopuncta*, the small white pupil being surrounded by a moderately thick black ring.

Near Oetakwa River, Snow Mountains, Dutch New Guinea, up to 3,500 ft., October—December 1910 (A. S. Meek). Type in coll. Tring Museum.

9. *Anisodes ockendeni* sp. nov.

♂♀, 29–30 mm. Smaller than *pintada* Dogn. (*Ann. Soc. Ent. Belg.* xxxvii. 159); palpus in both sexes a little longer, second joint perhaps less rough-scaled above; hindtibia of ♂ with a rather strong hair-pencil, proximal spur wanting.

*Forewing* rather less elongate than in *pintada*, the red irroration denser, the grey cloudings, on the other hand, weaker, though variable (in the Huancabamba specimens nearly as in *pintada*); cell-ring on an average smaller, though variable, sometimes (as also sometimes in *pintada*, teste Dognin) predominantly black with only a small white pupil; postmedian line of dots more proximally curved anteriorly.—*Hindwing* with corresponding distinctions.

S.E. Peru: La Oroya (including the type ♂), Tinguri, and Santo Domingo, a long series in coll. Tring Museum, collected by G. Ockenden. Also from E. Peru: Huancabamba, near Cerro de Pasco; Ecuador: Paramba; Colombia: Muzo and Popayan; Bolivia: Chulumani.

I cannot find that this variable little species has ever been named. Apart from its less red colour, it differs from *rufulata* Warr. (NOVITATES ZOOLOGICAE, xi. 510) in having the markings less oblique. Evidently Mr. Warren never differentiated it, as specimens in the Tring Museum are variously labelled *pintada* Dogn., *urcearia* Guen. (!), *stramineata* Warr., *ochricomata* Warr., *dispergaria* Möschl., *tolinta* Schaus.

10. *Anisodes curtisi* sp. nov.

♂, 37 mm. Similar to *alienaria* Walk. (*List Lep. Ins.* xxvi. 1586). Lower part of face whiter. Midtibia glabrous. Hindfemur glabrous; hindtibia with the proximal spur wanting.—*Forewing* rather less broad; venation normal (areole present, as in *alienaria*, but  $SC^5$  not arising—as in *alienaria*—from near  $R^1$  and diverging, but running almost parallel with  $R^1$  throughout); less clouded with fleshy grey than in *alienaria*; cell-ring smaller; median shade less broad.—*Hindwing* with corresponding distinctions.

Underside less clouded with pink than in *alienaria*, the pink markings consequently standing out more distinctly.

Penang, January 1897 (Curtis). Type in coll. Tring Museum.

May be placed next to *effeminata* Prout (*Ent. Mitt. Deutsch. Ent. Mus.* iii. 244), which is a broader-winged insect, with rather longer palpus, differently coloured face, different cell-mark of hindwing, etc.

11. *Anisodes incumbens* sp. nov. .

♂, 38 mm. Nearly related to *recumbens* Warr. (NOVITATES ZOOLOGICAE, ix. 358), differing as follows :

Wings narrower (termen of hindwing straightish from  $R^1$  to tornus, except for the small teeth), ground-colour much more ochreous, markings grey with a slaty tinge.—*Forewing* with costal margin grey ; median line even more oblique, reaching costa close to postmedian ; the shade which parts from it about the middle of the wing and runs to termen between the radials better developed than in *recumbens*, not interrupted.—*Hindwing* with the cell-ring less black and less elongate than in normal *recumbens*.

Markira Harbour, S. Christoval, May 1–9, 1908 (A. S. Meek). Type in coll. Tring Museum, unfortunately unique.

Possibly a remarkable subspecies or aberration of *recumbens*, but this seems scarcely credible. In a good series of that species before me from Bougainville, Choiseul, Vella Lavella, Guizo, Kulambangra, New Georgia, Rendova, Isabel and Florida Islands, there is nothing at all approaching it in shape or colour.

12. *Anisodes epicoccastria* sp. nov.

♂, 34 mm. Face narrowly red above, then whitish with red irroration, which becomes weak below. Palpus with second joint reaching beyond frons, third joint long (about = second joint) ; red above, white beneath. Head and body concolorous with wings. Hindleg long and slender, glabrous, tibia with terminal spurs only.

Wings in shape, colour, and markings almost exactly like an overgrown *griseata* Warr. (NOVITATES ZOOLOGICAE, iii. 380), with the markings rather shadowy ; but that species belongs to the section *Stibarostoma*, with essentially different palpus.—*Forewing* with the oblique shade from hindmargin between antemedian and median lines to termen between the radials rather broad but ill-defined ; terminal dots (as also on hindwing) minute and inconspicuous, red rather than black.

Underside pale, extremely weakly marked.

Upper Aroa River, British New Guinea, February 1903 (A. S. Meek). Type in coll. Tring Museum.

13. *Anisodes* (*Perixera*) *faustina* sp. nov.

♂♀, 30–35 mm. Extraordinarily like the largest, lightest (most sparsely irrorated) examples of *festiva* Warr. (NOVITATES ZOOLOGICAE, xiii. 90\*), which has the hindfemur glabrous. The new species, however, has the typical structure of the section *Perixera* (Meyr.), the distal half, or rather more, of the ♂ hindfemur bearing a suberect tuft of red hair. *Face white in lower half* (in *festiva* red throughout). Otherwise absolutely constant differences can scarcely yet be indicated.

*Forewing* with cell *slightly* shorter (appreciably less than one-half ; in *festiva* almost one-half) ; cell-dot generally (in *festiva* very rarely) shaded with red ;

\* Described with query as a *Perixera*, erroneously transferred to *Pisoraca*, NOVITATES ZOOLOGICAE, xiv. 144. It is really a "*Perixera*" (in sensu Warr., nec Meyr.), i.e. an *Anisodes* in sensu Turn.

median shade rarely (in *festiva* generally) touching the cell-dot.—*Hindwing* with a larger, predominantly red, patch at end of cell (but that of *festiva* is at times larger and redder than in Warren's type).

Forewing beneath in general less heavily suffused with red than in *festiva*.

Dutch New Guinea: Upper Setekwa River, 2,000—3,000 ft., August 1910 (type and two other ♂♂), September 1910 (1 ♂); Mount Goliath, 500 ft., February 1911 (1 ♂). British New Guinea: Biagi, Mamberé River, 5,000 ft., February 1906 (1 ♀). All in coll. Tring Museum, collected by A. S. Meek. In the two last-named localities *festiva* occurred with it.

#### 14. *Anisodes* (*Perixera*) *palirrhoea* sp. nov.

♂ ♀, 30–34 mm. Facies and coloration of *multipunctata* Warr. (NOVITATES ZOOLOGICAE, vi, 336) \* but considerably larger, perhaps slightly longer-winged. Palpus of ♂ with third joint longer (about as long as second). Face below less pure white. Femoral tuft of ♂ deeper red.

*Forewing* with the cell-mark narrow, generally obsolete posteriorly, only its anterior black dot sharply expressed; median grey line deeply zigzag, its proximal (interneural) and distal (neural) darker dots sharply expressed, so as almost to suggest the appearance of a double line; blackish confluent or subconfluent spots between the postmedian and subterminal often well developed costally, between the radials, and from M<sup>1</sup> to hindmargin, though subject to great variation.—*Hindwing* with cell-mark much narrower than in *multipunctata*, its outline extremely fine or subobsolete, chiefly marked by a large black anterior dot and a small, more red-mixed posterior one; median shade formed as on forewing but often weaker; distal dark spots nearly correlated to those of forewing, the posterior one in the most strongly-marked examples forming a large and conspicuous tornal patch, traversed by the pale subterminal.

Solomon Islands, widely distributed (Choiseul, Vella Lavella, Guizo, Kulambangra, New Georgia, Rendova), strangely misidentified by Mr. Warren as *porphyropis* Meyr., and hence not hitherto described. Type from Vella Lavella, March 1908 (A. S. Meek), in coll. Tring Museum.

#### 15. *Anisodes rudis* sp. nov.

♂ ♀, 42–46 mm. Face and palpus red above, white below; palpus fully 2, third joint in both sexes about as long as second. Crown white, almost entirely covered with black scales except anteriorly. Antenna blackened above, clavola white beneath; pectinations in ♂ long. Body above mostly concolorous with wings, the thorax crossed in front by a narrow leaden-grey band, the abdomen becoming paler at extremity; beneath whitish, the pectus mixed with dull pink. Midtibia of ♂ densely clothed with very long white and pinkish hair.

Wings robust.—*Forewing* with areole wanting; vinaceous cinnamon, with very fine dark-grey irroration, giving a general effect of hazel; costal margin blackish; lines black-grey, rather diffuse and not very sharply defined; antemedian from before one-fourth costa, rather oblique outward to fold, then obsolete, reappearing more proximally as a short streak from hindmargin 4 mm.

\* I think this is a synonym of *thermosaria* Walk. (*List. Lep. Ins.* xxvi, 1607), but as I have no Borneo material before me I prefer to use Warren's name.



from base; median shade rather beyond middle, slightly excurved in anterior half and incurved in posterior; postmedian from five-sevenths costa, slightly angulated inward subcostally, then forming a long and gentle outward curve, at fold gently incurved, reaching hindmargin rather near tornus, some blacker vein-dots on its outer side increasing its otherwise feeble arenulation; cell-mark rather long-oval, pale-centred but inconspicuous; very faint indications of the proximal subterminal shade; terminal interneural dots minute and not strong. —*Hindwing* with termen very slightly or scarcely bent at  $R^3$ ; antemedian line faint; cell-dot sharply white, inconspicuously dark-bordered; median shadowy, apparently encircling the cell-dot, at abdominal margin rather more distinct; postmedian angulated at  $R^3$ , the black dots (or small dashes) more sharply expressed posteriorly than anteriorly; the rest as on forewing, the fringe slightly paler.

Underside deep fleshy pink, the markings scarcely indicated; terminal dots rather distinct, partially—especially on hindwing—connected by a dark grey line.

Near Oetakwa River, Snow Mountains, Dutch New Guinea, up to 3,500 ft., October–December 1910 (A. S. Meek). Type ♂ and 2 ♀♀ in coll. Tring Museum. A very damaged ♀ from Sandakan, N. Borneo, appears to agree perfectly, in which case the species—like several of its congeners—has a wide distribution.

Evidently closely akin to *sciota* Turn. (*Proc. Linn. Soc. N.S. Wales*, xxxii. 692) from N. Queensland and *subrubrata* Warr. (NOVITATES ZOOLOGICAE, xii. 10) from the Solomon Islands.

#### 16. *Anisodes dispilota* sp. nov.

♂, 30 mm. Structure of *decussata* Scheller (*Sepp's Surin. Vlind.* iii. 287, t. 132) = *delineata* Warr. (*Proc. U.S. Nat. Mus.* xxx. 428), the hindtibia being extremely short, smooth, the first tarsal joint greatly elongate. Smaller.

*Forewing* appearing relatively broader, the costal margin being slightly more arched, the termen behind  $R^3$  rather less oblique; rather paler, or of a less warm tone; proximal markings weak; longitudinal lines obsolescent; cell-ring minute; the line beyond slightly less oblique; postmedian line almost as in *decussata*; a dark blotch running from postmedian to termen between the radials. —*Hindwing* with a dark line close to base; antemedian and median lines slightly less approximated than in *decussata*; postmedian rather less strongly bent before middle; a dark blotch between  $M^2$  and abdominal margin, reaching from postmedian line almost to termen.

St. Jean de Maroni, French Guiana. Type in coll. Tring Museum. A ♀ from Demerara, British Guiana (J. Rodway), in coll. British Museum.

#### 17. *Bytharia lucida angusticincta* subsp. nov.

♂, 36–42 mm.; ♀, 48 mm. Both wings with the distal border considerably narrower than in *l. lucida* Warr. (NOVITATES ZOOLOGICAE, vi. 14), from the Bismarck Archipelago, only measuring 1.5 to 2 mm., at the apex of forewing 3–4 mm.; its proximal edge scarcely crenulate.

Rendova, Solomon Islands, February 1904 (A. S. Meek). 4 ♂♂, 1 ♀ in coll. Tring Museum. A single ♂ from Choiseul, slightly intermediate, but should be referred here.



Remarkably similar to *uniformis* Swinhoe (Java, Sumatra, Borneo), which is larger, the borders of a more leaden hue, separated from the ground-colour by a whitish line.

#### 18. *Scelolophia littoralis* sp. nov.

♀, 19 mm. Similar to *nycteis* Druce (*Biol. Centr.-Amer.*, *Lep. Het.* ii. 122, t. 52, f. 28), to which I refer as subspecies the smaller, brighter *ignifera* Warr. (*Proc. U.S. Nat. Mus.* xxx. 436) from French Guiana, and the large, heavily clouded *latifasciata* Bastelb. (*Ent. Zeit.* xxii. 159) from W. Colombia. Hindtibia without the rudimentary fourth spur, which is usually present in *nycteis*. Body and wings dark, the forewing as far as the end of the cell (except costally) and the hindwing in proximal half heavily suffused, thus most recalling *nycteis latifasciata*.

*Forewing* with cell somewhat shorter, the median shade (which is curved somewhat inwards behind the vague cell-mark) more proximally placed; the narrow dark sinuous postmedian band (characteristic of *nycteis* and the new species) more proximally placed, scarcely farther from cell than from termen. — *Hindwing* with a vague sinuous median band parallel with the postmedian.

Barranco, near Lima, April 1, 1913 (H. O. Forbes). Type in coll. Tring Museum, together with a more rufescent, almost uniformly suffused ♀ taken the following day.

A ♂ from Callao, in coll. British Museum, doubtless referable here, shows nearly the same structure as *nycteis*, but has the sex-tuft of the underside of the hindwing apparently rather less elongate and more concentrated (roundish); wings rather broad, hindwing with termen slightly bent in middle, its underside whiter. Recalls also *damaria* Schaus (*Tr. Amer. Ent. Soc.* xxvii. 193), which has no tuft on hindwing.

#### 19. *Scopula alma* sp. nov.

♂, 19–21 mm. Face black. Palpus black, pale beneath. Vertex and antennal shaft white, ciliation slightly over 1. Collar ochreous. Thorax and abdomen concolorous with wings. Legs tinged with ochreous, the forecoxa above and forefemur and tibia on inner side blackish; hindtibia white, not very long, dilated, with long hair-pencil, tarsus almost 1.

*Forewing* not very broad, termen very gently curved, moderately strongly oblique; white with a strong fleshy or fleshy-ochreous tinge (as in *emutaria* Hb. or *flaccidaria* Zell.), and with scattered dark irroration; lines more brownish than in the species named; antemedian obsolete costally, weak throughout, excurved, rather near the cell-dot; cell-dot small, black; median shade oblique, obsolete costally, moderately strong from  $R^1$  or  $R^2$  near the postmedian to hind-margin at or slightly before the middle, almost straight; postmedian fine, not very strong, slightly accentuated at the veins, placed about 1.5 mm. from termen, parallel therewith, obsolescent costally; subterminal line white, little undulate, rather broader than in *emutaria*; termen with sharp black interneural dots; fringe slightly paler, at the tips free from irroration. — *Hindwing* with termen very feebly bent at  $R^2$ ; antemedian line wanting; median straight, well proximal to cell-dot; postmedian straightish or little curved, farther from termen than on forewing; subterminal nearly parallel with termen; termen and fringe as on forewing.

Forewing beneath slightly greyer, especially at base, hindwing beneath somewhat whiter; both with cell-dot and the markings beyond; fringe whitish, scarcely irrorated.

Nairobi, British East Africa. The type June 1905, paratype May 1906, both in coll. Tring Museum, collected by F. J. Jackson.

Except in size, this rather recalls some of the tailed species—*emutaria* Hb., *perlata* Walk., etc. Perhaps near *obliquisignata* Bastelb. (*Deutsch. Ent. Zeit.* 1909, p. 319), which I have not seen.

## 20. *Scopula opperta* sp. nov.

♂♀, 24–28 mm. Face black-brown, narrowly whitish below. Palpus black-brown, whitish beneath. Antennal joints in ♂ slightly projecting, ciliation about 1. Vertex white. Collar more or less buff. Thorax and abdomen whitish, dorsally with some grey irroration. Fore and middle legs somewhat buff, the former somewhat infuscated on inner side; hindleg white, tibia in ♂ dilated with hair-pencil, tarsus almost 1.

*Forewing* shaped about as in *nesciaria* Walk. (*List Lep. Ins.* xxii. 750); white, finely irrorated with olive-grey, which easily discolours to a more brownish or fleshy tone; costal edge narrowly tinged with buff; lines olive-grey; ante-medial fine and weak or subobsolete, generally traceable from cell at one-third of wing-length to one-third hindmargin, with slight bend inward at fold and sometimes a slight tendency to form small spots or dots in cell, at fold, and behind  $M^2$ ; cell-dot black, minute; median shade obsolete costally, oblique from  $R^1$  at two-thirds wing-length to scarcely beyond middle of hindmargin, feebly lunulate-dentate; postmedian at nearly three-fourths, feebly or scarcely lunulate-dentate, slightly inclining inwards costally, otherwise nearly parallel with termen, the customary radial and submedian curves very gentle or scarcely noticeable; subterminal white line of medium thickness, sinuous or lunulate-dentate, the grey shades on either side of it moderate or rather weak; terminal black dots small but well-developed, the anterior ones somewhat elongate, the posterior smaller and more detached; fringe slightly irrorated, with a clearer white line at base.—*Hindwing* rounded, scarcely bent at  $R^1$ ; first line wanting; median shade just proximal to (almost touching) the black cell-dot, which is slightly less minute than on forewing; the rest nearly as on forewing, but with the postmedian rather more proximally placed.

Underside whitish, the hindwing almost unmarked, the forewing more tinged with buff, especially anteriorly, and with minute cell-dot and weak, buff-tinged postmedian line; both wings with terminal dots present but weak.

Durban, Natal (G. F. Leigh). The type ♂ in coll. Tring Museum.

A few ♀♀ from Durban and other localities in Natal have been known to me for several years, scattered in various collections, but I hesitated to describe it, lest it might be a mere colour-form of *nesciaria* Walk. or *latitans* Prout (= *reconditaria* Snell., nec Walk.). The ♂ structure, however, shows that it comes nearer to *spoliata* Walk.; differs in having the hindtibia rather thicker, tarsus barely as long, antennal ciliation rather shorter, the colouring of the wings different, the postmedian line even, not punctiform, the anterior terminal dots elongate.

21. *Hamalia perbrunneata* sp. nov.

♂, 19–21 mm. Closely allied to *brunneata* Warr. (NOVITATES ZOOLOGICAE, xii. 322), structure nearly the same, though the hindtarsus may be a trifle longer (well over one-half tibia, the first joint very slightly thickened, which is scarcely appreciably the case in *brunneata*). Head and body coloured as in *brunneata*. Wings brighter brown, less infuscated, the narrow dark borders and the terminal blotches of forewing (between the radials and at tornus) consequently showing up more distinctly.

*Forewing* with median shade slender (in *brunneata* thick), usually crossing—in one example proximal to—the cell-dot; postmedian line a little farther from termen than in *brunneata*, less angulated at R<sup>1</sup>.—*Hindwing* with termen slightly less gibbous than in *brunneata*, postmedian line markedly farther from termen.

Underside much lighter and less cupreous than in *brunneata*, especially on the hindwing, which is, moreover, usually much less strongly marked; postmedian line placed as above, on the hindwing less excurved behind middle than in *brunneata*.

Pozuzo, Huanaco, E. Peru, 800–1,000 m., in various collections. Type and others (W. Hoffmanns) in coll. Tring Museum. Also from Calama, Rio Madeira, and from Charaplaya, Bolivia.

Has been mixed with *brunneata* Warr., of which the type from Cundimamarca remains unique. I do not think it can be even a subspecies, but in any case it must be named. The group to which these species belong differs from true *Hamalia* in the stalking of SC<sup>2</sup> of the hindwing and in the genitalia, and will require generic separation.

GENUS *Lobocleta* Warr.

*Lobocleta* Warr., *Proc. U.S. Nat. Mus.* xxx. 450 (1906).

*Metasiopsis* Prout, *Tr. Ent. Soc. Lond.* 1910, p. 219.

I think my *Metasiopsis* only differs essentially from *Lobocleta* Warr. in the non-pectinate ♂ antenna, and should be regarded merely as a subgenus. It is unfortunate that Warren mistook the bulk of this fairly extensive genus for *Ptychopoda* and only established a new genus on a single aberrant member of it, and almost equally unfortunate that in discovering the necessity for the generic separation of the bulk I overlooked Warren's already existing name of *Lobocleta*.

22. *Lobocleta xenosceles* sp. nov.

♂♀, 21–22 mm. Face and palpus blackish, the latter pale beneath. Head and body concolorous with wings, the collar brighter ochreous. Antennal ciliation in ♂ slightly over 1, in ♀ minute. Midtibia in ♂ with a strong hair-tuft at end; hindtibia in ♂ dilated, rather elongate, with long strong hair-pencil (reaching nearly to end of first tarsal joint) and a small additional hair-tuft at extremity; hindtarsus in ♂ abbreviated (less than half).

*Forewing* shaped about as in *indecora* Warr. (NOVITATES ZOOLOGICAE, vii. 162) or *malepicta* Warr. (NOVITATES ZOOLOGICAE, xii. 46), colour intermediate between these, rather glossy, without (or with only very sparse and minute)\* dark irroration; markings about as in the species named, but, with the exception

of the black cell-dot, always weak, sometimes almost entirely obsolete ; dots of the postmedian line usually better developed, at least at costa ; fringe paler, especially distally, marked at base with small black dots opposite the veins.—*Hindwing* with termen scarcely waved ; similar to forewing.

Forewing beneath with somewhat rosy flush, especially proximally, hindwing whiter ; both very feebly marked.

Obidos, Amazons, October—November 1904 (M. de Mathan). Type ♂ and allotype ♀ in coll. Tring Museum. Also in the same collection, ex coll. Meyer, a ♂ labelled “Brazil” and 2 ♂, 2 ♀, merely labelled “S. America,” all of which may be suspected of coming from the Amazons, as was certainly the case with many species in that interesting but badly localised collection.

### 23. *Lobocleta unigravis* sp. nov.

♀, 19 mm. (Face abraded.) Palpus short, brownish, beneath white. Head and body white, the body above with sparse black irroration ; collar tinged with ochreous.

*Forewing* with termen gently curved, moderately strongly oblique ; SC<sup>2</sup> from close to end of cell ; white, with sparse black irroration (slightly more copious in proximal part of costal region) ; lines light ochreous brownish, the antemedian, postmedian, and two subterminals weakly expressed, the median rather stronger ; antemedian from about one-fourth costa, rather oblique outward, sharply angulated in cell, then nearly straight to hindmargin before one-third, dotted with black on SM<sup>2</sup> ; cell-dot rather large, sharply black ; median shade just beyond it, obsolescent costally, angled outward on R<sup>1</sup> and R<sup>2</sup>, incurved between, oblique inward to hindmargin a little beyond middle, but slightly angled outward on SM<sup>2</sup>, where it is accentuated by some black irroration ; postmedian and proximal subterminal approximately parallel with median but more crenulate, more markedly angled outward on SM<sup>2</sup>, the postmedian arising from a rather noticeable black dot on costa and irrorated with black about SM<sup>2</sup> ; distal subterminal close to termen ; black dots at vein-ends, the anterior ones particularly strong.—*Hindwing* not very long, termen slightly waved, rather strongly gibbous, feebly bent at M<sup>1</sup> ; SC<sup>2</sup>—R<sup>1</sup> stalked for about half their length ; similar to forewing, the first line undeveloped, the median incurved proximally to the cell-dot.

Underside with the cell-dots and the postmedian costal dot of forewing strong, otherwise more weakly marked, the median and postmedian lines fairly well developed, terminal dots nearly as above ; costal margin of forewing ochreous brownish.

La Plata town. Type in coll. Tring Museum.

A very ordinary-looking little species, yet not particularly reminiscent of any other. In some respects, though rather whiter, it somewhat recalls *Scopula albidulata* Warr. (NOVITATES ZOOLOGICAE, iv. 432).

### 24. *Ptychopoda subfervens* sp. nov.

♂♀, 20–25 mm. Very similar to *fervens* Butl. (*Tr. Ent. Soc. Lond.* 1881, 340). Both the colours paler, the ground-colour being whitish lavender-grey, the “red-brown” (burnt sienna or chestnut) markings more cinnamon-rufous.



*Forewing* with costal edge less darkened than in *fervens*, remaining rufous; antemedian line usually more complete, more strongly bisinuate; postmedian different in form, being acutely angulated outward on  $R^1$ , but less deeply incurved behind  $M^2$  than in *fervens*; the rufous band beyond not interrupted by the ground-colour between the median veins; subterminal line more sharply white; fringe paler.—*Hindwing* with the markings in general weakly expressed, but with a complete, well-defined white subterminal, which forms an acute, V-shaped proximal projection on  $R^2$ .

Both wings beneath paler; forewing somewhat darkened along costal margin and with shadowy indications of the markings of the upperside; hindwing almost unmarked, with slight iridescence; both wings with complete terminal line.

St. Jean de Maroni, French Guiana, type ♂ and others in coll. Tring Museum, allotype ♀ in coll. Dognin. Also from Juan Vinas (Costa Rica) and Potaro (British Guiana), and a large, more ochraceous-marked ♀ from La Oroya, S.E. Peru, which latter may perhaps eventually prove to represent a local race.

#### 25. *Ptychopoda palniensis* sp. nov.

♂, 20–25 mm. Face black. Palpus black above, brown beneath. Vertex whitish brown. Antennal joints triangularly projecting, ciliation nearly 2. Thorax and abdomen concolorous with wings, collar brighter brown. Foreleg (except tarsus) darkened on inner side. Hindtibia dilated, longer than femur, fringed above and with long hair-pencil from femoro-tibial joint, tarsus extremely short.

Forewing with areole moderately large, all the subcostals stalked beyond it,  $SC^1$  separating just before  $SC^3$ ; brownish white, strongly irrorated with slightly rufescent brown; antemedian line not strong, obsolescent at costal strongly excurved between SC and fold and more slightly behind fold, oblique inwards to hindmargin; cell-dot rather strong, black; median shade obsolescent at costa, rarely strong, touching the cell-dot on its distal side, scarcely incurved posteriorly; postmedian sharper, somewhat lunulate-dentate, the two customary sinuities; distal area darkened, leaving free a slight streak from costa just beyond the postmedian, a rather broad sinuous subterminal (formed nearly as in the *biselata* group) and some slight terminal spots; termen with blackish interneural dashes; fringe with small blackish dots opposite the veins.—*Hindwing* with termen waved and sinuous, slightly prominent at  $R^3-M^1$ ; first line wanting, median proximal to cell-dot, postmedian little beyond centre, dark borders sometimes vague.

Forewing beneath sharply marked, darkened to median shade, distal area nearly as above, fringe paler proximally. Hindwing whiter, with strong black cell-dot and rather weak brown median and postmedian lines; terminal dashes strong.

Palni Hills (W. H. Campbell). 5 ♂♂ in coll. L. B. Prout. Also in other collections.

#### 26. *Cyllopoda janeira lugens* subsp. nov.

Hindwing with the black abdominal and distal borders broader than in *j. janeira* Schaus (*Proc. Zool. Soc. Lond.* 1892, p. 286), and in addition with a black



costal border above and beneath, which merely leaves free a slender, pointed streak of the ground-colour at base. Forewing in general with the yellow markings slightly reduced, as also the white scales at apex of fringe.

Castro, Parana (E. D. Jones). Type ♂ and 4 ♀♀ in coll. Tring Museum. Also in coll. E. D. Jones.

It seems that this is the "*approximans*" of Schaus and Warren, but not of Walker.

#### SUBFAM. LARENTINAE.

##### 27. *Lithostege buxtoni* sp. nov.

♂, 34 mm. Face blackish brown, paler in middle. Palpus short and slender; above dark, beneath pale. (Tongue concealed.) Antenna with fascicles of rather long cilia. Vertex and body light brown. Foretibia with terminal claws rather slender, the inner moderately long, the outer short.

*Forewing* rather narrow, costal margin faintly sinuous, apex round-pointed, termen very oblique, gently curved posteriorly, tornus rounded off; both areoles ample, their dividing vein from apex of cell,  $SC^2$ ,  $SC^{3+4}$ , and  $SC^5$  from apex of distal areole,  $R^1$  from beyond its middle; very pale brownish with strong gloss (as in *Myinodes*); an oblique dark line from apex nearly to hindmargin about 3 mm. from base, consisting of a series of very shallow lunules separated by slight distal and posterior indentations on the veins, slightly more longitudinal between  $M^1$  and  $M^2$ ; anteriorly to this line the colour is white for some distance, distally and posteriorly slightly deeper brown; fringe rather long, white, tinged proximally with brown, a shadowy brownish line dividing the two colours.—*Hindwing* narrow and elongate; C anastomosing with SC from near base to near end of cell;  $M^1$  separate; glossy white.

Forewing beneath slightly more greyish, the line feebly showing through, at least in apical part.

Kangavar, Hamadan, N.W. Persia, 5,000 feet, December 6, 1918 (P. A. Buxton). Type in coll. L. B. Prout, kindly presented by the discoverer. A second ♂, considerably darker and with the line more deeply lunulate-dentate, has since come to hand from Mesopotamia (Shergat, Asshur, at light, December 27, 1919, H. D. Peile), and has equally kindly been presented to me by Mr. H. T. G. Watkins.

According to the ♂ antenna, will require a new section of the genus. With it will probably be associated—if my conjecture in Seitz, *Macrolep.* iv. 175 is correct—the enigmatical *chaoticaria* Alph.

## A NEW FAT-TAILED GERBIL (*PACHYUROMYS*) FROM WESTERN ALGERIA.

BY OLDFIELD THOMAS.

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**A**MONG the mammals obtained by Lord Rothschild's expedition into Western Algeria in 1913, of which I gave a list in the NOVITATES,\* there was a young *Pachyuromys* from Aïn Sefra provisionally determined as *P. duprasi*, the Saharan form. But its colour was darker than one would have expected the young of *P. duprasi* to be, and Lord Rothschild has since made efforts to get further "Boubiedas" from that region.

Thanks to the help of M. Victor Faroult, he has now obtained three adult skins from Méchéria, 100 km. north-east of Aïn Sefra, and these he has kindly placed in my hands for examination.

As I had expected from the colour of the young specimen, these adults clearly represent a new and much darker form, which, at Lord Rothschild's suggestion, I propose to name :

***Pachyuromys duprasi faroulti*, subsp. n.**

Size and essential characters, including the skull and teeth, as in ordinary *P. duprasi* of the Algerian Sahara. General colour, however, very much darker, the back between "drab" and "buffy-brown," while *duprasi* is of a bright desert colour, like other Gerbils of the same area. In addition, instead of the colour passing without sharp line of demarcation into the white of the undersurface, the line of division is quite sharply marked, and there runs along just above it a broad band of bright "pinkish cinnamon," less developed on cheeks and flanks, broad and conspicuous on the rump. Ears short, buffy whitish with their extreme edges brown. Hands and feet wholly white as usual. Fine hairs of tail pale cinnamon.

Dimensions of the type :

Head and body (from skin), 105 mm. ; tail, 62 ; hindfoot, 23.

Skull, median length 33·2, greatest diagonal length to back of bulla 36·5 ; condylo-incisive length, 30·7 ; diagonal length of bulla, 17 ; bi-meatal breadth, 20·5 ; upper molar series, 5.

*Hab.* Plateau of Western Algeria. Type from Méchéria, 1,100 m. ; another specimen from Aïn Sefra at the same altitude.

*Type.* Skin and skull, B.M. No. 20. 3. 1. 1. Collected in the summer of 1918 by M. Victor Faroult. Presented by Lord Rothschild. Four specimens in all.

The three forms of *Pachyuromys* now known present remarkably little difference in essential characters, either cranial or external, and should apparently only be considered as local subspecies, of which those from Egypt and the Algerian Sahara seem most nearly allied to each other.

\* Nov. Zool. xx. p. 586, 1913.

The three forms may be distinguished as follows :

A. General colour paler, passing gradually on sides into white of under-surface, the line of separation not marked by a cinnamon band. Edges of ears not darkened.

(a) General colour more or less ochraceous buffy. Algerian Sahara.

1. *P. duprasi duprasi* Lataste.

(b) General colour very pale yellowish buffy. Natron Valley, Lower Egypt.

2. *P. d. natronensis* de Wint.

B. General colour darker, sharply demarcated on sides, and with a cinnamon band along the lower edge of the upper colour. Extreme edges of ears brown. Plateau of Western Algeria.

3. *P. d. faroulti* Thos.

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## CAPTAIN ANGUS BUCHANAN'S AIR EXPEDITION.

## I.

## ON A SERIES OF SMALL MAMMALS FROM KANO.

BY OLDFIELD THOMAS AND MARTIN A. C. HINTON.

BY the kindness of the authorities of the Tring Museum we have been entrusted with the examination of a number of small mammals obtained by Captain Angus Buchanan, while stopping at Farniso, near Kano, North Nigeria (altitude 1,700 ft.), in December 1919, on his way to explore the unknown regions farther north.

These Kano Mammals have proved to be of so much interest and to include so many novelties that we have thought it worth while to give a complete list of them.

The most striking form from a zoological point of view is undoubtedly the little short-tailed Gerbil *Desmodilliscus buchanani*, which represents a genus only discovered in 1917 and hitherto not included in the British Museum collections.

The handsome little carnivore *Pæciliotis rothschildi* is also a discovery of some interest, as it greatly extends the known range of its genus, which has only recently been distinguished from *Ictonyx*.

By the generosity of Lord Rothschild, a set of the species obtained by Captain Buchanan, including the types of new species and subspecies, has been presented to the British Museum.

The only place towards Kano from which the British Museum has hitherto received any noticeable collection of mammals is the Bauchi Plateau, some 160 miles to the south-east, where the missionary brothers G. T. and J. C. Fox collected a number which formed the basis of papers by Thomas in 1911-12.\* Practically all the species, however, prove to be different, and show that the two places are in different faunal areas, of which Kano is strikingly more of a desert character.

1. *Hipposideros caffer tephurus* Cabr.

♂ 28, ♀ 7.

Adults, in normal dark coat, agreeing in every respect with *H. c. tephurus* as defined by Andersen (*Ann. Mus. Genova* [3], iii, p. 12).

Measurements of ♂ and ♀: forearm, 46, 47 mm.; metacarpal III, 33, 34; ear, 13, 13; tail, 28, 25; hindfoot, 8.5, 8.

Skull No. 7: length condyle to canine, 16.9; maxillary width, 5.8; canine to *m*<sup>3</sup>, 5.7.

\* *Ann. Mag. N. H.* (8) vii. p. 457, ix. p. 269, and ix. p. 683.

2. *Pipistrellus culex* Thos.

♂ 5.

3. *Pæciliotis rothschildi* sp. n.♀ 53. December 25, 1919. *Type*.

A small species with rather sharply defined coloration and a small black tail-tip.

Size about as in *P. multivittata*. Fur thinner, less loose and fluffy, so that as a consequence the black and white bands are more sharply defined, almost as much as in true *Ictonyx*, from which we have recently separated *Pæciliotis*. Black lines more absolutely black, less lightened by intermixed white hairs. General pattern quite the same, the  $\phi$ -shaped marking on the back with a well-defined median black line. White frontal band much broader and more conspicuous, its breadth approximating to that of the black muzzle band in front of it, and not much narrower than in the black crown band behind it. Below, on cheeks and interramia it is quite continuous, and nearly equally broad. Ears black with a very slight white edging at tip. Black bands on top of neck continued forward to join the black crown patch; not cut off at the occiput as in other species. Belly with two inconspicuous rows of small white patches running down the sides from the axillary to the inguinal region. Tail not very bushy, mostly washed with white; the terminal hairs tipped with black, as in *P. libyca*, but the black far less in extent.

Skull about as in *P. multivittata*, but rather more robust.

Dimensions of the type skin, measured in flesh:

Head and body, 222; tail, 126; hindfoot, 29.5; ear, 17.

Skull (not yet received from Capt. Buchanan).

A male skull sent home by Major Cock measures: condylo-basal length, 50 mm.; zygomatic breadth, 30; interorbital breadth, 14.5; intertemporal breadth, 11.5; mastoid breadth, 27.5; vertical height, including bullae, 21; palatal length, 24. Length of  $p^1$  on outer edge, 5.9; transverse diameter of  $m^1$  5.4.

This little Zoril is a very well marked and striking species, and constitutes a great extension of the range of the genus *Pæciliotis*, the previously known species occurring from Algeria to Suakin and the Upper Nile. Its original discoverer was Major Hubert Cock, R.A., who obtained a specimen at Zungeru, N. Nigeria, in 1904, but was only able to bring home the skull, which is now in the National Museum and is measured above.

The genus *Pæciliotis* has only been recently founded by us for the members of the *Ictonyx libyca* group, these being distinguished from true *Ictonyx* by various essential characters, of which the most noteworthy are the truncated skull, hypertrophied bullae, and more hairy palms and soles. *P. multivittata* Wagn., referred to above, is better known as *frenata* Sund., but this latter name is certainly a synonym of the former.

We have much pleasure in naming this very handsome little animal after Lord Rothschild, by whom Captain Buchanan's expedition has been arranged, and to whose generosity the National Museum owes a series of all the species obtained, including the types.



4. *Taterillus gracilis angelus* subsp. n.

♂ 18, 19, 26, 40, 51, 58, 80 ; ♀ 35, 38, 52, 79.

Paler than true *gracilis* and with whitish head-markings.

Size as in true *gracilis*. General colour above more buffy, less ochraceous than in that animal. In some instances this is not so marked on the back, but the crown and forehead are in all cases of the paler and more buffy tint. Sides of muzzle white nearly up to eyes. A linear area along above eye and extending back to the ear-opening white or whitish, so that in upper view the whole frontal area is bordered on each side with whitish. Ears buffy. Hands and feet pure white. Tail very pale-coloured, generally whitish above, rarely rather buffy, and white below to the tip, including the underside of the pencil.

Skull as in *gracilis*.

Dimensions of the type :

Head and body, 113 ; tail, 148 ; hindfoot, 29 ; ear, 19.

Skull, greatest length, 33 ; condylo-incisive length, 29 ; palatal foramina, 6.1 ; upper molar series, 5.

*Type.* Young adult male, No. 51. Collected December 24, 1919.

Distinguished from true *gracilis* by paler colour and the whitish lateral areas on the head.

5. *Gerbillus nigeriae* sp. n.

♂ 48, 56, 57, 65 ; ♀ 24, 50, 55, 60, 62, 63, 64.

A small Gerbil allied to the Sudan *G. agag*.

Size about as in *G. agag*. General colour about normal Gerbil colour, not so vivid as in the North Saharan *G. gerbillus*. Cheeks white, a lighter patch in front of the eye, a more marked one behind it, and another behind base of ear. Ears buffy. Fore-limbs white from elbow, hind- from ankle ; feet comparatively short, soles hairy. Tail pale buffy above proximally, the rest white except that there are a few brown hairs in the inconspicuous pencil.

Bullae small, about as in *G. allenbyi* and the small species of *Dipodillus* ; much smaller than in *G. gerbillus* and its allies.

Dimensions of the type :

Head and body, 98 mm. ; tail, 108 ; hindfoot, 23 ; ear, 13.

Skull, greatest length, 28 ; condylo-incisive length, 24.3 ; zygomatic breadth, 15.5 ; nasals, 10.7 ; breadth of brain-case, 13.2 ; anterior palatal foramina, 4.7 ; posterior palatal foramina, 2.6 ; bullae,  $9 \times 5.7$  ; upper molar series, 4.

*Type.* Old female, No. 55. Collected December 25, 1919.

This pretty little Gerbil is no doubt closely allied to the *G. agag* of the Egyptian Sudan, but has longer ears, a tendency to lighter patches in front of as well as behind the eyes, and a buffy whitish instead of brownish upperside of tail, of which the terminal tuft is less developed and has less brown in it.

6. *Desmodilliscus buchanani* sp. n.

♀ 25.

Allied to *D. braueri* of the Egyptian Sudan, but with less enlarged bullae.

Size about as in *D. braueri*, or rather smaller. Fur very soft and fine.

General colour above sandy fawn, the sides little paler than the back, the fur deep slaty blackish at base over most of the buffy area; but in three nearly equidistant regions, one below the ears, one in the centre of the flanks, and one behind the hips, the slaty is absent, and the hairs are white with buffy tips. Undersurface as usual wholly pure white. Cheeks, a prominent patch behind the eyes, and another behind the ears white. Ears short, their proecotote whitish with black edges; metentote blackish but with fine white hairs on it. Forelimbs and hindfeet white; palms and soles apparently as described in *D. braueri*. Tail little more than half as long as the head and body, thinly haired, not pencilled, wholly white.

Skull on the whole not dissimilar from that of *D. braueri*, as shown in the excellent figures published by Wettstein. The bullae are, however, a good deal less swollen, especially anteriorly, where they do not nearly reach the zygomata, nor surpass them laterally. Posterior palatal foramina even larger than in *braueri*, exceeding in area the anterior pair.

Incisors exceedingly narrow, and so bevelled that the strongly marked grooves appear laterally to be halfway along the outer side of the tooth; front surface white or whitish. Molars apparently very similar in structure to those of *D. braueri*, except that the anterior lobe of  $m_1$  is more or less median, instead of diverging outwards.  $M_2$  wholly absent, as in *D. braueri*.

Dimensions of the type:

Head and body, 66 mm.; tail, 37; hindfoot, 15; ear, 9.

Skull, greatest median length, 21.4; condylo-ineisive length, 20; zygomatic breadth, 12.8; nasals, 7; interorbital breadth, 3.8; breadth of brain-case, 10.4; bi-meatal breadth, 12.8; distance between bullae across interparietal, 6; palatilar length, 9.3; anterior palatal foramina, 3.8; posterior palatal foramina, 2.9; diagonal length of bullae, 9.8; front of meatus to back of bullae, 8.5; upper molar series, 3.2.

*Type.* Young adult female, No. 25. Collected December 19, 1919.

This remarkable little Gerbil is a most valuable and acceptable addition to the National Collection, as it represents one of the few genera that we had not previously had. The original species was described by Dr. Wettstein\* from near El Obeid in the Egyptian Sudan, and this is clearly a second species of the same genus, which is related to *Microdillus*, *Desmodillus*, and the other short-tailed Gerbils.

We have named it in honour of its captor, to whose interest in collecting small mammals we are indebted for the many novelties contained in this Kano series.

## 7. *Steatomys cuppedius* sp. n.

♂ 36, 59; ♀ 39, 44, 61, 70.

A small species of the *S. minutus* group, with comparatively long tail.

Size about the same as in *S. minutus* and *loveridgei*, therefore much smaller than the ordinary species allied to *S. pratensis*, and still more so as compared with the only Nigerian species hitherto known, *S. caurinus*. General colour pale drab, without definite darkening on crown or middle of back, though of course

\* *Denkschr. Akad. Wiss. Wien*, vol. xciv. part ii. 1917, p. 115.

the sides are rather paler. Undersurface as usual white, the white area rising well up on the cheeks, and taking in the whole of the forelimbs, but not the legs. Ears of medium length, pale brown, a well-defined white spot at the base of their outer edge, just below the meatus. Hands and feet pure white. Tail decidedly longer than in *minutus* and *loveridgei*, almost wholly white, a few darker hairs on the middle of its upper surface at base and tip.

Skull stoutly built; bullae of medium size; palatal foramina well open, reaching backwards to the level of the middle of the first lamina of  $m^1$ .

Dimensions of the type:

Head and body, 81 mm.; tail, 42.5; hindfoot, 13.5; ear, 13.5.

Skull, greatest length, 21.7; condylo-incisive length, 20.4; zygomatic breadth, 11.4; nasals, 8.6; palatilar length, 9.5; palatal foramina,  $4.2 \times 2.1$ ; upper molar series (worn), 3.5.

*Type.* Female, No. 70. Collected December 29, 1919.

This *Steatomys* is readily distinguishable by its small size and comparatively long tail. On the other hand, the species discovered by Mr. Fox on the Bauchi Plateau—*S. caurinus*—is one of the largest of the genus, with a skull over 27 mm. in length.

#### 8. *Arvicanthis* sp.

♂ 21, 68; ♀ 4, 71, 72, 76, 77.

*A. testicularis* group.

#### 9. *Rattus* (*Mastomys*) sp.

♂ 69; ♀ 47.

#### 10. *Rattus* (*Myomys*) *daltoni* Thos.

♂ 8, 22, 31, 32, 42, 43, 46, 49, 75; ♀ 33, 37, 54.

The majority of these specimens are quite like ordinary *daltoni*, but three of them, nos. 32, 46, and 49, are strongly melanistic, quite different from the rest, and so like large examples of *Mus musculus* that they were at first supposed to be that animal, and then, on closer study, a special local blackish species. But we have now no doubt that they really are melanos of *R. daltoni*, thus giving an example of a somewhat rare phenomenon among wild Muridae, especially among such as inhabit dry countries.

#### 11. *Leggada haussa* sp. n.

♂ 13, 14, 16, 17, 29, 45; ♀ 15, 49, 67.

A small pale gerbil-coloured species.

Size among the smallest of the genus. Fur crisp, not spiny, hairs of back about 3 mm. in length. General colour above pale sandy or gerbil colour, not far from "cinnamon-buff." Sides "light ochraceous-buff." Undersurface as usual pure white, the white including the whole of the forearms, but a line of buffy runs down the back of the legs to the ankles. Ears pale brown; a distinct white spot just below their outer base.

Skull of normal proportions; palatal foramina long; choanæ not specially contracted or pushed backwards. Molars of the highly developed *Leggada* type, with long anterior lobe to  $m^1$ .

Dimensions of the type :

Head and body, 55 mm. ; tail, 37 ; hindfoot, 11·5 ; ear, 9·5.

Skull, greatest length, 17 ; condylo-incisive length, 16·1 ; zygomatic breadth, 9 ; interorbital breadth, 3·2 ; palatal foramina, 4 ; upper molar series, 3.

*Type.* Adult female, No. 67. Collected December 29, 1919.

This tiny mouse is related to the ordinary W. African *L. musculoides* Temm., but is decidedly paler in colour, and always has a distinct white spot at the base of the ear.

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ON THE GENUS *ELACHYOPHTHALMA* Feld.

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

THE genus *Elachyophthalma* was established by Felder in 1861 for a species of the family *Bombycidae* from Amboina which he called *tricolor*. Felder placed the genus in the *Saturnidae* (*Attacidae*), although it struck him as very aberrant, for he says in the footnote to the generic diagnosis, "Genus ab omnibus *Saturniidis* jam habitu discrepans, *Ocinarae* Walker secundum alarum formam fortasse accedens."

Its right place in the system is in the *Bombycidae*, immediately following *Gunda* and *Ocinara*. The sexes are dimorphic and strangely different. The ♂ described in this article are described for the first time, **all the hitherto described** specimens being ♀♀.

The diagnosis of the genus, given by Felder, is as follows :

"Caput parvum, valde retractum. Oculi minimi. Antennae (♀ nae) breves, sat late pectinatae. Lingua nulla. Palpi minuti, caput aequantes. Alae breviter ciliatae, integerrimae, anticae apice obtusae, margine externo convexo, vena subcostali quinque-ramosa (ramo primo ad cellulae extimum oriente), vena discoidali secunda fere in medio venae discocellularis arcuatae oriente, ramis ultimis medianis approximatis, primo remotiore, posticae rotundatae, vena costali ad basin cum subcostali connata, dein costae valde approximata, post hujus medium desinente, vena subcostali longe post cellulae irregulariter clausae extimum ramificante, ramo tertio et secundo mediano valde approximatis. Pedes breves, setosi, tibiae posticorum calcaribus duobus apicalibus minutis. Abdomen (♀ nae) subrobustum, alis posticis dimidio fere brevius, ano subvillosa."

The synonymy of the genus is as follows :

*Elachyophthalma* Felder, *Ber. Kais. Ak. Wiss. Wien* (*Math.—N.W. Class*), vol. xliii. (I) (25–44), p. 32 (1861). Type *tricolor* Feld.

*Laganda* Walker, *List. Lepid. Ins. Brit. Mus.* part xxxii. p. 389 (1865). Type *picaria* Walk.

*Diversoserxus* Bethune Baker, *Nov. Zool.* vol. xi. p. 402 (1904). Type *bicolor* B. Baker.

There are two sharply defined groups of species : 1st, with the ♀♀ more or less golden yellow, resembling in general facies the genus *Gunda*, and with the ♂ large with a diagonal orange band across the hindwings ; 2nd, with the ♀♀ black, white, and yellow, or black and white, or black and yellow, resembling certain groups of *Liparidae* and with the ♂ small and uniform brown. In the latter group must be ranged two aberrant species, of which only ♀♀ are known, of a rufous-brown colour and mimicking almost exactly some species of the *Eupherotid* genus *Cotana*. There are at present known 18 species, as follows :

1. *Elachyophthalma megaxantha* (Walk.).

*Artaxa megaxantha* Walker, *List Lepid. Ins. Brit. Mus.* part xxxv. p. 1913 (1866) (Batchian).

The type now in the Hope University Museum, Oxford, has remained unique.



2. *Elachyophthalma inturbida* (Walk.).

*Leucoma inturbida* Walker, *List Lepid. Ins. Brit. Mus.* part xxxii. p. 345 (1865) (Celebes).

This has also remained unique.

3. *Elachyophthalma kebeae* (B. Baker).

*Gunda kebeae* Bethune Baker, *Novit. Zool.* vol. xi. p. 370. No. 4. pl. iv. f. 32 (1904) (Mt. Kebea).

The series at Tring consists of 1 ♂ and 24 ♀♀. The ♂ was hitherto unknown.

♂. Pectus orange; legs orange-yellow varied with maroon-chocolate; antennae chocolate-brown, pectinations no longer than in ♀; head, thorax, and abdomen chocolate-brown.

Forewing maroon-chocolate-brown, disk sparingly sprinkled with yellowish hairlike scales, an indistinct antemedial, strongly zigzag shadow band; discocellular stigma lunate black-brown; a broad sinuate postmedian shadow band. Hindwing maroon-chocolate-brown, inner one-third sprinkled with yellow hair scales; a broad, oblique, wedge-shaped band of orange runs from base of wing to termen between veins 4 and 6; a trace of a sooty line crosses the orange before termen; the hindwing is very long and ovoid.

1 ♂, 1 ♀ Mt. Goliath, Central Dutch New Guinea, 5,000 ft., March 1911; 1 ♀ nr. Oetakwa River, Snow Mts., Dutch New Guinea, October–December 1910; 6 ♀♀ Kumusi River, N.E. British New Guinea, May 1907; 1 ♀ Good-enough Island, 2,500–4,000 ft., April 1913; 1 ♀ Milne Bay, British New Guinea, December 1898; 1 ♀ Lower Aroa River, British New Guinea, November 1904–March 1905; 1 ♀ Biagi Mambare River, N.W. British New Guinea, 5,000 ft., February 1906 (A. S. Meek coll.);—6 ♀♀ Hydrographer Mts., N. British New Guinea, 2,500 ft., March 1918 (Eichhorn Bros. coll.);—2 ♀♀ Dorey, Dutch New Guinea, June 1897; Kapour, S.W. Dutch New Guinea, January–February 1897; 2 ♀♀ Humboldt Bay, N. Coast Dutch New Guinea, September–October 1892 (W. Doherty coll.);—1 ♀ Ninay Valley, Central Arfak Mts., Dutch New Guinea, 3,500 ft., February–March 1909 (A. E. Pratt coll.).

The amount of dark scaling on the outer quarter of wings and the distinctness of the two transverse dark bands varies much in the ♀♀, and two of those from Kumusi River and one from the Hydrographer Mts. are practically pure yellow. The Dutch New Guinea ♀♀ appear to be generally smaller than the rest, but two British New Guinea ♀♀ are the smallest of all.

Length of forewing, ♂ 22 mm.; expanse, 47 mm.

4. *Elachyophthalma flava* (Joicey & Talbot).

*Gunda kebeae flava* Joicey & Talbot, *Trans. Entom. Soc. Lond.* 1916. p. 384 (Arfak Peninsula).

This is not a form of *kebeae* B. Baker, but a distinct species easily recognised by the brown apical area of the forewing and the cream-grey tornal area of hindwing.

5. *Elachyophthalma keiensis* sp. nov.

♀. Similar to *kebeae* but smaller, differs principally in having the legs golden yellow instead of sooty black, and in the first 3 rings of the abdomen being strongly suffused with yellow on the sides.

Length of forewing, 21 mm.; expanse, 47 mm.

*Hab.*: 3 ♀♀ Little Kei Island, March 1893 (H. Kühn coll.).

#### 6. *Elachyophthalma flavolivacea* (Rothsch.).

*Gunda flavolivacea* Rothschild, *Brit. Ornith. Union & Woll. Exped., Lepid.* p. 101. no. 552 (1915) (Utakwa River).

1 ♀, type, Canoe Camp, Utakwa River, Dutch New Guinea, October 1912 (A. F. R. Wollaston); 4 ♀♀ Upper Setekwa River, Snow Mts., Dutch New Guinea, 2,000—3,000 ft., August 1910 (A. S. Meek).

#### 7. *Elachyophthalma dohertyi* sp. nov.

♀. Head, thorax, and abdomen golden yellow. Forewing canary-yellow, some irregular antemedian and cellular streaks, a postmedian line joining on to the oblique apical one-third, the apical one-third of wing, and the margin dull maroon-brown. Hindwings deep golden yellow.

Length of forewing, 17 mm.; expanse, 37 mm.

*Hab.* 1 ♀ Tenimber Island, June—July 1892 (W. Doherty).

#### 8. *Elachyophthalma meeki* sp. nov.

♀. Pectus and legs sooty brown; head sooty brown; antennae shafts whitish, pectinations sooty brown; thorax pale golden yellow; abdomen sooty grey-brown, anal tuft white on basal half, pale grey on apical half. Forewing semi-vitreous pale golden yellow, apical one-third densely irrorated with grey scales. Hindwing semi-vitreous pale golden yellow.

Length of forewing, 21 mm.; expanse, 48 mm.

*Hab.* 1 ♀ Angabunga River, affl. St. Joseph's River, British New Guinea, 6,000 ft. upwards, November 1904—February 1905 (A. S. Meek).

#### 9. *Elachyophthalma semicostalis* sp. nov.

♀. Pectus and legs sooty black-brown; head sooty brown-black; antennae black; thorax and tegulae orange-buff, rest sooty black-brown; abdomen sooty black-brown, anal tuft white. Forewing thinly scaled sooty black-brown, basal half with an olive tinge; basal three-fifths of costal area orange-buff. Hindwings basal two-thirds sooty black-brown, outer two-fifths orange-golden, fringe black-brown. Underside basal three-fifths of forewing obliquely dull orange-golden, outer two-fifths brown-black; hindwing as above, but outer two-thirds heavily dusted with dark scales.

Length of forewing, 22—26 mm.; expanse, 48—58 mm.

*Hab.* 2 ♀♀, type, Upper Aroa River, British New Guinea, February—April 1903; 1 ♀ Booboomie Aroa River, 2,000 ft., May 1905 (bred from cocoon); 1 ♀ Kumusi River, N.E. British New Guinea, July 1907 (A. S. Meek);—1 ♀ Dorey, Dutch New Guinea, June 1897 (W. Doherty).

The cocoon of this species is most curious; it is flagon-shaped, quite hard, and with a tail-like appendage 11 mm. long and dark brown in colour. It is suspended free in the air by a cord 40 millimetres long attached to the underside of a bamboo leaf.

10. *Elachyophthalma goliathina* sp. nov.

♂. Dark chocolate-brown above ; an indistinct darker zig-zag antemedian line and 2 darker serpentine zigzag postmedian lines more distinct on forewing ; apex of forewing more olive. Hindwing with rufous tinge, abdominal margin on edge with whitish lines.

Length of forewing, 26—28 mm. ; expanse, 56—60 mm.

*Hab.* 5 ♂♂ Mount Goliath, Central Dutch New Guinea, 5,000 ft., February 1911.

11. *Elachyophthalma tricolor* Feld.

*Elachyophthalma tricolor* Felder, *Ber. Kais. Ak. Wiss. (Math.—N.W. Class)*, vol. xliii. p. 32 (1861) (Amboina).

6 ♀♀, incl. type, Amboina (Doleschall ex coll. Felder) ; 5 ♀♀ Amboina, August 1892 (W. Doherty).

12. *Elachyophthalma bicolor* (B. Baker).

*Diversosexus bicolor* Bethune Baker, *Novit. Zool.* vol. xi. p. 403 (1904) (Dinawa) (♀ descr. as ♂ ; Baker's ♀ is a *Lymantrid*).

The amount of yellow at tornus of hindwings and the width and shape of the median band of forewings varies very much.

5 ♀♀ Milne Bay, British New Guinea, January—October 1899 ; 1 ♀ Upper Aroa River, British New Guinea, March 1903 ; Booboomic Aroa River, 2,000 ft., May 1905 ; 1 ♀ Goodenough Island, November 1896 ; 2 ♀♀ Kumusi River, N.E. British New Guinea, June 1907 (A. S. Meek) ; —3 ♀♀ Hydrographer Mts., N. British New Guinea, 2,500 ft., April—May 1918 (Eichhorn Bros.).

13. *Elachyophthalma melanoleuca* sp. nov.

♀. Legs, pectus, head, antennae, and thorax sooty black ; abdomen sooty black, anal tuft white with bright buff centre. Forewing sooty black, a median band broad, curved, white, reaching from inner margin to just below subcostal nervure. Hindwing sooty black, a large, irregular, white triangular patch extends from the abdominal margin to just above vein 5.

Length of forewings, 25 mm. ; expanse, 55 mm.

*Hab.* 3 ♀♀ Humboldt Bay, September—October 1892 (W. Doherty).

14. *Elachyophthalma insularum* sp. nov.

♂. Uniform chocolate-rufous above ; sides of abdominal margin of hindwing with oblique white streaks.

Length of forewing, 17 mm. ; expanse, 38 mm.

*Hab.* 1 ♂ Roa Island, July 1897 (W. Doherty).

15. *Elachyophthalma fergussonis* sp. nov.

♂. Uniform chocolate-brown above ; thorax with a mauve-grey suffusion ; forewings owing to the excavated termen strongly falcate ; hindwing tornus much produced, 3 strong oblique white bands on abdominal margin.

♀. Pectus, legs, head, antennae, and thorax sooty black-grey; abdomen sooty black, anal tuft buff-white below and on sides. Forewing sooty black-grey, a broad creamy white curved band from subcostal nervure to vein 1; area below vein 1 yellow on outer three-fifths. Hindwing basal two-fifths sooty grey-black, outer three-fifths yellow, slightly sprinkled with dark scales; fringe, margin, and outer half of nervures sooty.

Second ♀ has yellow below vein 1 of forewing and outer portion of hindwing much obscured by black scales.

Length of forewing, ♂ 17 mm.; expanse, 39 mm.

Length of forewing, ♀ 26 mm.; expanse, 58 mm.

*Hab.* 1 ♂, 2 ♀♀ Fergusson Island, December 1894—November 1895 (A. S. Meek).

#### 16. *Elachyophthalma infaluteola* sp. nov.

♀. Pectus, legs, head, and thorax sooty brown-black; abdomen sooty brown-black, anal tuft buff-white on sides. Forewing sooty brown-black above, with a broad curved white band. Hindwing above basal half except costa and base pale golden yellow; outer half, costa, and base sooty brown-black. Below the white band on forewing is much extended.

Length of forewing, 23 mm.; expanse, 51 mm.

*Hab.* 1 ♀ Humboldt Bay, N. Dutch New Guinea, September—October 1892 (W. Doherty).

#### 17. *Elachyophthalma doreyana* sp. nov.

♂. Uniform rufous-chocolate above, a small yellow half-moon-shaped discocellular stigma in forewing, and white streaks on abdominal margin of hindwing.

♀. Uniform sooty grey-black; a broad white median band on forewing, more even in width and more strongly curved than in *bicolor* B. Baker, tornal half of abdominal margin greenish buff with black band across centre.

Length of forewing, ♂ 17 mm.; expanse, 38 mm.

Length of forewing, ♀ 26 mm.; expanse, 57 mm.

*Hab.* Dorey, N. Dutch New Guinea, June 1897 (W. Doherty).

*Diversosexus aroa* B. Baker is not an *Elachyophthalma* at all, but a *Lymantrid* of the genus *Nygmia*.

#### 18. *Elachyophthalma cotanoides* sp. nov.

♀. Pectus rufous-orange; legs black, clothed on inner side with orange hair; antennae brown-black; head and thorax rufous-orange; abdomen rufous-orange, anal tuft lead-blue at base, rest greyish white, centre rufous. Forewing chocolate-rufous; basal three-fifths of costal area orange, nervures golden-yellow washed with rufous on inner four-fifths of wing, a darker rufous and yellow double postmedian band, beyond which nervures broadly golden yellow, a patch of golden buff between veins 2 and 4 on inner side of postmedian band.

Hindwing chocolate-rufous, nervures on inner three-fourths slightly yellow,

a somewhat obsolete postmedian band yellow, beyond which the nervures are strongly golden yellow.

Below both wings chocolate-rufous, nervures strongly yellow.

Length of forewing, 25 mm.; expanse, 56 mm.

*Hab.* 2 ♀♀ Upper Setakwa River, Snow Mts., Dutch New Guinea, 2,000—3,000 ft., August 1910 (A. S. Meek).

19. *Elachyophthalma mimiocotana* sp. nov.

♀. Pectus and legs pale rufous washed with buff; antennae chocolate-rufous; head and thorax pale rufous; abdomen pale rufous, a transverse band and anal tuft whitish. Forewing pale rufous, nervures golden buff, a patch occupying most of cell and some indistinct marks below it golden buff, a chocolate-rufous postdiscal band. Hindwing pale rufous nervures and broad postmedian band golden buff.

Length of forewing, 21 mm.; expanse, 47 mm.

*Hab.* 1 ♀ Lower Aroa River, British New Guinea, November 1904—March 1905 (A. S. Meek).

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## THE NEW NAMES IN J. HERMANN'S *TABULA AFFINITATUM ANIMALIUM*.

BY DR. ERWIN STRESEMANN.

IN 1783 Johann Hermann,\* Professor of Natural History at the University of Strassburg, published a rather voluminous work entitled *Tabula Affinitatum Animalium*,† in which an attempt at a natural classification of vertebrates is made.‡ The birds are dealt with on pp. 131 to 235.

Hermann was exceedingly well acquainted with the scientific literature of his time, and it might almost be said that his knowledge of birds was principally derived from the works of his predecessors in ornithology. Among the books quoted by him, Buffon's *Histoire Naturelle des Oiseaux*, 1770-9,§ stands in the foremost rank. As every ornithologist knows, in that great work many representatives of tropical bird-life were for the first time characterized under French vernacular names. Hermann, an adherent of Linné's binomial system, thought it advisable to propose for a good number of these novelties generic and specific terms in the Latin language which are perfectly valid under existing rules, each being accompanied by a reference to the particular species or group in Buffon's work for which the new scientific term was intended. Some of these names have undoubted priority over others in current use. Hermann, it must be remembered, was the first author to introduce scientific designations for some of Buffon's new species. Shortly afterwards a Dutch author, C. Boddaert, followed in his steps by publishing the *Table des Planches enluminées*, now well known to ornithologists through the reprint edited by the Willoughby Society. It has been pointed out by C. W. Richmond|| that Hermann's book has precedence over Boddaert's, the latter having been issued "in December 1783 or later."

Owing to its scarcity, Hermann's *Tabula Affinitatum Animalium* has been rarely taken into account by ornithologists. The earliest reference I find is that by Selater,¶ when quoting the generic name *Myrmornis* Herm. Several years later Cabanis and Heine\*\* unearthed Hermann's specific name *discolor*, which stood ever since for a Madagascar Roller of the genus *Leptosomus*; while Richmond called attention to *Tinamus soui* and the generic term *Lybius*. In

\* A short biography of Hermann is to be found in R. Lauterborn's edition of L. Baldner's *Vogel-, Fisch- und Thierbuch*, Ludwigshafen, 1903, pp. xxxviii-xxxix.

† *Tabula | Affinitatum | Animalium | olim academico specimine edita | nunc | uberiore commentario | illustrata | cum annotationibus | ad historiam naturalem animalium | augendam facientibus | auctore | Johann Hermann—M.D. et Prof. | Argentorati 1783.*

‡ The tract "*Tabula Affinitatum Animalium*, Strassburg 1777," mentioned by Engelmann and Carus, is a dissertation by G. Chr. Würtz, one of Hermann's pupils. This paper, consisting of 16 pages in 8vo, contains no new names.

§ By a singular coincidence, Hermann's copy of that work, presented to him by Buffon's joint author, Guenau de Montbeillard, and provided with numerous manuscript notes by his own hand, passed into possession of the library of the Munich Museum, where it has been frequently consulted by me while compiling the present article.

|| *Auk* 17, 1900, p. 179. A little-known memoir in which the author endeavours to determine every bird figured in Daubenton's *Planches enluminées* is due to Heinrich Kuhl (Buffonii et Daubentonii figurarum Avium coloratarum nomina systematica. Groningen, 1820).

¶ *Proc. Zool. Soc. Lond.*, 1853, p. 276.

\*\* *Mus. Hein.* iv. 1862, p. 57 (Anmerkung).

Ridgway's monumental work *The Birds of North and Middle America*, Hermannian names are quoted in the synonymy of various species.

## NEW GENERIC NAMES.

### FORMICARIIDAE.

**Myrmornis** Hermann *vs.* **Rhopoterpe** Cabanis.

*Myrmornis* Hermann, *l.c.* pp. 188, 210, 235, proposed for "Fourmilier" of Buffon, iv. p. 462. Type by tautonymy: "Le Fourmilier proprement dit" of Buffon, iv. p. 473 = *Formicarius torquatus* Bodd. 1783. Replaces *Rhopoterpe* Cabanis 1847. Type by subsequent designation (Cabanis and Heine, 1859), *Formicarius torquatus* Bodd.

### CAPITONIDAE.

**Lybius** Hermann *vs.* **Melanobucco** Shelley.

*Lybius* Hermann, *l.c.* pp. 217, 235. Type by monotypy, *Lybius guifsobalito* Herm. 1783 (= *Loxia tridactyla* Gmelin, 1789). Replaces *Melanobucco* Shelley, 1889. Type by original designation, *Bucco bidentatus* Shaw, 1798.

### SAGITTARIIDAE.

**Sagittarius** Hermann *vs.* **Serpentarius** Cuvier.

*Sagittarius* Hermann, *l.c.* pp. 136, 165, 235. Type by original designation: "Sagittarius" Boddaert, *Dierk. Mengelwerk*, vol. v. 1770, p. 17 = *Falco serpentarius* I. F. Miller. Replaces *Gypogeranus* Borkhausen, 1797, and *Serpentarius* Cuvier, 1798.\*

## NEW SPECIFIC NAMES.

### PARADISAEIDAE.

**Falcinellus fastosus** (Herm.) *vs.* **Falcinellus striatus** (Bodd.).

*Promerops fastosus* Hermann, *l.c.* pp. 194, 202, based on "Le Grand Promerops à paremens frisés" of Montbeillard, in Buffon, vi. p. 472, has priority over *Upupa striata* Boddaert, 1783.

### DICAEIDAE.

**Dicaeum australe** (Herm.) *vs.* **Dicaeum papuense** (Gm.).

*Pipra australis* Hermann, *l.c.* p. 223, based on "Le Manikor" of Buffon, iv. p. 431, takes precedence over *Pipra papuensis* Gmelin, 1789.

### TANAGRIDAE.

**Arremon taciturnus** (Herm.) *vs.* **Arremon silens** (Bodd.).

*Tanagra taciturna* Hermann, *l.c.* p. 214 note, based on "L'Oiseau Silentieux" of Buffon, iv. p. 304, has priority over *Tanagra silens* Boddaert, 1783.

\* Cf. C. W. Richmond, *Proc. U.S. Nat. Mus.* 53, 1917, p. 622.

## ALAUDIDAE.

*Certhilauda curvirostris* (Herm.) *vs.* *Certhilauda capensis* (Bodd.) \*  
et *Certhilauda africana* (Gm.).

*Alauda curvirostris* Hermann, *l.c.* p. 216, based on "Le Sirli du Cap de Bonne Espérance" of Montbeillard, in Buffon, v. p. 65, antedates *Alauda africana* Gmelin, 1789.

## TYRANNIDAE.

*Tyrannus curvirostris* (Herm.) *vs.* *Tyrannus dominicensis* (Gm.).

*Sitta curvirostris* Hermann, *l.c.* p. 204, is based on "La Grande Sittelle à bec crochu" of Montbeillard, in Buffon, v. p. 475, where we find Sloane's description of an apparently young bird. The name antedates *Lanius dominicensis* Gmelin, 1788.

## FORMICARIIDAE.

*Myrmothera* † *campanisona* (Herm.) *vs.* *Grallaria brevicauda* (Bodd.).

*Myrmornis campanisona* Hermann, *l.c.* p. 189 note, based on "Le grand Béroï" of Buffon, iv. p. 470, antedates *Formicarius brevicauda* Boddaert, 1783.

*Leucolepis arada* (Herm.) *vs.* *Leucolepis musica* (Bodd.).

*Myrmornis Arada* Hermann, *l.c.* p. 211 note, based on "L'Arada" of Buffon, iv. p. 480, antedates *Formicarius musicus* Boddaert, 1783.

*Myrmotherula brachyura* (Herm.) *vs.* *Myrmotherula pygmaea* (Gm.).

*Muscicapa brachyura* Hermann, *l.c.* p. 229 note, based on "Le petit Gobe-mouche tacheté de Cayenne" of Buffon, iv. p. 554, and *Pl. Enl.* No. 831, fig. 2, antedates *Muscicapa pygmaea* Gmelin, 1789.

## COTINGIDAE.

*Procnias averano* (Herm.) *vs.* *Procnias variegatus* (Gm.) et *Procnias nudicollis* (Vieill.).

*Ampelis Averano* Hermann, *l.c.* pp. 211, 214, based on "l'Averano" of Montbeillard in Buffon, iv. p. 457 (based in its turn upon Marcgrave's "Guirapunga"), antedates *Ampelis variegata* Gmelin, 1789.‡

\* *Alauda capensis* Boddaert, 1783, is preoccupied by *Alauda capensis* Linnaeus 1766 (*Syst. Nat.* xii. p. 268, *Alauda* sp. 8), which has been generally overlooked (for instance, by Reichenow, *Vögel Afrikas*, iii. p. 352).

† *Myrmothera* Vieillot, *Anal. d'une nouv. Ornith. el.* 1816, p. 43: "Esp. Béroï, et quelques autres fourmilliers de Buffon"; type by monotypy: *Myrmornis campanisona* Herm. The generic name *Myrmothera* is to be found in Vieillot's tract on the same page as *Grallaria*, hitherto used in the same sense, but has precedence by several lines.—C. E. HELLMAYER.

‡ Marcgrave's *Guirapunga*, the sole basis of both *Ampelis averano* Herm. 1783 and *Ampelis variegata* Gmelin (*Syst. Nat.* i. ii. 1789, p. 841), had hitherto been referred to the Black-winged Bell-bird of British Guiana, Trinidad, and Northern Venezuela. Although—as pointed out long ago by Lichtenstein (*Abhandl. Berliner Akad. a. d. Jahren* 1816–17, publ. 1819, p. 163)—Marcgrave (*Hist. Nat. Bras.* p. 201) described a bird in change from juvenile to adult plumage, there can be hardly any doubt as to its having belonged to *Procnias nudicollis* (Vieill.), the only species of Bell-bird occurring in Eastern Brazil. In spite of the fact that Marcgrave's account is in several respects

*Procnias alba* (Herm.) *vs.* *Procnias nivea* (Bodd.).

*Ampelis alba* Hermann, *l.c.* p. 213 note, based on "Le Guira Panga ou Cotinga blanc" of Montbeillard, in Buffon, iv. p. 454, antedates *Ampelis nivea* Boddaert, 1783.

#### CAPITONIDAE.

*Lybius guifsobalito* Herm. *vs.* *Melanobucco tridactylus* (Gm.).

*Lybius guifsobalito* Hermann, *l.c.* p. 217 note, based on "Le Guifso Balito" of Buffon, iii. p. 471, is much earlier than *Loxia tridactyla* Gmelin, 1789.

#### CORACIIDAE.

*Coracias abyssinicus* Herm. *vs.* *Coracias abyssinus* Bodd.

*Coracias abyssinica* Hermann, *l.c.* p. 197, based on "Le Rollier d'Abyssinie" of Montbeillard, in Buffon, iii. p. 143, antedates *Coracias abyssinus* Boddaert, 1783.

#### ALCEDINIDAE.

*Dacelo novaeguineae* (Herm.) *vs.* *Dacelo gigas* (Bodd.).

*Alcedo novae Guineae* Hermann, *l.c.* p. 192 note, based on Daubenton's *Pl. Enl.* No. 663, antedates *Alcedo gigas* Boddaert, 1783.

#### CAPRIMULGIDAE.

*Chordeiles acutipennis* (Herm.) *vs.* *Chordeiles acutipennis* (Bodd.).

*Caprimulgus acutipennis* Hermann, *l.c.* p. 230 note, based on "L'Engoulevent acutipenne de la Guyane" of Montbeillard, in Buffon, vi. p. 547, antedates *Caprimulgus acutipennis* Boddaert, 1783.

#### MICROPODIDAE (Apodidae).

*Chaetura martinica* (Herm.) *vs.* *Chaetura acuta* (Gm.).

*Hirundo martinica* Hermann, *l.c.* p. 229 note, is based on "L'Hirondelle à queue carée de la Martinique" of Montbeillard, in Buffon, vi. p. 553, who refers to "L'Hirondelle de la Martinique" of Brisson, *Ornith.* ii. p. 499. The name has priority by several years over *Hirundo acuta* Gmelin, 1789.

#### CUCULIDAE.

*Saurothera longirostris* (Herm.) *vs.* *Saurothera dominicensis* Lafr.

*Cuculus longirostris* Hermann, *l.c.* p. 186, based on the "Tacco" of Montbeillard, in Buffon, vi. p. 402, antedates *Saurothera dominicensis* Lafresnaye, 1847.

incorrect (e.g. he erroneously took the bristle-like feathers on the naked throat for fleshy wattles !), the name *A. averano* cannot well be avoided as being the oldest for the East Brazilian Bell-bird and must be used in place of *P. nudicollis* (Vieill.) 1817, of which *A. variegata* Gmelin becomes likewise a synonym.

*P. variegata* auct. (nec Gmelin) is entitled to the name *Procnias carnobarba* (Less.), since Lesson (*Traité d'Orn.* livr. 5, end of 1830, p. 365, pl. 52, fig. 1) described and figured s. n. *Averano carnobarba*, an adult male secured by Robin on the island of Trinidad. A little-known synonym thereof is *Procnias lumbriciferus* Gistel (in Gistel and Bromme, *Handb. Naturg. aller drei Reiche, Stuttgart*, 1850, p. 295: "in Wäldern Brasiliens," *errore* !), accompanied by an excellent description of both sexes. Neither of these names is mentioned in the synonymy of *C. variegata* in Volume xiv. of the *Catalogue of Birds in the British Museum*.—C. E. HELLMAYR.



## OTIDIDAE.

**Houbaropsis indica** (Herm.) *vs.* **Houbaropsis bengalensis** (Gm.).

*Otis Indica* Hermann, *l.c.* p. 138, based on "Le Churge ou l'Outarde moyenne des Indes" of Buffon, ii. p. 56, antedates *Otis bengalensis* Gmelin, 1789.\*

## SYNONYMS OF HERMANN.

*Gracula Martinus* Hermann, *l.c.* p. 195 note, ex Buff. iii. p. 423, "le Martin" = **Acridotheres tristis** (L. 1766).

*Paradisaea sexfilis* Hermann, *l.c.* p. 166, ex Buff. iii. p. 171, "Le Sifilet ou Manucode à six filets" = **Parotia sefilata** (Penn. 1781).

*Lanius Gonolek* Hermann, *l.c.* pp. 179-180, ex Buff. i. p. 314. "Le Gonolek" = **Laniarius barbarus** (L. 1766).

*Oriolus albiatriatus* Hermann, *l.c.* p. 204 note, ex Buff. iii. p. 197, "L'Etourneau des terres Magellaniques ou le Blanche-Raie" = **Trupialis militaris** (L. 1771).

*Oriolus striatus* Hermann, *l.c.* p. 204 note, ex Buff. iii. p. 265, "Le Lorient rayé" (based in its turn upon Brisson, ii. p. 332, "Le Lorient à teste rayée") is indeterminable. It invalidates the later *Oriolus striatus* Quoy and Gaim. 1830, which has to bear the name **Oriolus granti** (Mathews) (*Ibis*, 1916, p. 297).

*Loxia fusca* Hermann, *l.c.* p. 221 note, ex Buff. iv. p. 388, "Le Bouveron" = **Sporophila lineola** (L. 1758).

*Loxia flabellicauda* Hermann, *l.c.* p. 186, ex Buff. iii. p. 463, "La Queue en Eventail" = **Guiraca caerulea** (L. 1758).

*Fringilla ministra* Hermann, *l.c.* p. 220 note, ex Buff. iv. p. 86, "Le Ministre" = **Cyanospiza cyanea** (L. 1766).

*Loxia scandens* Hermann, *l.c.* p. 216, ex Buff. iv. p. 398, "L'Hambouvreux" = **Passer montanus** (L. 1758).

*Pipra longicauda* Hermann, *l.c.* p. 429, "Le Plumet blanc" = **Pithys albifrons** (L. 1766).

*Tanagra Misisippica* Hermann, *l.c.* p. 214 note, ex Buff. iv. p. 252, "Le Tangara du Mississipi" = **Piranga rubra** (L. 1758).

*Tanagra mancipium* Hermann, *l.c.* p. 211 note, ex Buff. iv. p. 263, "L'Esclave" = **Dulus dominicus** (L. 1766).

*Larus maximus* Hermann, *l.c.* p. 146 note, description of a Herring-Gull, captured in the neighbourhood of Strassburg in September 1772 = **Larus argentatus** Pont. 1763.

*Emberiza Mytilene* Hermann, *l.c.* p. 222 note, ex Buff. iv. p. 322, "Le Mitilene de Provence" = **Emberiza rustica** Pall. 1776.

*Motacilla pyrenaica* Hermann, *l.c.* p. 226, based on the "Pégot," excellently described by de Lapeirouse in Rozier's *Observations sur la Physique*, xiii. 1779, pp. 422-4 = **Prunella collaris collaris** (Scopoli, 1769) ex *Pyrenaicis montibus*.

*Psittacus Arimanon* Hermann, *l.c.* p. 182, based on the "Arimanon" of Buffon, vi. p. 175 = **Coriphilus peruvianus** P. L. S. Müller, 1776.

\* *Otis indica* Herm. 1783 precludes the further usage of *Otis indica* Gmelin, 1789 (*Syst. Nat.* i. ii. p. 725), for which the next available name is *Otis aurita* Latham (*Ind. Orn.* ii. 1790, p. 660). The species has therefore to stand as *Sypheotis aurita* (Lath.) in place of *S. indica* (Gm.).



*Anas melanocephala* Hermann, *l.c.* p. 161 note, description of a specimen which had been ascertained by dissection to be a male, captured in January 1774 (near Strassburg ?) = **Bucephala clangula** (L. 1758), description of a male in juvenile plumage.

*Anas Leucotis* Hermann, *l.c.* p. 161 note, description of a specimen actually examined by the author = **Nyroca marila** (L. 1761), description of the female.

*Alcatras* Hermann, *l.c.* pp. 155, 235, is based on the "Alcatraz" in Rozier's *Observations sur la Physique*, xiv. 1779, p. 475. The description of that bird, "translated from the Italian," appears to have issued from the pen of G. T. Molina. This author gives Alcatraz as the Spanish name of *Pelecanus Thagus* Molina.\* *Alcatras* Hermann, 1783, becomes, therefore, a synonym of *Pelecanus* Linnaeus, 1758; its type is **Pelecanus thagus** Mol.

\* Cf. Molina, *Saggio sulla storia naturale del Chili*, 1782, p. 240.

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# NOVITATES ZOOLOGICAE.

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## SPHINGIDAE OF PARA, BRAZIL.

EARLY STAGES, FOOD-PLANTS, HABITS, ETC.

BY THE REV. A. MILES MOSS, M.A., F.Z.S., F.E.S., BRITISH CHAPLAIN OF PARÁ.

(Plates I-XI.)

### INTRODUCTION.

THE present treatise, though published under the auspices of Lord Rothschild and Dr. Jordan in the NOVITATES ZOOLOGICAE of Tring, must be regarded as a sequel and continuation of my *Sphingidae of Peru*, produced by the Zoological Society of London in their Transactions for 1912 (vol. xx. part ii. No. 1).

It was due to the warm appreciation of the results of my self-imposed task on the part of certain entomological friends in Tring and London that this small work was privileged to see the light. My information at that time was accumulated during a three years' sojourn in Lima, from which I made occasional expeditions over the Andes into the hilly, well-watered, and thickly-forested region of the Interior as far as the river Perené. The volume comprises notes relating to 47 species, with many coloured figures of the early stages of some 22 which had come under my direct observation and been verified, together with a map of the limited district which I had the opportunity of exploring. The investigation of the early stages of Lepidoptera in general has for many years been to me the special charm of collecting, even in England, where, by comparison with distant Peru and other parts of the tropics, almost everything relating to larvae and food-plants is already known. An opposite state of things, however, prevails in S. America, where the large majority of its splendid butterflies and moths are known only as regards general locality in the winged condition. Little by little, at any rate, the different species of kindred or widely-separated groups have been falling into line; and though in so vast a field of research the work of an individual for a lifetime can never be more than a measured contribution, I am now in possession of voluminous notes and figures relating to the larvae and pupae of *Papilios*, *Morphos*, *Caligos*, other butterfly genera such as *Heliconius*, *Danais*, *Ithomia*, *Prepona*, *Catonephele*, *Ageronia*, etc., the *Notodonts* with their wondrous diversity in larval form, the *Bombyces*, *Saturniidae*, and *Limacodidae* with their extraordinary spined and stinging caterpillars; and last, but not least in interest, the elegant and highly-developed *Sphingid* family.

My hunting-ground, though remote from the former, and separated from it by some 3,000 miles, is nevertheless part of the same continent, and possesses a climate and a vegetation widely different from the Pacific Coast, but not altogether dissimilar from the Interior of Peru. The continuity, therefore, of my former investigations has been emphasized by the recurrence of species of wide distribution, and this to an even larger extent than I had anticipated.

Common insects among the Hawk-moths, like *Herse cingulata*, *Pseudosphinx tetrio*, *Erinnyis ello*, etc., are known to have an enormously wide range in the American continent, reaching in some instances from Canada to Argentina, and from the Pacific Ocean to the Atlantic, inclusive of the West Indian Islands; but I have been not a little surprised, when tabulating my Pará species, to renew acquaintance with so many old friends. In *Sphingidae* alone I find that no fewer than 25 out of the 47 Peruvian species occur here in greater or less abundance. Now, after some eight years' residence in the immediate vicinity of the city of Belem (Pará), my total list of Hawk-moths has just reached 90 distinct species—a remarkable number when contrasted with the mere 30 which the climate of Europe can support, or the 912 or so known to the entire world. In addition to the 22 species of which I have been fortunate enough to find the larvae, figure them, and more or less study their habits and food-plants according to the opportunity, 17 of this number being common to Pará, I am now similarly informed in regard to at least 46 other species, not hitherto obtained or remaining unidentified. The larvae, generally at full growth, sometimes also in the earlier instars, together with a few characteristic pupae, have been figured life-size in water-colours, with all the patient care and faithfulness to detail which I could command in the matters of size, form, and colour. The pupae in many instances throughout an entire genus, such as *Xylophanes*, approximate to a certain standard or generic pattern, and the highly-important differentiating characters between allied species, such as those supplied by the form of the cremaster, are too minute to portray except by photography or by enlarged diagrams. For other reasons I have been obliged largely to eliminate the portrayal of the food-plants.

Judging by numbers alone it would seem that Pará is by far the richer field for *Sphingidae*, and this of course is true if balanced against Lima, which is merely an oasis of green on a desert coast.

But when a comparison is made between the mouth of the Amazon and its head-waters in the region of Chanchamayo and Perené, it is by no means so easy to form a just relative estimate. Wallace and Bates discovered many butterflies in Pará, but they never even saw many of the Hawk-moths which I find commonly here, and for the simple reason that in their day there were no electric arc lamps to attract them.

There are none in the wild Interior of Peru to-day, and the wonder is, looking back at those hasty mule-back trips of ten days at a time, and not always at the best time, that one caught so much. Except for stray moths taken by day, or subsequently bred from larvae on those rare occasions when all conditions were favourable, the only attraction after dark in those parts was a solitary kerosene lamp.

Here, in Belem, conditions are very different: we live in the midst of swamp and forest unending, 100 miles from the open sea, with the great muddy, tidal river in front of us, intersected by innumerable islands, and each one clothed to

the water-line by an impenetrable tangle of trees and creepers. We live also in a blaze of electric light nowadays, and from far and near come the moths under the baneful influence of our nightly illuminations; and this to such an extent that what was once superabundantly common when the electric plant was first installed about 1895, is now comparatively rare, through a process of decimation, as I suppose, within the area of light's attraction. Whether my explanation is adequate to account for the diminution I cannot say for certain, but many bear witness to the fact that there has been an obvious decrease in the number of corpses beneath every brilliant arc lamp since 1908, when the road-cleaners would sweep them up by the bin-full at a time.

It is true that *Erinnyis ello* is still so common in the early months of some years, that on certain occasions it is no exaggeration when I say that I have counted over 200 at a single lamp. Thick, like a swarm of bees, they definitely obscure the light as they swirl around the globe or momentarily settle upon it. The insulated wires are practically invisible, so thickly are they coated with moths, giving them the appearance of being tattered to rags. On every adjacent object does *ello* settle, walls, palings, tree-trunks, foliage, and even human beings, while many lie squashed on the pavement beneath the feet of pedestrians or by vehicles in the road. Of no other species, however, in these parts can the same be said; and having now lived in Pará for considerable periods on and off since 1911, and having worked the lamps at all times of year and searched every available part of the matto surrounding the city for larvae and imagines, I have come to the fixed conclusion that we possess an immense and extensive entomological fauna, corresponding to the vegetation, but that hardly anything is really abundant. Species in plenty but paucity of individuals is a characteristic of Belem, as opposed to other parts of the States of Pará and Amazonas up-river, where butterflies like the *Pieridae*, for example, may sometimes be caught, 40 or 50 at a single stroke of the net.

These remarks apply with special force to such families as the *Erycinidae* among the butterflies, and to the *Syntomidae*, *Limacodidae*, and *Notodontidae* among the moths, and they are no less applicable to the *Sphingidae*. Statistics in the matter of relative abundance are apt to be erroneous and to defy conclusions, but my experience seems to suggest a fairly equal grouping of the Pará *Sphingidae* under four heads, as follows: Single specimens or very rare; rare or of spasmodic occurrence; hidden but not rare; common and occasionally abundant; about 22 in each group.

It is worth while to examine, and as far as possible to co-ordinate, the various causes which make for the abundance or scarcity of particular species; for apart from the disturbance of nature's balance by the introduction of brilliant and attractive lights, for which man is responsible, there are many important factors over which he has little or no control, and which claim the attention of every observant person.

Let us consider first the species which are abundant, and see why this is probably the case. Our conclusions rank under three heads:

(1) General hardiness and adaptability of larva to withstand various climates and thrive on various food-plants.

(2) The abundance and wide distribution of suitable plants.

(3) The comparative or total absence of parasitic attack.

All these conditions appear to be fully satisfied in the case of *ello*, which is



doubtless the commonest *Sphinx* in the American continent, and so can still afford, better than any other, to lose a few millions periodically at electric lamps. Only once in numerous examples have I found it affected by dipterous parasites. The next point to notice is that *Euphorbiaceae*, with which the larva is chiefly associated, is an immense and widely-distributed Order of plant-life, and also that *ello* largely facilitates matters for itself by being able to feed freely on very many species belonging to different genera of that order. My idea, in short, then, is that the insect is hardier, and has a wider range of distribution, than any one species of those plants which sustains it as a larva; and as one after another fails when the tropics are exchanged for the colder regions, its place is taken by some other plant which provides an equally nutritious pabulum. The chief means of sustenance in the Pará region for *ello* are apparently two in number, the rubber tree (*Hevea brasiliensis*), for which Pará is famous, and the mandioca (*Manihot utilissima*), for which it is hardly less so, providing, as it does, the native substitute for bread and starch from here to the coast of Peru. Even with this abundance others are occasionally preferred, and thrice, to my surprise, have I discovered *ello* associating itself with the entirely distinct Order *Sapotaceae*, and feeding on the leaves of "abiú" (*Lucuma caimito*). In two of these cases, being half-grown, the larvae stoutly refused to eat anything else. One died of starvation through my too-prolonged experiment with other leaves; with the other I gave way, hoping that possibly I had discovered the larva of *E. lassauxi*, a totally distinct creature associated with *Asclepiadaceae*, but this I only learnt three years later. It was carefully figured to note subtle points of difference, but on emergence, to the banishment of my hopes, it produced but a perfect and typical *ello*. In Barbados *ello* feeds on the deadly "manchineel" (*Euphorb.*); and in the Lima district it was more often found feeding on *Euphorbia pilulifera* and *heterophylla*, *Cnidioscolus fragrans*, *Curcas purgans*, and *Poinsettia pulcherrima*.

Continuing this line of research, we pass briefly to such common and widely-distributed species as *Herse cingulata*, the Convolvulus Hawk of America, the larvac of which thrive equally well on the cultivated sweet potato of these parts, with its abundant wild variety called "salsa," as they do on any species of true bind-weed from north to south and right across the continent. This species, again, seems to enjoy complete immunity from parasitic attack.

A few other examples may be cited, e.g. *Protoparce sexta*, a *Solanaceous* feeder, which is very widespread, and is as much at home on the potato and tomato of North America as it is on the tobacco, the capsicum peppers, or the "jurubebas" of hotter parts. Within the great Order of *Solanaceae*, though more especially in the genus *Solanum*, there is never the lack of appropriate fodder; and once again I have only occasionally found this species troubled with dipterous and hymenopterous parasites. *Pseudosphinx tetrio*, an *Apocynaceous* feeder, though limited to *Plumiera*, is never at a loss in establishing a large gregarious brood of larvae, which will as readily defoliate the Frangipanni trees adorning the gardens of the West Indies and Brazil as the many still undescribed species of that genus, known here as "sucuuba," and ranging throughout all the more open parts of these tropical forests. Never have I discovered any parasite which attacks this most showy and abundant caterpillar.

*Pachylia ficus*, another very common and widely-distributed species associated with *Moraceae*, I recall for the particular purpose of showing

that her adaptability to environment gives us at least one of the causes of her abundance, and affords a fine example of the working of an unerring instinct in regard to the distribution of her ova. I have learnt some botany from her at first-hand, and also a new riddle, which I may perhaps be pardoned for quoting as a good instance of appearance deceiving the eye, viz.—When is a willow tree not a willow tree?—When it is a ficus! Such a tree grows in our Botanic Garden in Pará, and was at first quite erroneously recorded by me as a *Salix*. After repeatedly finding the caterpillar of this species on it and on many other trees of very distinct form and foliage, if I have not yet learnt how many different species of *Ficus* there are, I at least realize how deep and sound were the lines of our scientists, who, under the titles *Moraceae* and *Urticaceae*, were bold enough to group with *Ficus* such dissimilar trees as *Artocarpus* and *Cecropia*. On representatives of all three genera the larvae of *Pachylia*, especially *P. syces*, are often found feeding.

My friend and botanical instructor of former days in Pará, Dr. Huber of the Museu Goeldi, and a botanist of the very first rank, was greatly impressed with this interesting sidelight on our parallel studies.

In their own limited degree, and in accordance with their particular needs, there are no finer botanists in the world than the moths, nor any such savants in the minute details of organic chemistry; for, by methods beyond our comprehension, they know exactly where to lay their eggs, and of what particular shade of composition those leaves must be to admit of nourishing their progeny, or of even providing them with their first green meal. *P. ficus* is sometimes, but rarely, stung by the same small hymenopterous fly which, in Pará, too frequently brings about the destruction of its congener, *P. syces*.

We have instanced enough by way of example, taking a few of the commonest species, to show, I hope correctly, why they are common.

Everything is a matter of degree, and the conditions, favourable or unfavourable to the life of a species, would appear to differ in every case. In regard to the scarcity of many species, I have occasion throughout to point to causes which are traceable, and which, whether acting singly or in combination, are obviously enough to bring about the rarity of rare species, and reduce others to well-nigh the point of extinction.

Before, however, considering these causes, there are other points in regard to abundance and wide distribution of which we must take account. The first is that such species as *ello*, *cingulata*, *sexta* and *tetrio* among those instanced, as well as many other moderately common forms like *Pholus labruscae*, are known to be long and strong fliers, as evidenced by their capture at sea and on the cold inhospitable heights of the Andes, far away from the localities and plants which gave them birth. This propensity of wandering, though it must result in the destruction of scores of individuals, betokens an extraordinary power of endurance, and exhibits an inborn tendency to spread and to establish when conditions are favourable. That this has been the case with many, one cannot doubt; that it fails of its purpose in other instances, and more by faulty climatic conditions than by any shortage of food, is equally apparent. This is well illustrated in the case of *P. tetrio*, which was sometimes intercepted in its long flights over the Andes by the electric lights of Cerro de Pasco at an altitude of nearly 15,000 feet above sea-level, but which also frequently reached the coast from the Interior. There in the neighbourhood of Lima, the Frangipanni, its



food-plant, was common in gardens, but the conditions were chill and gloomy, and never once could I discover its very obvious and easily-found larva, or induce a captured female to lay eggs.

In England, to take a parallel case, we never tire of regretting that *Euphorbia* on the south coast and *Galium* on the sandhills of Lancashire are not enough in themselves to induce the lovely *Celerio euphorbiae* and *C. gallii* to take up their residence among us permanently.

Returning to the question of abundance, an important feature to note is the greater hardiness sometimes observable in the larvae of many common species over rarer forms, the latter appearing to be more delicate and fastidious and susceptible of attack. Often have I noticed that a rare species, though provided with suitable food, will in many cases absolutely refuse to eat, if sealed up within the confines of a biscuit-tin; whereas common things like *sexta* will finish off every scrap of leaf and stalk, and manage to pupate somehow, though deprived of nature's bounty. Fortunately, nature can provide no such harsh parallel, but even in the wild state caterpillars, like other creatures, have troubles many and various to meet; and the extra degree of hardiness to withstand every wind that blows may quite conceivably spell the salvation of the individual and the increase of its kind.

The percentage, too, in the death-rate of pupae, considered in relation to the brevity or longevity of the pupal period, is another factor of importance to note. Under artificial conditions this is certainly a very variable quantity with different species, but for that very reason it is difficult to generalize and to say exactly what happens in nature, for better or for worse. Undoubtedly here, as with larvae, some are more delicate, and are more readily influenced for weal or woe than others by conditions of humidity and temperature.

The last point I wish to make in connection with the abundance of those species which we have been considering, and many others almost equally common, is that in proportion as they are common, due allowance being made for the limitations imposed by climate, range and extent of food-plant, general hardiness, etc., so are they comparatively free, not from outside foes, but from that still more serious and deadly complaint, parasitic attack in the early stages, which is generally irremediable. By this I do not, of course, mean that their abundance gives them any such immunity, but that the immunity which they enjoy in this respect is at least one of the prime causes of their abundance. This I take to be a most important consideration, and though even here there are exceptions, I am convinced that the converse is equally true, viz. that the rarity of many rare species, where the struggle for existence is obviously very severe, is primarily due to excess of parasitic attack in the early stages of those species. Doubtless all this is governed by the laws of nature, and summed up under the principle known as the "Survival of the Fittest," but I am bound to confess that I do not like the term, when thus applied.

If, at any rate, my views are sufficient to explain why many species still remain common, we cannot deny that many others are rare; and in facing the problem of rarity, which we must now do, and in searching for its causes, it is well perhaps to take the least important first and deal with the rest in an ascending scale.

## CLIMATIC CONDITIONS.

The weather must, of course, come in for its fair share of blame, but Pará would not be Pará without it, and all things considered we enjoy a really wonderful climate, the advantageous conditions which it produces being far in excess of its drawbacks. (See General Conditions, p. 358.) My accusations, therefore, under this head shall be limited to the following: Torrential downpours of rain, preceded by sudden sharp gusts of wind of short duration, which undoubtedly dislodge various larvae, and bring to their certain doom many that have only just emerged from the egg; floods, which must occasionally drown ill-located larvae and subterranean pupae, but to what extent it is impossible to estimate; excessive humidity, which frequently, even in nature, produces fungoid growth to the destruction of pupae with or without cocoons; excess of direct sunshine, which in certain localities burns pupae to death, or deprives larvae of pabulum by drying up the food-plant. Such troubles, however, in Pará do not amount to more than, if as much as, they do in other parts of the world, nor do they apply in any special measure to the *Sphingidae*. In fact, my experience inclines me to the belief that even collectively they constitute the least of the destructive forces which act and react upon the forms of life under consideration.

## PREDATORY FOES.

A far greater responsibility undoubtedly rests with certain predatory foes, which comprise a woefully long and varied list. To illustrate this, I can but catalogue a number of individual instances which have come under my direct observation, as follows:

(1) The "bemtivi" or golden tyrant, which is frequently seen assisting the lamp-cleaner by consuming Hawk-moths as well as the smaller fry left from the previous night. Not content with mouthfuls in moderation to be found in genera like *Epistor*, *Perigonia*, and *Sesia*, he sometimes has the audacity to sample with his damaging beak the large and showy representatives of *Protambulyx*, *Amplypterus*, *Oryba*, and *Pholus*.

(2) The "bacuráo" or night-jar, which carries on the same murderous game at night, waiting silently on the ground just outside some illuminated area in an open place, and rising to snatch the moths as they are drawn to the light.

(3) Other insectivorous birds, small and great, and too numerous to mention, of such families as *Formicariidae* and *Dendrocolaptidae*, whose life's occupation is to hunt insect-eggs and caterpillars on leaf, stem, and trunk, and peck open cocoons. Though I cannot here cite special instances, it can hardly be doubted that young *Sphingidae*, especially when green, perish thus in considerable numbers.

(4) Coming to domestic regions, the barn-yard fowl, the cat, and that particular type of pedestrian whose mind is as heavy as his boot, I rank in one class, though they are not all birds. To their united and vandalistic efforts in the immediate vicinity of dwellings must be ascribed a very considerable shortage in those forms of living creatures which were surely meant to adorn the earth, and which are just as harmless as they are beautiful. Ignoring the obvious ravages of the hen and her brood, the chief victims are large *Sphingid* moths,

"played" to death beneath every other street-lamp at night by cats, whose more normal avocations in life are temporarily suspended. Then come the great larvae of such genera as *Cocytius*, *Protoparce*, and *Pachylia*, which from their size, movement, and vivid coloration on the dead earth or pavement are very conspicuous objects, as they wander in search of suitable places to pupate. The destructive instinct at once comes uppermost, and is unfortunately not limited to children and school-boys. Though in many cases not in the least like snakes, they are, of course, always taken for them, and *must* be squashed or cut in half.

(5) Of insect-eating animals I cannot speak from personal knowledge, but from the way in which small monkeys greedily devour cicadas, it is not unreasonable to assume that *Sphingidae* have foes even from this quarter.

(6) Then come the bats, whose ravages are but too well known. Though *Vampirus* is mainly a fruit-eating genus, and others have a decided taste for human and animal blood, the nightly destruction which prevails among the winged creation in general, *Sphingidae* included, must be enormous beyond computation. On favourable evenings in the main public square of Pará, the central pavement of which is adorned with a monument and four brilliant arc lamps, I have seen as many as twenty very large bats at the same time, sweeping in and out of the illuminated area, twittering vociferously in chorus and devouring everything wholesale. I have many times seen one actually cling for a brief moment to the wire hanging in proximity to the globe, gobble an *ello* or two, disturb half a dozen others with its wings, and decamp.

(7) Under the general head of reptiles, but especially lizards, the destruction of *Sphingidae*, as of other families, is again enormous. The electric lamp is once more the rendezvous for toads and frogs. There are huge olive-brown, fat-bellied toads sitting beneath and ready to swallow up anything that is unwary enough to alight on the ground, or being dizzy, and perhaps singed, falls within the range of their leap. There are small frogs of several tree-climbing varieties, which I have frequently seen not only elinging to the smooth iron of the post, but on occasion quietly enjoying their suppers in line with forty or fifty Hawk-moths upon the insulated wire leading to the globe.

Never, surely, was there such a place as Pará for lizards in the matters of size, abundance, and variety. They are to be found in every part of the matto, wet or dry, in every garden, on every wall, and even in every house; for a small sand-coloured and semi-domesticated cousin, named "osga" (*Hemidactylus*), is suffered to abide with us, because he is fond of mosquitos. "Osga" also sits upside-down on enamelled lamp-reflectors at night and waits for moths. I counted five the other day in passing a dozen street-lamps. But the point to remember above all is that all lizards and snakes, so far as I am aware, eat caterpillars and chrysalides, morning, noon, and night, and have apparently solved the knotty problem most satisfactorily to themselves, that they of all creation are the fittest to survive. The "acapú" palings which line the roads and gardens of Pará are largely tressed with creepers like *Cissus*, *Echites*, *Davilla*, etc., and they are also thronged with lizards, untiring in their quest for food. It is here that many heedless Hawk-moths of such genera as *Pholus*, *Epistor*, *Aleuron*, and *Leucorhampha* deposit the greater portion of their ova; for it is here that I have periodically been successful in securing a first innings at the egg-laying season.



Assiduous and prolonged searching results in the discovery of many ova and young larvae of these species on the out-branching tendrils and freshly-expanding leaves, but not for long will you find them there. A number of empty egg-shells and recently nibbled leaves too often betoken only that the devourer has been devoured. A fortnight later you will be fortunate if you discover a single caterpillar that had somehow escaped detection, and become too tough and fat or too snake-like to be eaten; for in such positions the waste must be enormous, and it is clear that only the merest fraction of this potential life can ever reach maturity. Considering the perpetual depredations of lizards alone or in conjunction with other foes, the marvel is not that the majority of butterflies and moths are scarce hereabouts, but that many species which are rare survive at all. Possibly some have disappeared by this agency, and I presume that we shall none of us ever be any the wiser. Possibly they represent some of the missing links in that great chain of life of which to-day we behold but remnants in certain isolated units which seem to hinge-on to nothing and to defy classification.

(8) Next come predatory insects. I use the term freely for convenience, to include all sorts of creeping, crawling, and flying creatures, which in turn bite, sting, and devour lepidoptera in all stages of life. Prominent among these are *Arthropods* such as centipedes and spiders, small and great, as well as lice, beetles and cockroaches, locusts and *Mantidae*, wasps and other flies, and last, but by no means least in effect, hordes of ants, whose ravages, whether conducted singly or by universal onslaught according to the habit of the species, certainly represent wholesale destruction on the grandest and most distressing scale.

For the scavengers of refuse we have nothing but approval, but Pará is so richly furnished that it has ants to eat everything, alive or dead, and half one's time is wasted in the futile attempts at warding off their insistent attacks. Besides the ants which fill your sugar-basin, eat your fruit, drown themselves in your drinks, and invade your entire food-supply, there are ants to consume not only your dried insects but living larvae and the young brood just out of the egg, which have been carefully sleeved-out on some growing plant. The sleeve-net is at once appropriated as the suitable locality for a new nest, with the larder already stocked at close quarters.

On other occasions you import choice plants into your garden to serve in larvae-rearing, and during the night they are denuded of every leaf by a train of big red "saüba" ants, whose earthworks may be in some one else's garden a hundred yards or more away. A very large solitary black ant known as "formigão" (*Euponera*) is often met with on the matto paths with a moribund caterpillar between his jaws. In short, there is not a place, not a tree-trunk nor a leafy bough, that is not the resort of one species or another of the ant world. They literally swarm everywhere, and are responsible for immense destruction.

The attack of a common black predatory wasp has recently been very clearly demonstrated to me, still further explaining why the healthy young caterpillar of yesterday is no longer to be found on his perch to-day. In an attempt, which should otherwise have succeeded, to introduce a hardy species of *Citheronia*, found commonly at Pernambuco but unknown here, I reared some 300 young larvae from the egg. These were kept in the protection of my bathroom until they had reached the second or third instar, and were an inch

or more in length. Then, considering them tough enough to withstand the elements, and sufficiently heavily spined to ward off predatory foes, I placed them out in a large net open at one end upon a guava tree with profuse leaves in my churchyard. Three days later my 300 were reduced to 3 by this miserable black thief, several specimens of which were seen still exploring the boughs, while one was actually inside the net munching at mangled remains. As no further trace of the rest could be found, I presume that the majority had been carried off to the nest.

Thus does the struggle for life continue, and I know of no place which offers greater facilities than Pará for the observation of its diverse phases and features.

#### PARASITIC FOES.

We come now in order to the last but most insidious branch of foes to which lepidoptera in their early stages are exposed—viz. *Hymenopterous* and *Dipterous* parasites. Once again Pará is full of them, and doubtless in many instances they are in themselves undescribed species, or if they occur in collections, they at any rate lack any demonstration of that intimate relationship with the various species of lepidoptera on whose life's blood they were nourished in their own larval stages. I have got nothing new in principle to narrate over and above what is known to exist in Europe and other parts of the world, but only to record the very widespread and pronounced character of this unlovely association in Pará, as evidenced by the large proportion of one's caterpillars, which to one's disgust only produce flies and wasps. These may be very interesting in themselves, and I kill and label them off under the name of the host for future identification; but as it is impossible to specialize in all branches of entomology at the same time, I will at once confess to being the victim of a relentless prejudice. Among the *Sphingidae*, as illustrations of what I have too often experienced, I may cite the following instances: The eggs, generally laid on the under-surface of the tenderest leaves of the food-plant, are frequently "stung" by some almost microscopic hymenopterous fly. After the lapse of but a few days there emerge from one or several holes ten or a dozen of its progeny, which, marvellous to relate, have completed their entire metamorphic cycle within the confines of the egg-shell of the moth.

This I observed in Cambridge and Windermere years ago in the case of the common Emperor-moth's eggs, and I have very frequently noted it not only in connection with the large ova of *Cocytius*, *Protoparce*, *Protambulyx*, *Pachylia*, *Leucorhampha*, and *Pholus*, but even with the smaller eggs of *Xylophanes*, and no species seems to be immune.

In *P. syces*, *L. ornatus*, and *X. chiron*, *guianensis*, *anubus*, and especially *mossi*, the larvae are too frequently stung by diptera, producing from 10 to 30 maggots with imagines resembling blue-bottles or the common house-fly. Many are subjected to attack by both diptera and hymenoptera; the larva of *X. anubus*, for example, once producing a single and very large wasp grub which spun a tough black silk cocoon.

The genus *Protoparce* is similarly troubled, not only by Diptera (the eggs of the parasite in this case being generally introduced in the region of the spiracles), but also, though more rarely, by a small wasp. In this latter case the full-grown grubs of the parasite emerge through the back and sides of the still-living but



sadly attenuated host, and spin little yellow or white silken cocoons *in situ*, standing up on end and reminding one of the almonds which sometimes adorn a plum-pudding. The larvae of a small Hawk-moth in Pernambuco, *Neogene dynaeus*, is thus literally decimated. On corresponding lines the genus *Pachylia*, especially *syces*, which is so much rarer in Pará than *ficus*, is stung by a very small hymenopterous parasite, resulting in the production of some hundreds of tiny flies from the body of a single caterpillar. In this instance, the larva, while still clinging to a leaf, becomes completely encircled by a mass of tiny white cocoons closely woven together. The writhing larva then falls out or is devoured by ants, and what is left appears to be a thick lump of cotton-wool sticking to the leaf, of tubular formation and open at each end.

In the case of dipterous parasites which affect species belonging to *Acherontiinae*, *Sesiinae*, and *Choerocampinae*, and possibly the two other sub-families, the exodus of the maggots from the body of the caterpillar invariably takes place in the puparium, and even after the spinning of a slight but deficient amount of silk. These Diptera, though bearing a striking resemblance to ordinary flies, of course represent many distinct species. It is more than possible, however, that some of the common parasitic species are by no means restricted to any one kind of caterpillar, but thrive at the expense of the lives of a number of larvae belonging to different species and genera or even to different groups. In other families of Lepidoptera, such as the *Saturniidae*, the larvae manage to pupate in stout, well-woven cocoons with all the appearance of health, and only later do the dipterous maggots break through the walls of the chrysalis within, and form their own glossy brown oval cocoons alongside the corpse of their victim.

This sometimes takes place here with a few *Sphingidae* which spin a covering web interwoven with fragments in the crevice of a tree-trunk, such as *Isognathus scyron*. In other cases the metamorphosis of a species of Diptera, sometimes that of one large hymenopterous fly, sometimes that of a number of small ones, is completed within the confines of the pupa-case itself, from which the flies emerge by separate holes.

This is frequently observed here, as elsewhere, as a pronounced feature with many species of lepidoptera, the first prevailing with the *Saturniid* genus *Rothschildia*. The last-named variety is especially marked in such species as *Papilio thoas* and *androgeus*, *Aganisthos odius*, *Brassolis sophorae*, *Opsiphanes*, etc., among the butterflies; and I have only recently discovered that *Isognathus allamandae* Clark in Pernambuco is similarly attacked, though up to the present I do not remember to have bred any *Sphingid* parasite of this particular kind in Pará.

For the sake of completeness, as being a prevalent form, one other type of dipterous parasite deserves special mention. How far it attacks *Sphingid* larvae I cannot say, but the large *Nymphalids* of such genera as *Caligo*, *Catoplesia*, *Opsiphanes*, *Dynastor*, and *Prepona* are very extensively troubled by it. The method of egg-laying on the part of the female parasite, which I have caught in the act of ovipositing, is different, and for a brief period one degree less damaging, in that it gives the caterpillar, or rather its captor, a fighting chance. This I have repeatedly proved after a painstaking operation with the forceps, in which the temper of the "stung" caterpillar is sorely tried. The eggs, which are ochreous and tough, are gummed on externally with diabolical accuracy of instinct, sticking like ticks at one end immediately behind the horned head of

the larva and in the interstices of the segments, so that the poor victim cannot bite them off. If found before the young maggots have hatched and eaten their way into the host's body, they may with great patience and care be removed, one at a time, 10 to 50 of them, and the larva will pupate and emerge as perfectly as if it had never been scented-out by so unwelcome a visitor. This method of procedure is adopted by certain species of Diptera in England, and I have more than once found the noble larva of *Oryba kadeni* thus molested.

Such, then, are the forces of decimation among the butterflies and moths of Pará, and with parasitism in insect life I close my mournful list. The word, from being originally applied to the drone in human society, has come now to be used somewhat loosely, thereby losing some of its original force. In a true sense the cuckoo, which has ceased to build a nest and rear its own progeny, is a parasite. My use of the term here, however, is strictly limited to what I consider to be degenerate forms of life, whose evolution has had a downward tendency, and has involved the loss of an erstwhile independence by an unorthodox dependence for nutriment upon the living and prepared juices of another species in the same general order of creation. Such is our mistletoe, which no longer needs roots, but sucks the prepared sap of the apple-tree and the oak, and survives at their expense. Such is the Brazilian mistletoe, clustering as a thick yellowish mass among the upper branches of *Genipa americana*; such also is the "herva de passarinho," which diminishes the health and fecundity, if it does not curtail the growth, of the orange and mango, and others like the "abacaté," among the more indigenous trees of Brazil. Such, however, is *not* the orchid, which, like many another plant (ferns, *Bromeliaceae*, etc.), only finds a lodgment and support upon the trunk or branches of a tree, does not derive nourishment from its sap, and is quite erroneously termed "*parasita*" in the Portuguese tongue.

Of parasitism among the insects I have already said enough to make my meaning clear. That it has its uses in preserving the balance of nature by limiting the over-rapid increase of those species attacked cannot be doubted. It is a selfish and harassed world in which we live, and just as parasitism looms large as a universal feature, so are we bound to acknowledge that this trouble in the insect world is quite in order. My contention therefore is, not that it is right, but that, so far as the present age is concerned, it is in full accord and harmony with those laws which we find actively at work in every other department of life. I contend, on the other hand, that it is very far from ideal, and that by no stretch of casuistry can it be reconciled with the assertion made in Genesis (chap. i. ver. 31), that "God looked upon everything that He had made, and behold it was very good." No matter how allegorical such passages as these may be, no matter how deficient as scientific statements, they stand, in my humble estimation, in their broad general outlines for essential truth. And, though it may be thought fanciful, I fail to understand how persons who refuse credence to the second great dogma, known as "the Fall," can effect any sort of reconciliation between nature and revelation. Accept "the Fall," and parasitism at once becomes at least intelligible as a part, not of a fair creation, but of a disorganized and perverted system; and at the same moment, in the marvels of the Divine economy, one of the means necessarily resorted to to prevent matters from becoming worse.

Not therefore by adopting the so-called "scientific" view of former days,

not by ignoring the theological tenet regarding a fallen state, which for too long has been deemed at variance with the theory of evolution, but by accepting both the statements of the Bible and the plain truths of nature can one read Darwin and Wallace, and may I add Huxley, with the immense pleasure and profit to be derived from almost every page of their writings. And, further, I claim that one can emerge from this fiery ordeal not a rationalist, still less an atheist, but a believer still and a fuller believer, whose creed, if it has been subjected to the rationalizing process, has only been shorn of immaturity and excess, and readjusted to an altered perspective.

By way of forestalling a possible criticism, it is obvious, from the previous verse to that referred to in the first chapter of Genesis, that vegetation was meant to serve as food for animal life and creeping things, and it is equally obvious that man was meant to eat animals; but all this is the direct opposite of parasitism, taken as I understand the word.

To summarize, then, I cannot conceive it as any part of a *very good* creation, though evolutionary changes subsequent to "the Fall" may have necessitated it, that, for example, a healthily-nourished caterpillar, which has in itself all the potentialities of becoming that for which it was intended, viz. a perfect butterfly or moth, should have its vitals consumed by another *creeping thing*, the larva of another insect, in fact, simply to complete its own metamorphosis, no matter how equally perfect that other insect may be in the marvels of its own construction. Is not the world large enough for all? Its near relatives still live on fruit or decaying wood or excrement, and at the least hasten on the purifying process whereby these substances are returned to their primal and scentless elements.

The degenerate parasite, on the other hand, slowly tortures another living creature to death, and, having deprived the earth of an item of beauty so far in excess of its own achievements, leaves behind a putrid and stinking mass for others to clear away.

However much truth the term "Survival of the Fittest" may cover, it does so effectually cover up everything under that vaguely comprehensive and indefinable word "fittest," that it seems but to shelve difficulties. What is the fittest to survive, and why? From what initial standpoint of enlightenment and authority do we argue that any one living organism is more fit to survive than another?

Is it not from all the evidence before our eyes, those plain broad facts which none can dispute or deny, that feeling bound to acquiesce in the inevitable we give it a name? My objection is solely ranged against the word "fittest," for it seems to beg the question and to land us into an awkward dilemma. We all, for example, have our sense of beauty as opposed to ugliness, and there is even a general consensus of agreement upon the point. We all form relative estimates upon the practical utility and worth of things throughout the entire creation, animate and inanimate, and again there is a large general consensus of opinion. But how does nature deal with beauty and utility? She is stern, relentless, and without discrimination, making no account whatever of our conventional standards and values. As often, in obedience to those elementary laws which enjoy universal sway, do her blind forces of destruction demolish the beautiful and useful as they burn rubbish. As often, in her milder moods, does she tenderly nurture the worthless weed by those same benign influences



with which she fosters some type of growth that we account precious. We are left, then, to face two alternatives: (1) that our standards of appreciation and valuation, no matter how world-wide their support, are all wrong, which I do not believe; for though confessedly conventional, they must bear *some* relation to the absolute; or (2) that, in the face of our ideas upon beauty and utility, those which actually do survive in the struggle for existence are thereby proved, *ipso facto*, to be the fittest to survive, which I no more believe. I am aware that I am employing the term in a somewhat unusual and restricted way, and it is in this sense only that I contend that the word "fittest" is made to do too much duty. At one time it stands as the equivalent of "strongest" or "cleverest," at another it simply represents superior brute force or the greatest cunning, or at best the most prepared. But it is when we come to a consideration of those disintegrating forces like parasitism among insects and plants that our rebellion against the use of the term "Survival of the Fittest" reaches high-water mark: for the successful parasite, though transcending the wisdom of a Solomon in the accuracy of its aim and in the attainment of its object—namely, supremacy in the struggle for life—does so by methods which are discredited and are altogether out of harmony with what we understand as the principles of justice and morality. Though it may serve a useful purpose in the general economy, judging by human standards, we are bound to acknowledge that on such occasions it is the fit which disappears and something worse, less valuable or less beautiful, which survives.

Right or wrong, fit or unfit, parasitism is assuredly and immensely responsible for the reduced number of many representatives of practically all the lepidopterous families, and consequently for the reduction, almost to vanishing point, of one of nature's loveliest ornaments.

Each of the five subfamilies into which the *Sphingidae* are now classified is represented in Pará and in the following proportion: *Acherontiinae* 16, *Ambulicinae* 6, *Sesiinae* 47, *Philampelinae* 9, and *Choerocampinae* 12; and just as there are many other species of a more or less restricted range of distribution in different parts of the immense region drained by the Amazon and its tributaries, so possibly are there even more species near the southern side of its mouth than the 90 or so which I have had the good fortune to come across. Due allowance must of course be made for this in any subsequent remarks dealing with the parallelism or difference which obtains between the species considered.

I now have some observations to make in regard to the features, habits, and peculiarities of the Pará *Sphingidae*, which, when correlated, apart from any intricate or anatomical questions, constitute a striking array of facts, and go far in suggesting a true system of classification. Those with which I wish to deal are five in number: (1) Form, design, and colour of larvae; (2) Peculiarities of their excrement; (3) Method of pupation; (4) Form, design, and colour of pupae; and (5) The association of species or even whole genera with some particular Order of food-plant.

#### (1) *Form, Design, and Colour of Larvae.*

Here I would notice at the outset the general similarity of young *Sphingid* larvae on emergence from the egg, suggesting the close alliance of each species,

be it small or great, and forming the whole into one compact and well-defined family, irrespective of subfamily distinctions. The character to which I refer more particularly is the uniformity of the tail on segment 12, which at that stage is always a noticeable feature, of remarkable length, speedily changing from light to dark in colour, and when examined under the lens found to be rough in surface, frequently bi-lobed at the extremity, and surmounted by a single bristle on each fork. It is in this particular, or rather in the extraordinary variety of tail-formation, the partial or complete loss of this appendage in the succeeding stages, that we behold such striking specific differences. Stage after stage, as the skin is moulted and successive instars reached, does each species, ever true to its kind, exhibit a new form of tail or horn or hump, different from that which preceded it, different from that which is to follow, and in many instances, especially in the fifth and final instar, essentially different in length, thickness, quality, curve, and colour from even its next-of-kin in the same genus. This is most noticeably the case in the genus *Xylophanes*, and perhaps least pronounced in *Isognathus*, where an exceptionally long whip-like black tail is retained up to the period of pupation, and where the difference between the various species in this one respect becomes more one of degree in length, roughness, and the presence or absence of a white ring or two.

It is surely worthy of note, though I will leave it with those better versed in the laws of evolution to draw conclusions, that *Isognathus* is practically the only genus in *Sphingidae*, so far as I am aware, that retains the long, rough, flexible tail of the baby caterpillar to the full end of the larval period. Curiously a few deceptive *Notodonts* possess a very similar appendage. The kindred genera in this same subfamily *Sesiinae* exhibit very strange diversity of form in the tail, *Erinnyis*, the next-of-kin with almost identical pupa-form, being characterized by an appurtenance which in *alope* is like a rounded tusk, in *ello* and *oenotrus* like a swollen knob, and then a mere nipple-like point in the last stage. In *Oryba achemenides*, but not *kadeni*, it is like a sickle in the fourth instar and only a button or nipple in the final. In *Enyo*, *Aleuron*, *Madoryx*, and *Leucorhampha*, on parallel lines, the tail resembles a curved knife-blade, followed as before by the mere button. *Hemeroplanes* bears a rather stout grey and curved horn, while *Pachylia* has a small sharp spike in *syces* and a thick, blunt, but very diminutive hook in *ficus*. In *Philampelinae* the tail of *Pholus anchemolus*, after being reduced to a fine and absurdly disproportionate black hair in the foregoing instar, disappears altogether in the last.

Its relatives *Peacus fasciatus* and *vitis* evolve on the same lines, but *P. labruscae* shows a new development, exchanging the flexible and curled pink filament of the fourth instar for a hard glossy disk, capable of a rapid undulatory movement. The *Ambulicinae*, from my restricted acquaintance with their larvae, and the *Acherontiinae*, where I am more at home, seem in the main to possess what we are accustomed to regard as the normal horn, partaking more or less of the dorsal coloration of the larva or inclining to black, blue, or pink, stiff and stout in construction, though more slender in *Ambulicinae*, rather erect in posture, incapable of free movement, straight or finely curved, and generally bristling with small setiferous tubercles. *Herse cingulata*, *Protoparce sexta* and *albiplaga* are, however, exceptions to the rule, and, though it be only a matter of degree, exhibit strongly curved and rather smooth horns. In *Choerocampinae* the variety is so great that I fail in any attempt at description. Suffice it then



to say by way of contrast, that *Xylophanes guianensis* possesses a broad, thick, and perfectly straight blade-like horn, rough like a file on both upper and lower edges, but smooth on the sides; while *X. mossi* in its last instar retains but the merest vestige of a down-turned tail upon the anal flap.

True to the principles enunciated by Darwin in *The Origin of Species*, it is this strongly pronounced but variable feature, representing, as I suppose, the tail or horn possessed by the ancestral *Sphinx*, and ante-dating the various later evolutionary changes, such as have necessitated subfamily divisions, which has shown the greatest amount of variability in structure throughout the entire family.

Nothing short of enlarged photographic diagrams, showing the evolution of the tail of each species during its five successive instars, species after species set side by side for comparison, could serve adequately to portray the extraordinary degree to which this caudal appendage of the *Sphingidae* has varied.

Coming to the later stages of larval development, colour and design, apart from their adoption as protective measures by resemblance to surrounding objects, seem also frequently, though with a few strange exceptions, to suggest a sequential progression, or at least a circular grouping of species. I refer in the first place to the seven lateral oblique stripes, so characteristic of *Sphingidae* throughout the world; to their irregularity in *Cocytius*; to the greater regularity of the same in *Protoparce*, *P. albiplaga* forming an exception; to the fixed and constant deviation from the normal type, depending wholly upon the difference of food-plant in *Protambulyx strigilis* and *Sesia ceculus*; to the extension of the seven to an eighth or even ninth stripe in species of *Epistor*, *Sesia*, etc.; to an entirely distinct design in *Isognathus*, *Pseudosphinx*, *Leucorhampha*, and the later stages of *Erinnyis*; to their transposition, pointing up towards the head instead of the tail in *Pholus* and *Pachylia*, *P. resumens* forming a most remarkable exception to this; to their reduction to five in diminishing ratio in *Pholus anchemolus* and *vitis*, to six in *eacus* and their increase to eight in *fasciatus*; and, finally, to the partial reappearance of the customary seven stripes directed tailwards, when visible at all, in *Xylophanes*.

The presence of a medio-dorsal stripe is again a characteristic attribute, appearing strongly in *Cocytius*, in many of the genera of *Sesiinae*, in *Philampelinae*, and to a partial extent in *Choerocampinae*, but seldom strongly marked in *Protoparce* and usually absent.

Possibly a still more important and significant feature, specially characterizing the entire subfamily *Sesiinae*, with or without the addition of the oblique side-stripes, is to be found in the enclosure of the dorsal area by two lines adorning the face and continued at a slightly divergent angle, which then run parallel and unite somewhat more abruptly at the tail. This pattern is totally absent, so far as I know, in *Acherontiinae*, *Ambulicinae*, and *Philampelinae*, but reappears strongly in some species of *Choerocampinae*.

Mere colour counts for but little, I presume, in the matter of classification, being so largely a question of adaptation, but even here there are features worthy of note. Though one occasionally meets with exceptions where the adaptation to surroundings is less perfect than in others, the rule of course holds good that green caterpillars with light stripes are to be found by day among the leaves which they so closely resemble in colour and design, and on which they feed, chiefly at night. Various devices are resorted to for protection during the day

by caterpillars which are not green, or better, when they cease to be green after any particular moult. It is thus with the later stages of *Erinnyis*, and more especially with *Madoryx* and *Leucorhampha*, the larvae reposing with two or three pairs of claspers tucked up and unused, geometer-fashion, on branch or trunk, where they are by no means easy to detect. It is thus particularly with those species of *Xylophanes* which, while young and green or coloured like the stalk, are well adapted to stay in the neighbourhood of the fresh shoots on which they are feeding. Indeed, a long journey at this stage would be not only uncalled-for, but would entail fatigue and danger. Quite the reverse, however, is the case when, by successive moultings, the caterpillar has grown larger and stronger and become brown, maroon, or peat-coloured. Then almost invariably is it only to be found, if searched for by day, on the darkest and shadiest part of the trunk near the ground, or quite frequently, as in the case of *X. guianensis*, at some distance from the tree, lying on the earth among dead leaves and sticks, an extremely inconspicuous object. The habits of *X. anubus*, *loelia*, and *tersa*, in association with their particular plants, are identical; but *X. porcus* and *chiron*, which remain green to the last, have no need to move and seem to be aware of the fact, finding an umbrella of leaves sufficient protection from rain and sun and from prying eyes.

On several occasions I have found *X. tersa* by way of variety retaining a green coat to the end of its larval period, and then, as though it knew all about the matter, it was perched-up on the top of a spray of *Spermacoce* in broad daylight, apparently justified for once in ignoring the secretive habits of its kind.

Poor *X. mossi*, which is nearly always "stung," is exceptional in its habits, and would appear to be in a dilemma on account of its bright colour. When young it is reddish-maroon, and there is no doubt that it wonderfully simulates the little tailed red sheaths of the newly-expanding leaves of *Pagamea*, where it rests and feeds. Sometimes it develops into a grey-green with growth, and it is then equally well situated by remaining among the leaves. Usually, however, the colour turns to a brilliant burnt sienna on the sides with a pink back, lemon-yellow bands on segments 11 and 12, and five (sometimes six) patches of viridian green marking the side-stripes. In this predicament, allowing for the fact that the stems and branches of *Pagamea guianensis* are of a bright sienna colour also, instead of seeking the shade it elects to stay, but is thus too easily detected if at all exposed to view.

In the case of the highly ornate larvae of *Pseudosphinx* and *Isognathus*, there is generally no attempt at concealment beyond selecting the under-surface of a *Plumiera* leaf for shade, and sometimes frequenting the trunk or branches in the blazing sun. As the well-known arrangement of warning colours largely enters into their composition, alternating belts of black and white, or black with yellow stripes and red heads, touches of blue or mauve, etc., I presume that they are *not wanted*, and they certainly behave as though they were aware of the fact. In this immediate connection it is interesting to note, the exception incidentally proving the rule, that there are at least two members of the group which act differently in this respect, *Isognathus scyron* and *allamandae*. These larvae are of a grey-brown colour and distinctly dowdy by comparison with their more gaily-attired congeners, invariably hiding away in perfect concealment during the day on the dull branches or among the roots of *Allamanda cathartica*. They are not *Plumiera* feeders like the rest, and it is significant that they should be almost

the only species of the group which I have noted as being occasionally stung by both dipterous and hymenopterous parasites.

The mimicry of small snakes, if one is right in using the term, is a marvelously pronounced feature in some species, and is to be had to perfection in certain members of the *Sesiinae* subfamily, such as *Madoryx* and *Leucorhampha*, in *Pholus labruscae* as an exceptional development in *Philampelinae*, and again very specially in many species of *Choerocampinae*. As, however, this resemblance is effected by slightly, or extremely, different methods in almost every case, I prefer to reserve the subject to individual treatment in connection with the species thus enhanced.

## (2) Peculiarities of their Excrement.

The next point upon which I wish to touch is the peculiarity of the excrement or frass of *Sphingid* larvae, which though constructed, as I suppose, upon a fundamentally uniform plan, and very similar to that produced by *Notodonts*, *Saturniids*, etc., is strikingly different in distinct species, and very often acts not only as a guide to the whereabouts of a larva, but informs the practised collector in advance of its precise identity as a species. By this I do not mean to infer that every single species can thus be discriminated in advance, but that by previous acquaintance with the larva, its habits and its association with some particular form of plant-life, the colour, size, shape, and general character of the excrement will, in the majority of instances, if carefully observed, betray the genus and very likely the exact species.

I know too little of the digestive organs of larvae to say exactly what takes place, but the model upon which the excrement is constructed, a pellet of hexagonal and tripartite form with a central core, is well illustrated by that which is produced by *Cocytius* in the final instar. At this stage, in *antaeus* and *cluentius* at least, it invariably breaks up at the moment of extrusion into 21 small brown fragments. In *duponchel* the pellet more often falls to the ground whole, but being of a dry character, and the divisions being well marked, it very readily breaks up as before into 21 pieces.

For brevity I must confine my remarks to the last larval instar. In *Herse* the excrement is of an opposite character, being blue-black in colour, soft and wet, and consequently so far welded into one piece as largely to obscure the hexagonal design. This is even more the case in the genus *Xylophanes*, where many species deposit stiff black or dark brown pellets of enormous and seemingly impossible dimensions, and where the minute leaf-fragments are welded most compactly, layer upon layer in rough oval formation, showing but a trace, if anything, of the hexagonal design and nothing at all of the tripartite divisions or the core. It is no exaggeration to say that in the cases of *X. guianensis*, *anubus*, and *mossi*, for example, these pellets frequently approach an inch in length, and are proportionately thick. In these instances, though the larvae grow with exceptional rapidity, *mossi* never exceeding five days in its final instar and still fewer in each of the four previous stages, the number of pellets rarely exceeds 6 or 8 in the 24 hours. Conversely with other species where the excrement is small and neatly hexagonal, *Sesia titan* and *fadus*, for example, will drop 50 or 60 pellets in the same time. *P. sexta* is a good illustration of this, being a hardy, voracious, and almost continuous feeder; but of the



excrement of *Protoparce* in general it may be said that it is moderate in amount, well-proportioned to the size of the larva, fairly regular in form, and in colour dark brown, yellow, or green, largely in accordance with the nature of the particular plant upon which the caterpillar has been feeding. In *Protambulyx* the excrement of *strigilis* and *eurycles* is small and light green, the hexagonal form being subdivided and giving it an exceedingly regular appearance.

This character is shared by *Oryba* and to a limited extent by *Pachylia*, in both of which cases the frass, though large, is not excessive for such big larvae. In *Oryba kadeni* and *achemenides* the colour is light brown, and as it does not readily grow mouldy it is wont to retain its form for months after the larvae have pupated. Its position beneath bushes of *Palicourea* or *Ouroparia*, as the case may be, coupled with its size and general formation, leaves one in no doubt as to the identity of the species, even if, as too often happens, one is too late to discover the whereabouts of the particular caterpillar.

The excrement of *Erinnyis* and *Isognathus* is rather small, that of *Pseudosphinx* somewhat elongate, hard and black, with sharp angular projections and frequently bent. *Pholus* produces very large soft pellets of a light or dark green coloration with the hexagonal form obscured but not obliterated.

So much at any rate for a subordinate branch of the subject, which, if not the most savoury, is by no means devoid of scientific interest and is well worth the attention of the student of larval habits and early stages, as it so often leads to new discoveries.

### (3) Method of Pupation.

Turning to the different methods employed in the formation of puparia, a few brief general remarks are all that are necessary. I notice in the first place that digging at the roots of trees for pupae is not only extremely arduous work, but that so far as Pará is concerned it is next to useless, as the larvae of almost all species wander some distance on the ground and can seldom be traced. Many are subterranean, and, judging from their habits in captivity, do not hesitate to burrow deep into the earth to form their puparia in a loam that is sufficiently plastic to enable them to dispense with silk in the construction. So far as my experience goes, the entire subfamilies *Acherontiinae*, *Ambulicinae*, and *Philampelinae* behave in this way. In *Choerocampinae* the method is different, the larvae of *Xylophanes* never really entering the earth, but pupating at some distance from the food-plant on the surface of the soil, and being simply protected by scraps of growing or dead vegetation spun together by a few strands of strong glutinous silk to form a covering.

It is in the subfamily *Sesiinae* that we see the greatest divergence in the method of pupation. All the species can, I imagine, produce silk, and some actually do produce a considerable quantity to form their cocoons. In *Oryba*, *Epistor*, *Perigonia*, and *Sesia* subterranean methods are adopted, and the quantity of silk is negligible. In *Pachylia*, *Erinnyis*, *Pseudosphinx*, *Leucorhampha*, *Enyo*, and *Aleuron* the species pupate in a loosely-spun cocoon formed on the surface of the earth among dead leaves and the roots of grass, etc.; while in *Isognathus* and *Madoryx*, though it be but a matter of degree, a very considerable and completely closed-up cocoon is spun, not infrequently in the crevice of a tree-

trunk or on rotten wood, any particles of débris within reach being used, as we should expect, to stiffen the web and render it inconspicuous.

#### (4) *Form, Design, and Colour of Pupae.*

Referring to the pupae themselves, I can but once again go through the list and indicate the standard types, showing the lines on which species or genera vary from one another. In general, however, it is worthy of note that all the subterranean pupae, be they black, red-brown, or light mahogany in colour, are nearly uniform in tint and devoid of external ornament; whereas those species which spin cocoons, and remain more or less exposed to the light, are in most cases adorned with a freckled or linear arrangement of markings.

The exceptions to this are to be found in such genera as *Pachylia* and *Leucorhampha*, where the pupae, though highly lustrous, are of a uniform light or dark brown, and *Madoryx*, where they are of a dead black, relieved by bands of ochre-yellow in the interstices of two or three segments.

In *Acherontiinae* all the pupae vary slightly between a dark vinous and a yellowish brown, and are more or less glazed.

Besides the cremaster, already referred to as possessing highly important, even if minute, specific characters, there is also throughout this entire subfamily the free but immobile proboscis-sheath, providing further good differentiating features between the species by the peculiarities of its lateral ridges and its curve, as well as its length and thickness; but I am bound to acknowledge that this difference is exceedingly slight between some of the species of *Protoparce*.

In *Herse* the sheath makes a double turn and is readily distinguished from all others. In *Cocytius* it is various, being a single but stout and well-protruded loop in *antaeus* and *duponchel*, while *cluentius* possesses a complete spiral like a small clock-spring or Ionic volute, owing to its greater length. It has been a surprise and regret to me that after so long a time in the district I have been unable to trace the early stages of *lucifer* and the rarer species *beelzebuth* and *Amphimoea walkeri*, and can therefore say nothing with certainty about their larvae or pupae. A large dried pupa in the Tring Museum, possessing a big single-loop proboscis-sheath, Dr. Jordan thinks can be referred to no other species than *A. walkeri*, but the data are absent. With the afore-mentioned genus *Protoparce* the sheath assumes a big bold curve in *rustica* and *perplexa*, is ample but more slender in *sexta*, *diffissa*, *hannibal*, and *mossi*, shorter but stouter in *albiplaga* and *lichenae*. In the genera *Euryglottis*, *Hyloicus*, and *Neogene*, so far as my experience goes, though none are found in Pará, this sheath is simply a small turned-down piece lying in juxtaposition to the abdominal cases, as in the common Privet and Pine Hawks of Europe.

The plain light brown chrysalis-form, more or less elegantly curved, without free proboscis-sheath and differentiated by many slight variations—such as the precise tone of colour and degree of glaze—is shared by many species in common belonging to the three central subfamilies. Such features characterize *Protaetia*, *Pachylia*, *Oryba*, and *Pholus*; while *Madoryx*, *Leucorhampha*, *Epistor*, *Perigonia*, *Sesia*, etc., approximate to one another in darker hues. On the other hand, a certain standard pattern is adopted by *Isognathus*, *Erinnyis*, *Grammodia*, *Enyo*, and *Aleuron*, where the ground-colour varies between a



reddish yellow and a light straw yellow, and the entire surface, which is highly glazed, is more or less heavily adorned with tar-black lines and spots.

In *Xylophanes* an absolutely distinct type prevails in an elegantly-shaped but generally not very lustrous bone-coloured chrysalis, possessing a fine black line down the front to delineate the proboscis-case, an interrupted medio-dorsal line in black or brown, big black spots enclosing the spiracles which are of a dull red, while the rest of the surface is freckled by light umber patches and finely-pencilled lines and dots of a deeper hue.

We have already stated that the cremaster stands first and foremost as a distinguishing character; and as with the variations exhibited in the tails or horns of the larvae, so here a complete enlarged diagrammatic representation of the cremasters of all *Sphingidae* for comparison, group by group, is a decided want, and would form an adjunct to the evolutionary study of the family of the highest importance.

Speaking generally, however, for a moment, and by way of leading up to the last phase of the subject with which I wish to deal, and which I trust will be found by no means the least important or the least interesting, I must first make reference to such items in my collection where I am still in the dark as regards their early stages. Some few of these have occurred singly and rarely as moths, and, providing no clue, have defied all my repeated attempts to investigate their origins. A few others have only been taken once or twice in the larval condition and subsequently bred. Some have been chance finds, in the first instances at any rate, while others have only been found after diligent and prolonged searching, and by testing to the fullest extent possible every hint which the first discovery seemed to suggest in regard to food-plant and locality.

This has involved an increasing acquaintance with the botany of the district, and in this department I have at all times received most valuable information from the enlightened authorities of our local Museum and Botanic Gardens. I refer to Mr. F. Ducke, Miss Snethlage, and the late Dr. Huber,—a botanist of world-renown, whose untimely death through appendicitis in 1913 was a deplorable loss to the science, and whose skilled aid, in conjunction with that of the afore-mentioned friends, has to me been invaluable as an introduction to this vast study. The *Flora Brasiliensis*, an extensive series of volumes, but still largely incomplete, especially as regards Pará, has also at times been useful. Finally, the authorities of the Botanical Department at South Kensington have on several occasions, when consulted, been most kind in rendering expert advice in the matter of identification.

To one and all I am greatly indebted. It has perhaps given us all some extra work, but it has not been labour wasted, for by the mutual interchange of thoughts, ideas, and information on any given subject related to one's own particular study, knowledge has been disseminated, and our conceptions as individuals in our own lines of research have been broadened and amplified. Not infrequently also has the co-ordination of scientific facts in the realms of botany and entomology, which in their interdependence run on marvellously parallel lines, led to a happy readjustment of ideas that aforesaid were hazy, and to the correction of positive errors. Hardly less important has been the marking of certain exact spots in the great border-line of knowledge which man has not yet passed, but which with time and patience, "by mutual sympathy

and mutual aid," he assuredly can encompass. I refer, for example, to quite a number of plants and insects which are still unknown to science, and consequently as yet possess no specific names, though their genera may be obvious. I refer also to a perfect host of lepidoptera, where some species are still waiting for a name and an approximately correct family status, and where anything like a full and complete system of classification, whatever else may count, *must* comprise some elementary acquaintance with early stages. In Europe, where so much has been done, and where the material is so meagre by comparison with the tropics of America, we are apt to imagine that if only we go about the matter in the right way, some one can surely be found who will be able to tell us all about the butterflies and moths of the latter continent. Nothing could be further from the truth; and yet it was some such idea that I myself entertained before I went out to Peru in 1907 and found that in this, as in other matters, there was no high-road to knowledge, no pleasant hand-books of botany and entomology, and no collector's guide to the district. What one does find is the wealth of Nature's resources which baffle description, coupled with an array of unforeseen difficulties and drawbacks which equally thwart one in the endeavour to wrest from her more than a mere tithe of her secrets. While making due allowance for all the splendid scholarly works on insects in general, and especially for those on particular groups and families, that have yet been published, the fact remains that the early stages of very many species of Lepidoptera, including some of the most beautiful forms in the natural creation, some of the most curious, some of the most grotesque in their marvellous adaptation to environment, are still, in the great majority of instances, unknown to science.

If you have a collection of exotic Lepidoptera you may, by visiting one or other of the standard collections of the world, experience but little difficulty in getting most of your specimens named with a correct Latin designation as to family, subfamily, genus, and species, and you may also learn much as to the range of distribution which any particular species enjoys. But when it comes to the question of early stages, with even the most willing and enlightened of informants, there is often no one who can tell you in a thousand instances what the caterpillar looked like, what it fed upon, whether there was anything beyond the ordinary in its method of pupation or the egg-laying of its mother, or indeed anything at all about its habits as a living organism. Herein to me lies the intense interest of the quest, but when all this is unknown more than half the interest of a collection of moths vanishes. Having collected now for more than thirty years, with an ever-increasing enthusiasm as experience became enlarged, I have come more and more to regard a big collection with feelings akin to dismay. Though it be the outward and visible result of years of patient toil, in itself, and apart from other considerations, it can impart such limited information about that great world of life which lies behind it. The collection, without doubt, is highly necessary and important as a library of reference, case after case is very beautiful, a species here and there and now and again a whole genus exceptionally so, while another set are dull and monotonously alike to the untrained eye. But whether showy or plain, the fact looms larger than it once did that it is a cemetery of corpses, more or less well-embalmed and preserved, and, if well-ordered, possessing a number of interesting memorial tablets and epitaphs! The mournfulness of the spectacle is of course considerably diminished and the

interest sustained when whole families are entombed together under glass to facilitate the study of the comparative anatomy of their mummied remains, and especially when the epitaphs are generous enough to afford not only the name but the birth-place and date of decease !

Lest, however, I should shock any orthodox mind by such profane sentiments, let me at once call myself to order with an apology for my tangential wanderings and for discoursing at such length, and let me proceed to give some of those touches from the life, with which, at any rate, no one can quarrel, however much he may deplore the limitation of such information as is now available.

(5) *Sphingid Larvae and their Food-plants.*

We come then, finally, to a phase of the subject which has long appeared to me to be one of intense interest and importance—namely, *Sphingid* larvae and their means of sustenance.

In a land that is nearly all forest, where the vegetation is rife and luxuriant, where in hundreds of cases one tree bears the strongest outward resemblance to another, but where, nevertheless, the range of absolutely distinct species in particular localities is in reality so great as seemingly to equal the number of individual items of plant life which greet the vision, it is not unnatural to inquire how is one in such a labyrinth of green to find out the names of particular species. How indeed, unless sooner or later one can come into touch with some very experienced informant !

But in truth, the finding of a name, the necessary symbol of communication though it be, is not the first point in order of importance. What I mean to emphasize by saying this is the paramount importance of first adjusting the eye to those nice shades of difference in plant-life which distinguish closely-allied species, and, still more important, species not at all allied but belonging to different Orders, and bearing often an extraordinary superficial resemblance to one another. The bewildering tangle of growth which characterizes the Amazonian forest not unnaturally tends to obscure its less prominent details ; and it is only after weeks, perhaps months, of experience in the same locality, that one is able to form some rough mental classification, and focus one's eyes upon individual objects. Then with the observation-faculties intensified, one learns by degrees to be less led by appearances, and to appraise at their true worth those characteristics which are more fundamental and which bind together in one great Natural Order many forms outwardly dissimilar.

The specially-favoured locality selected by different trees and plants also calls for attention, be it the humidity and shade of overhanging matto-growth with its rich soil of decayed vegetation, or the region specialized by tabatinga clay or white sand, the sun-scored dry and open "campo," the "capoeira" or simple woodland, the "igapó" or forest swamp, or the land to a greater or less extent under cultivation with its fruit-bearing trees, each special in itself, and each with a varied and specialized flora and fauna attached. In fact, to put the matter shortly, an abundance of quiet field-work with the closest observation of almost everything is undoubtedly the first requisite. Then it is time to secure a few names, if these have not already been obtained ; and if the species, and perhaps the genus too, cannot readily be identified, one is seldom so out of luck's way as not to learn at least the Natural Order, which,



as I shall endeavour to show, is often the most valuable of the three, and ought always to be recorded when possible. On procuring some desirable caterpillar, my plan is generally to take it home in a tin with a sufficient amount of its special plant to serve as food, and also a good sample-specimen to dry and preserve for future identification, not forgetting to note down its association with that particular larva. One speedily learns that it is often not possible thus to identify the plant without its flower, so this too should be sought for, though it is sometimes tiring and disappointing work. Further discoveries reveal the same larva, it may be, upon a number of distinct species which ultimately prove to belong to the same Order, or to one in the same general group of plants. The recognition of this alliance in the plant-world next offers a clue which, if followed up, not infrequently leads to the discovery of an allied caterpillar upon a kindred plant, and little by little one learns, for example, that an entire lepidopterous genus is associated with some particular genus of plants, or is at least confined to the group. Equally worthy of note is it that allied genera in the same lepidopterous subfamily are in frequent instances similarly restricted to one and the same Natural Order of plant-life. The last point in this connection is no less striking—namely, that an occasional instance occurs where an Order like *Vitaceae*, or possibly a single genus of that Order like *Cissus*, or the common grape-vine itself, will serve as a pabulum for species so distinct as to represent no fewer than three different subfamilies like *Sesiinae*, *Philampelinae*, and *Choerocampinae*, though this of course is very exceptional. The result of all these revelations has been to emphasize in my mind the great importance of the Natural Order, to give it always in this connection the place of precedence over generic or specific distinctions, and to work for the discovery of the larvae of those species which still remain unknown largely upon the analogous principle that they will probably some day be found to be associated with some plant or plants closely akin to those already known as the food-plants of kindred species in the lepidopterous world.

I will give three examples in application :

(1) Seeing that three species of *Cocytius* in nature feed on at least six species of *Anonaceae*, and perhaps a great many more, it is highly probable that the remaining two in Pará, together with the closely-allied *Amphimoea walkeri*, are also *Anonaceous* feeders. Up to the present, however, this species with *Cocytius lucifer* and *beelzebuth* have only occurred as moths, and I have to confess my inability to trace their larvae.

(2) In Pará we have three species of *Protambulyx* and three of *Amphypterus*, and the whole six appear to be closely allied to one another. By exploring the caju tree, *Anacardium occidentale*, and the taperiba, *Spondias lutea*, and at least three other wild species belonging to this same Order *Anacardiaceae*, I have very often come across larvae sufficiently varied to convince me that I had secured different species, and as often have I been doomed to disappointment by breeding nothing but typical *P. strigilis*. By continuing, however, to work on this principle, I have at last succeeded in finding the larva of *P. eurycles* on an *Anacardiaceous* tree like the ash, locally known as “tapiririca.”

The moth is common enough to leave me still wondering why its larva does not turn up more frequently, while as for *P. goeldii* and the genus *Amphypterus* I am yet no further advanced.

(3) Out of 12 species of *Xylophanes* in Pará I have taken the larvae of 7,

and, though two *can* feed on plants of distinct Orders, all but one in nature have been found associated with *Rubiaceae*—such as *Spermacoce*, *Palicourea*, *Psychotria*, etc. There is, therefore, a fair presumption at least that all the remainder are *Rubiaceous* feeders, and that in proportion as the alliance between any two or more is close, so are their larvae likely to be found feeding on these same plants or on species close akin.

Perhaps the most striking exception to the general rule is to be found in *Protoparce*, which as a genus is commonly associated with *Solanaceae*, but where *albiplaga* seems to be limited to *Boraginaceae* and *Anonaceae*, the latter seeming to suggest a connection with *Cocytius*, which is extremely interesting. *P. lichenea* I have only taken on *Citharexylum*, a *Verbenaceous* plant, while the common *rustica* associates itself with many plants in *Verbenaceae*, *Boraginaceae*, *Bignoniaceae*, and *Oleaceae*, but never with *Solanaceae*. Among the remainder of my acquaintance *P. sexta*, *hannibal*, and the rare *perplexa* are occasionally seen to be sustained in nature by two or three species of *Aegiphila*, another *Verbenaceous* genus, in place of their more customary *Solanaceous* plants. In the Andes of Peru I found the larvae of *Euryglottis davidianus* associated with *Boraginaceae* and *Bignoniaceae*, and as *Euryglottis* comes next in order to *Protoparce* it is highly instructive, providing a wealth of suggestion to the explorer, to learn that botanists group *Boraginaceae*, *Bignoniaceae*, *Verbenaceae*, and *Solanaceae* together in the series *Bicarpellatae* of the *Gamopetalae*. So once again our exception hardly does more than prove the rule. One is naturally led to suppose that there are important ingredients in the chemical composition of the leaf which are shared alike by all these plants, though so seemingly diverse in form, and that this nutritious principle is essential to the life not only of *Protoparce*, but of other species of other genera in *Acherontiinae*.

Here, surely, is the evidence of design, to be accounted for as Darwin did by some grand evolutionary modifications in both plant and insect, running on parallel lines and reaching back into the remote ages of the past. Coming to present times, however, and allowing for the exceptions which greatly increase the number of those Natural Orders selected to provide food for *Sphingid* larvae, it is a striking and significant fact, and one which came to me as a revelation of analysis, that of the 63 *Pará Sphingidae* whose early stages have been revealed, leaving at least another 27 where they have not, no fewer than 17 are associated in nature with *Apocynaceae*, 14 with *Rubiaceae*, 8 with *Vitaceae*, 7 with the gamopetalous *Bicarpellatae*, and the remainder as follows: *Dilleniaceae* 4, *Anonaceae* 4, *Moraceae* 3, *Onagraceae*, *Euphorbiaceae*, *Papayaceae*, *Anacardiaceae*, and *Asclepiadaceae* 2 each; *Convolvulaceae*, *Piperaceae*, *Sapotaceae*, *Polygonaceae*, *Melastomaceae*, *Loganiaceae*, and *Vochysiaceae* 1 each.

Though I have occasion to refer to several other species of *Sphingidae* beyond the above 90, I naturally exclude them from my *Pará* statistics. They form, as it were, a supplement, too small to stand by themselves, and too interesting to be ignored simply because they happened to live, one of them at Pernambuco, one in the Antilles, one at Iquitos, and three others anywhere from 500 to 1,000 miles up the Amazon.

In conclusion I may say that, with the *Sphingidae* as one of my keenest specialities for a long period, I have striven to gather together every scrap of possible information relating to the life-histories of such species as have come under my notice. With this then, for the present, I must ask my readers to



be content, and wait in hope for that day when errors shall be corrected and a few more gaps filled.

PARÁ, *January* 1919.

### GENERAL CONDITIONS.

Under this heading I have briefly sketched a number of more or less disjointed facts and figures, which may enable the reader more readily to picture Pará and appreciate its advantages and disadvantages as an entomological centre. Such notes are often of considerable use to the practical collector.

Belem (Pará), with a population of about 120,000, is the capital of Pará, the third largest State in Brazil, and is situated 1° 27' south latitude by 48° 30' west longitude.

Though nominally at the mouth of the Amazon, a glance at a large-scale map will show that the main bulk of Amazon water reaches the sea north of the great delta island of Marajó, whereas Pará stands near the confluence of a distinct river-system, the immense Rio Tocantins proceeding from South Brazil, the Mojú, the Acará, the Capim, the Guamá, and the Guajará. All these rivers are tidal and, with the exception of the Tocantins, very muddy, the rise and fall being 8 feet for neap tides and over 12 for spring tides. The general elevation above sea-level is only a few feet, the highest part of the city being about 40 feet.

*Pictorial Aspect.*—Faced on west and south by Ilha das Onças and innumerable other islands, which partake of much the same character as the swampy part of the mainland. Backed closely on other sides by unlimited matto, an impenetrable jungle of virgin forest growth. Immediate south-east and east largely igapó or swamp region, practically impassable, even in the paths cut by seringueiros (rubber gatherers), after heavy rain or high tides. Railway cuttings through the matto run north to Pinheiro, passing through a tract of very white sand with a modified vegetation at kilometre 11, and in a north-easterly direction to Bragança. Roads leading from the city among the palm-thatched and humble dwellings of the caboclos (people of more or less Indian origin), towards the rivers or the forest, are known as travessas. These include many small fruit-gardens which generally abut on second-growth forest. Most of the travessas are broad, are cut at regular intervals, and are intersected by others on the rectangular block principle. They are the streets of a larger city in the making, but are still covered with grass and weeds like *Spermacoce*, etc., some being used for pasturage, and parts of some being distinctly swampy. The forest is divided by a network of igarapés (small tributary streams), the majority being muddy and subject to the rise and fall of tide, while a few are peat-coloured and clear with sandy bottoms, owing to a slightly increased elevation.

Unlike the Isle of Marajó, which possesses broad, open campos for cattle-grazing, our open spaces are very limited in number and extent, and are probably all of artificial origin. The "Bosque," situated outside the city at Marco da Legua, is a decent tract of original matto or forest, about 500 metres square, intersected by shaded paths and adorned with fountains and shelters as a resort for the public. Its conservation represents a degree of good taste and foresight which is somewhat exceptional in this part of the world. The *Morphos*

and other woodland butterflies are often to be seen here, and not infrequently have I here procured some larva of worth upon the undergrowth, or detected the presence of others altogether beyond my reach in the highest trees by their excrement scattered over the sandy paths. The public *praças*, squares, and gardens of the place are characterized by many trees imported from other countries, chief amongst which may be mentioned the Mango and *Ficus benjamina* as shade-trees in the streets, the banana in all its forms, and a number of oranges and lemons. These, coupled with certain flowering plants, garden palms, and other importations like *Artocarpus*, the "Jaca" and the bread-fruit tree, etc., naturally tend to produce in the mind of the visitor a completely erroneous impression in regard to the really indigenous flora of this part of Brazil.

Owing to the kindness of Miss Dr. Snethlage and of Sr. Rudolpho Siqueira Rodrigues of the Museu Goeldi, I am enabled to give some interesting statistics in regard to the climatic conditions of Pará for the past eight years, 1911 to 1918 inclusive.

Year,	Hygrometer (per cent.).	Rainfall.		Temperature (Centigrade).		
		Millimetres.	Days of rain.	Maximum.	Minimum.	Medium.
1911	88	2,550.2	272	33.6	21.4	25.4
1912	86	2,918.3	323	33.4	21.9	25.3
1913	88	2,616.8	280	33.6	21.6	25.5
1914	88	2,299.6	252	34.6	21.4	25.6
1915	89	2,042.3	215	34.6	21.7	26.3
1916	89	2,638.4	218	32.9	22.1	25.6
1917	89	2,809.7	248	32.0	22.0	25.8
1918	89	2,541.6	238	32.6 =	21.4 =	26.1 =
Fahrenheit				90.7	70.5	79.0

The above figures indicate that in relation to its proximity to the equator, Pará possesses a remarkably high degree of atmospheric humidity, frequently reaching a state of absolute saturation, and as a direct consequence an exceptionally moderate and uniform temperature. This is roughly 80° Fahrenheit in the shade of one's living-apartments throughout the year. The wet season normally begins during the second half of December and ends with May. The hottest month is nearly always November, the wettest February or March, and the coolest period from July to October inclusive. In 1916 and 1917, however, July was an exceptionally hot month, as was the close of August in 1918. The wet season is accompanied by much thunder and lightning and by many very heavy, but only occasionally prolonged, falls of rain. It is to be noted that even during the dry season there is seldom a week or ten days without any rain, but that then the rains are more regular to time of day and of short duration. The result is perennial green and a vegetation which seldom hangs limp.

Though times have changed considerably since the days when Dr. Alfred Russel Wallace and Mr. Bates spent their six months in Pará, living near the village church of Nazareth in a wooden hut at the delightful price of 30 milreis a month, and though the population has probably trebled since then, there are still a few ancient landmarks. The Nazareth Praça, for example, is still there,

but is now, of course, a definite part of the city, surrounded on all sides by houses. The church of their day has long been replaced by a larger edifice, close to which I myself lived for some months. This is still so popularly attended that it is now giving way once again to a more spacious building of very greatly improved solidity and architectural form. The famous Nazareth Festa, though degenerate in its cheap-jack association and modern cinema shows, is still the great feature of the place every year as October comes round; we still drink purple "assahy" with or without "farinha"; and still, most assuredly to an increased extent, have our nerves shattered by innumerable rockets, fired off at the slightest pretext at all hours of day and night. The old city of Belem, with its fine cathedral and castello, can have changed but little in outward appearance since 1848; but though the chief markets are still at Veropeso, the centre of the city, territorially speaking, is to-day marked by the Largo da Polvora, the Theatro, Café da Paz, and Grand Hotel, the last two providing excellent accommodation for visitors. Close to this, and leading towards the beautiful Largo de Baptista Campos, in former days all wild matto, is the ancient British cemetery, dating from 1815, where, through the generosity of English banks, business houses, and especially Messrs. Booth & Co., I was enabled in 1912 to build a small English church. The old mud-stretches of the Pará river fronting the city have now, with the exception of the Veropeso dock, all been mercifully buried beneath many thousand tons of clean sand, a factor which has contributed largely, not only to the appearance, but to the health of the place, not one case of yellow fever, so far as I am aware, having originated here since the early months of 1911.

A bad name dies hard, and at this late date it is really surprising to find so many persons of education who know nothing of Pará's charms, and who merely regard it as a mud-stretch and a death-trap to the white man. Though hot and lacking the salt sea-breezes of towns on the coast, there is probably no pleasanter or more comfortable place in the north of Brazil than Pará, none so up-to-date, and none that is freer of fevers and epidemics. As in other parts, there is, of course, the ever-present malaria of the tropics, but it constitutes no serious menace to Europeans passing through or settled in the city. Camping out in the forest without a mosquito-net is of course to be avoided; but with some such preventive, which is always a comfort whether in town or country, there is really nothing to be feared.

The rickety wooden trapiches or piers of former days have now been replaced by a stout wharf of concrete, upon which stand a number of great corrugated-iron sheds. Alongside these lie tethered not only river boats but ocean liners with a draught of 20 feet or more, which continue their journey for a thousand miles up-river to Manáos. Boats drawing from 16 to 18 feet of water proceed to Iquitos in Peru, no less than 2,200 miles from the Atlantic, so immense in breadth and depth, as well as in length, is this South American Mediterranean.

Finally, Pará is to-day magnificently served throughout by an adequate supply of speedy electric cars, called "bonds," not to mention the ubiquitous automobile, 300 of them at least; and the well-built houses and well-paved streets, which in the main are distinctly above the South American average, are brilliantly illuminated by electricity.

## NOTES ON THE SPECIES.

Having already dealt at considerable length with so many general questions touching not only the characteristics of genera but the individuality of species, repetition would be superfluous; and as some of these species are common and well known, my notes on them can well afford to be brief and scrappy, and must be regarded as merely supplementary to what has gone before. The Detail Index, which comes later, provides, so far as I have found it possible, the full list of local food-plants with their localized popular names, if any; but I have refrained, as inconsistent with the title of the present work, from introducing the names of those particular plants which serve the species in regions remote, but which either do not grow in Pará, or are seldom, if ever, selected as the natural food-supply in this part of the world.

For descriptions of the moths, their general range of distribution, as also their subspecific or geographical differences, matters which do not come within the scope of my treatise, I must in all cases refer my readers to the work by Lord Rothschild and Dr. Jordan, entitled "A Revision of the Lepidopterous Family Sphingidae," issued as a Supplement to Vol. IX. of the NOVITATES ZOOLOGICAE of Tring, England, in 1903. The species are here numbered according to the Catalogue.

*T.Z.S.* is an abbreviation for *Transactions of Zoological Society*, London, vol. xx. pt. 2, and refers to Plates in *Sphingidae of Peru*.

*N.B.*—Larvae are described throughout as possessing 13 segments, the head, for uniformity's sake, counting as No. 1, the leg or thoracic segments being Nos. 2, 3, and 4, the post-thoracic segments 5 and 6, the clasper segments 7, 8, 9, and 10, the tail or horn being situated on the back of 12, and the anal flap and claspers constituting segment 13.

## SUBFAMILY ACHERONTIINAE.

4. *Herse cingulata*. (Plates *T.Z.S.*)

R. & J. p. 10.

Larva secretive in habits and seldom met with except by systematic searching. In colour, markings, and form up to fourth moult resembles *Protoparce* with a straight horn. In final stage very different, possessing curved horn and usually more brown than green, but widely variable. Moth common at light in Pará, but I have not observed it at flowers like *H. convolvuli* in Europe.

33. *Cocytius cluentius*. (Plates 1 & 2.)

R. & J. p. 54,

A common species in Pará, the moth in both sexes often appearing at electric arc lamps. Larva twice found feeding on *Piper aduncum*, a seemingly strange departure from the customary *Anonaceae*, *Biribá*, *Graviola*, *Araticu*, etc.; a somewhat pronounced aromatic odour being the only apparent feature in common between the two Orders.

Young larva dull sage-green and white, side-stripes irregular in length and



breadth, and merging into the medio-dorsal band in a series of Vs. Fourth instar with fine, light, and scattered hairs, and minute yellow tubercles on thoracic segments, especially segment 2. A couple of broad and composite bands, which are conspicuous by their nebulous whiteness and great length, spring from the base of the post-thoracic segments, with three others in rapidly diminishing ratio in front, and all merge in narrow V-formation into the white medio-dorsal line. Three others, very faintly indicated on a deep green ground, represent the customary fourth, fifth, and sixth side-stripes, while the seventh leading up to the horn is once more marked by a nebulous white band which stands out conspicuously, but melts away into a bluish ground. Horn emerald and glazed with small yellow setiferous tubercles. Anal portion dull blue, but flap brightly edged with yellow-green. In adult stage uniformly hairy like *antaeus*, but always very white. Description in R. & J. correct but deficient.

Pupa, like all in *Acherontiinae*, subterranean and bright mahogany in colour. The proboscis-sheath is so long that it makes as much as  $2\frac{1}{2}$  concentric turns in the form of an Ionic volute.

Length of proboscis very variable: in female moth  $6\frac{1}{2}$  to  $10\frac{1}{4}$  in., in male  $10\frac{1}{4}$  in.

### 34. *Cocytius beelzebuth*.

R. & J. p. 55.

My remarks below on the occurrence of *C. lucifer* and the uncertainty of its appearance apply equally here, except that I can say even less of this rare species, having only captured the moth at light in Pará on three occasions, once in 1911 and twice in 1912, a female on July 4 and a male on the following day, both in perfect condition.

### 35. *Cocytius duponchel*. (Plate 1.)

R. & J. p. 56.

Undoubtedly the commonest species of the genus in Pará, both sexes occurring freely at light. Larva without any of the short hair which forms such a pronounced feature in *cluentius* and *antaeus*. Side-stripes, except the third and seventh which are white, but faintly delineated in all instars. Intensity of colour, as with many green larvae, variable in individual specimens, and generally well matched to the particular variety of food-plant selected. Markings more intense when ground colour inclines to yellow-green, fainter when compounded or combined with white-green. Proboscis-sheath of pupa, though stout, well-curved, and much swollen at the extremity, is nevertheless distinctly shorter than that of *antaeus*.

The male moth possesses a very strong, musty, and disagreeable odour, akin to that of the cockroach. This is shared somewhat by other Sphingids and by some *Limacodids*, but generally to a less noticeable extent.

Length of proboscis in female moth  $3\frac{1}{2}$  in., in male  $3\frac{1}{4}$  in.

### 36. *Cocytius antaeus medor*. (Plates T.Z.S.)

R. & J. p. 57.

Moth in both sexes common at light in Pará. Food-plants, as in the last species, exclusively *Anonaceae*. Rounded head of young larva becomes extremely



arched or pointed on the crown, as in *Protambulyx*, but recovers some rotundity in the final instar.

In all stages, and in the three species with which I am acquainted, the larvae are wont to repose geometer-wise, the forepart hanging free from stem or leaf, with two or even three pairs of claspers tucked up and unused. When disturbed it wags itself violently and repeatedly from side to side, another character which it shares to a pronounced degree with *Protambulyx*. Different to those found in Lima, Peru, the full-grown larva here, as in Manáos and Pernambuco, is of a very intense uniform green with the side-stripes hardly visible, except the elongated seventh which is very white. The mauve medio-dorsal band is also less pronounced and less edged with white.

The pupa, like some others, is endowed with much nervous agility, and the force of the exhalation from its big thoracic spiracles is sufficient to blow away some of the fine sand on which it lies, forming a slight cavity at this point. This is but a recent observation, and it came with surprise; for though I have experienced various audible sounds from different pupae, it had never occurred to me that a chrysalis could produce an appreciable puff of wind.

Length of proboscis in female moth  $5\frac{3}{4}$  in., in male  $4\frac{7}{8}$  in.

### 37. *Cocytius lucifer*.

R. & J. p. 59.

Early stages remain undiscovered. From its comparative abundance in Pará as a moth at light on July 8th, and from then till October 1912, its return from March to May in 1916, and its spasmodic recurrence since, I suggest that it may be an immigrant from afar, as all attempts to trace its larva locally among *Anonaceae* and other Orders have so far failed. The entire genus are obviously long and strong fliers, but, whether in fresh or worn condition, I think I am not beyond the mark when I say that most specimens of *lucifer*, *beelzebuth*, and *A. walkeri* have, in support of the idea, been picked up off the pavement in a somewhat lethargic or tired condition. A strange feature to record, unique among the *Sphingidae*, so far as I know, and in striking contrast with others of this genus, is that the female of *C. lucifer* in Pará is almost invariably smaller in wing-expanse and less robust in general appearance than the male.

Length of proboscis in female moth  $4\frac{1}{4}$  in., in the male  $3\frac{3}{4}$  in.

### 38. *Amphimoea walkeri*.

R. & J. p. 61.

Here I have once again to refer to my remarks on *C. lucifer*, and suggest that this large and handsome moth may be drawn from some distance to the electric lights of Pará, where alone I have taken it, about a dozen specimens in both sexes from March to October 1912, several times since, and generally in perfect condition. I know also of one specimen caught in Pernambuco. A general characteristic with many of these big S. American *Sphingids*, *A. walkeri* included, is that they can produce a very audible squeak when handled, like that of the Death's Head moth in Europe, and recorded in connection with that species as an almost unique phenomenon. *A. walkeri* possesses, I believe, the longest insect-proboscis in the world, measuring as much as from 10 to 11 in.

Like the genus *Cocytius*, to which it bears such obviously close relationship, this almost abnormal development of the trunk, strikingly varied in length with different species, would seem to indicate that this entire group of moths are wont to suck honey from flowers with long narrow calices like the *Datura*. This, at any rate, has been suggested by both Darwin and Wallace. It may, however, simply serve the purpose of enabling long-winged and heavy-bodied moths, as in the case of *H. convolvuli*, to hover more freely over small flowers like the jasmine without damage to their wings.

As to the larva and pupa of *walkeri*, I can but refer to the notes in R. & J. p. 61, which may possibly describe this species, but I cannot but feel sceptical in regard to the name of *Jatropha* as its food-plant. I may not have sufficient grounds for saying that I regard it as an unlikely pabulum, but the fact remains that repeated inquiries among the growers of mandioca and macaxeira, coupled with the assiduous searching on my own part of *Jatropha* (*Curcas*) and all such *Euphorbiaceous* plants, has never produced anything beyond the larvae of two of our commonest Hawk-moths, *Erinnyis ello* and *alope*.

### 39. *Protoparce sexta paphus*. (Plates T.Z.S.)

R. & J. p. 67.

Abundant in Pará as elsewhere. While falling short of a geographical subspecies, both sexes of the moth are here smaller and blacker, when compared with the form frequently taken in Lima and those which I have seen from other places. The larva, too, has a peculiarity here which I have not encountered elsewhere. When the dorsal and lateral areas are of a uniform green tint, it is smooth and devoid of hair; when it is parti-coloured, that is lighter dorsally above the side-stripes, as when the larva is found feeding on the white woolly leaves of *Solanum grandiflorum*, the whole surface is often, *but not invariably*, covered with very fine, light hair. I naturally thought at first that I had obtained two distinct species and figured them both, but I can observe not the slightest difference in the resulting moths, which in several instances, and in both sexes, I have been careful to label "smooth" or "hairy," in accordance with their former larval peculiarity. Both forms are equally common on many *Solanaceous* plants, and in no other respects that I can see, beyond what has been mentioned, do they differ. If the moth appears commonly at light, the caterpillars are still more frequently brought to me by friends who find them in their gardens on the capsicum peppers, the "Bringella," the tobacco and tomato plants. Besides several species of *Jurubeba* and *Cestrum floribundum*, the larva is also sometimes found feeding in nature on *Verbenaceous* plants such as *Aegiphila cuspidata*, *elata*, and probably *velutina*. Again, I once took it devouring a hair-leaved garden creeper with crimson flowers, locally known as "Primaveira," and which I am told ranks as a *Solanaceous* plant, though no one beyond its mother-moth or the most erudite of botanists would have guessed it.

Length of proboscis in male moth  $3\frac{7}{8}$  in.

### 44. *Protoparce diffissa tropicalis*.

R. & J. p. 75.

A somewhat scarce species in Pará, a few moths only having occurred at light or on tree-trunks. From time to time I have taken solitary larvae, and

always on species of *Solanum*, *S. campaniforme*, the as-yet-unnamed species which serves *P. perplexa*, another common kind with long, rough, pungent leaves, and perhaps oftener on three of the common *Jurubebas*. Though obviously distinct as a species, the caterpillar of *diffissa* bears but few characteristic features to differentiate it from a washed-out example of *P. hannibal*; while the moth, especially when worn, may easily be mistaken by the uninitiated for a brown specimen of *P. sexta*. The Pernambuco form, however, if one may judge from a single specimen seen, is much richer in its combination of black and brown, and would appear to rank as the subspecies *diffissa petuniae* of Southern Brazil.

Confusion between the larvae of *diffissa* and *sexta* can at any rate be avoided by remembering that *diffissa* bears an ample horn which is green and rough and only slightly curved, its head is faintly lined with yellow, and there is no black edging to the seven light side-stripes. Though I once bred the species from a larva taken in the Interior of Peru, my figure in the *T.Z.S.*, Plate 8.d, is in error in all these respects, and this particular specimen, which was found on wild tobacco and figured, can only have been a strongly-marked *sexta*, while the real *diffissa* escaped my then indiscriminating eye and its pupa got mixed up in my subsequent travels.

In accordance with its close alliance, the pupa is, as one would expect, intermediate between *sexta* and *hannibal*, though almost impossible to differentiate with any certainty.

The larva is sometimes stung in the region of the spiracles by a dipterous fly similar to that which affects *P. mossi* in Lima, and it is also attacked by a hymenopterous parasite.

#### 46. *Protoparce hannibal*. (Plates 1, 2, & 9.)

R. & J. p. 78.

A fairly common species in Pará, occurring at light but never abundantly. Food-plants: *Solanaceae*, *Cestrum floribundum*, *Solanum campaniforme*, and, as stated by Bönninghausen, *trombeta* or *Datura*, two garden species being often chosen; frequently also on *Aegiphila elata* and *Clerodendron* (*Verbenaceae*).

Though the larva varies in itself, as in its food-plants, with acquaintance it admits of little doubt as to its identity, being generally of a very intense green and almost blue on the ventral area, while the seven oblique stripes are broadened downwards in their whitest portions. The more normal form at any rate is thus readily distinguished from *diffissa*, and still more from *sexta* by the absence of any black above the stripes, the presence of a few short yellow tubercles on the thoracic segments, and the ample curved and rough green horn.

Pupa similar to both of the preceding species, but in Pará bigger than either. Proboscis-sheath rather shorter and more robust.

#### *Protoparce perplexa*. (Plates 2 & 9.)

R. & J. (1910).

As far as the moth is concerned I have taken but two worn males at light in 1912. Apparently a very rare species, though, if local, I have reasons for thinking that the Pará region is at least one of its strongholds. Food-plants: (1) A delicate arboreal *Solanum*, sp. ?, with small heart-shaped leaves, which



are rough to the touch and light on the under-surface, a widely-distributed plant, seen abundantly at Porto Velho on the Rio Madeira, but growing only sparsely in the shade of the forest near Pará. (2) A creeping species of *Solanum* with bright vermilion berries, rarely noted in the Pará matto. (3) *Aegiphila cuspidata* (*Verbenaceae*); one larva only.

The moth at first might be taken for a richly-marked Amazonian form of *scutata*, but the larva in all its stages is wonderfully distinct from that species. It was on the first-named plant in early March 1915 that I eventually took a single "stung" egg and a very remarkable large black caterpillar with a bright yellow horn, heavily adorned with setiferous tubercles, held erect and rather sharply curved down at the tip. The thoracic segments were similarly ornamented with a thick cluster of exceptionally tall and sharp-pointed tubercles, three being situated on segment 5, and an odd one marking the right dorsal area of segment 6. The entire ground-colour of the larva was sooty black, only the last four oblique side-stripes being faintly indicated in a lighter key and edged above with an intenser black. The general tone is modified to a gloomy maroon with advancing growth. My impression at the time was that I had secured a strange melanic variety of some species; but having been fortunate enough to possess this strange caterpillar on eleven subsequent occasions, I find that this description of the final instar holds good in every detail, even to the irregularity in the position of the dorsal tubercles, one specimen having an odd one on segment 8 and an unequal pair on segment 10, surely a unique feature in *Protoparce*!

Only two of these were found full-grown, and one was full of dipterous maggots. The remainder were taken in the egg or as very young larvae, and these up to the end of the fourth instar were always green, the seven side-stripes gradually increasing in clearness of definition and the colour intensifying to pure white and lemon-yellow, outlined above with olive. The face up to this stage is lined with yellow, and the long, yellow-green horn is always exceptionally erect and is roughened on its upper side with black tubercles.

The first larva obtained formed a dark red-brown pupa similar to that of *P. rustica*, with a long proboscis-sheath, and produced a richly-variegated female moth of *perplexa*, to my great delight, on April 21st, 1915. After working methodically for this species from the beginning of 1917, I managed in February, from the two species of *Solanum* above-named, to secure at least a dozen ova and young larvae, and subsequently lost five through the attack of a small black ant which infests my house.

Assiduous searching in 1918, a wretched year for almost everything, produced only one larva in the fourth instar on January 29th, this time a plainer green variety resembling *hannibal* (see fig.), found feeding on *Aegiphila cuspidata*, and resulting in a perfect male on March 5th. At the time of writing, February 18th, 1919, we appear to have reached low-water mark, and much searching of the most approved plants in all the likeliest places for miles around Pará has yielded nothing but three eggs of this rare species on one small bush, and all of them doomed, black centres of corruption, dead yet strangely living, destined but to render a homage to Baal, the Lord of flies.

*Written later.*—Towards the end of March I found a small bush of *Solanum* completely eaten down, an abundance of black excrement freshly deposited and typical of this species. The disappointment was great, for I had searched here before, and from former records I judged that for this year, at any rate,

the time had gone by. I persisted, however, in the repeated examination of a particular seraggy *Solanum* which is still permitted to stretch out its brittle arms towards the sun in one of the shaded but now disused pathways of Utinga, and which had yielded ova in 1917.

Here on April 11th I was unexpectedly rewarded by finding three oval green eggs on the under-surface of its sparse leaves, which proved to be those of *perplexa*, recently deposited and unstung, and from which I had the good fortune to rear three perfect moths, a female and two males, before leaving for England on June 11th, 1919.

As an exceptionally rare and interesting species, it is perhaps worth while recording the following details of their life-histories :

Ova darkened so irregularly from April 17th that it was feared they were stung. About noon on the 19th they hatched satisfactorily into well-formed white larvae with erect black tails. Having consumed their egg-shells, they readily took to fresh leaves of *Solanum* and *Aegiphila*, soon becoming green and glossy. Then, having more than doubled in size, they cast their first larval skins after no more than 50 hours. Their subsequent growth was proportionately rapid. On the 30th two of the three larvae performed ecdysis for the final instar. This occurred at 9.30 a.m., and from being of a sombre green with 7 clear white stripes, the entire area gradually darkened, while the yellow of the horn and fleshy tubercles became more intense. At 11.10 a.m., the side-stripes having now become so dark as to be scarcely visible in the prevailing blackness of the ground-colour, both larvae turned round and ate up their skins in the approved fashion; the third moulting similarly later in the day. On the following day all three were more intensely black and the side-stripes practically obliterated. By May 2nd they were much grown, their distended skins appearing lighter and of a sooty maroon colour, and the side-stripes being once again traceable. On May 4th at midnight two of the larvae were laving their bodies with spittle prior to pupation and the third had finished feeding, making the whole larval period only a few hours over fifteen days. After burying themselves deep in wet loam in three separate tins, the first two actually pupated in the early hours of May 10th, and produced a perfect pair of moths at 9 in the evening on the 28th of the month. Why the third, a perfect male of rather larger dimensions which emerged three days later, should have developed more slowly is hard to say, seeing that no question of sex was involved. It is, however, the unusual brevity of both larval and pupal periods that is specially worthy of note; for 39 days 9 hours from the hatching of the egg to the production of the perfect moth in both sexes constitutes, I should imagine, a minimum time record for the genus *Protoparce*.

Length of proboscis in female moth 4 in., in male 4½ in.

##### 55. *Protoparce rustica rustica*. (Plates 2 & T.Z.S.)

R. & J. p. 84.

Though by no means rare in Pará as a moth at light, and noted from time to time as a larva feeding on a variety of plants, it appears to be less common than at Lima. This caterpillar is sufficiently varied in itself and in relation to its pabula among the Orders of *Verbenaceae*, *Bignoniaceae*, *Boraginaceae*, etc., to frequently dupe one into the belief that a new species has been obtained.



Though already figured in Peru, I have made new illustrations to portray apparently distinct larvae, found feeding at the same time in the Botanic Gardens on two species of *Cordia*, one being an exotic from Japan and yielding a larva of a very intense green. Both, however, on emergence proved to be typical *rustica*, and were probably the progeny of the same mother.

In this, as in the majority of *Protoparce* species, the pupal period is usually about a month, but the pupa sometimes "stands over," as it is termed, for five or six months. Certain obvious advantages as well as disadvantages in adopting this method at once suggest themselves, but the causes which bring it about are far from obvious. Though other species occasionally behave in this way, it is, as one would expect, the exception rather than the rule with *Sphingidae* in tropical climates like that of Pará.

Length of proboscis in female moth  $4\frac{3}{8}$  in., in male  $5\frac{1}{8}$  in.

#### 56. *Protoparce albiplaga*. (Plates 2 & 9.)

R. & J. p. 86.

Not very common in Pará as a moth at light. Larvae found both on *Cordia* sp. ? (*Boraginaceae*) and two species of *Anonaceae*, including the *Biribá* (*Rollinia orthopetala*) in gardens. Three specific features call for notice, viz.: (1) The utter dissimilarity of the larva from the ordinary green *Protoparce* form, *albiplaga* assuming an uniformly bluish white ground with cadmium lateral patches enclosed by a bold design of black in place of the usual side-stripes. Feeding, as it does, fully exposed on somewhat dull green leaves, no attempt at concealment on the ordinary lines of protective resemblance to surroundings is possible, and it forms a truly remarkable exception to the majority of *Protoparce* larvae which imitate the green coloration of their leaves, if, as appears, its generic status is beyond question. (2) The disregard for danger exhibited by the larva of this species is still further manifested by the gregarious habit, from three to a dozen or more of the caterpillars being generally found feeding together on the same branch. This is another high peculiarity among *Sphingidae*, and finds but one parallel in these parts in the case of *Pseudosphinx tetrio*. (3) The proboscis-sheath of the pupa, which is free like the others, is as stout as that of *rustica*, well projected in a rounded curve, but barely half the length.

#### 59. *Protoparce dalica*.

R. & J. p. 88.

One fine female moth was picked up beneath a lamp in Pará and brought to me by a friend on January 11th, 1913. This, I regret to say, has been the beginning and, up to date, the end of my acquaintance with this rare and handsome species. In such a case, where food-plant and general conditions are not likely to present any special difficulties, one is left to ruminate as to why it should be so rare.

#### 64. *Protoparce floristan*. (Plates 1 & 2.)

R. & J. p. 92.

Moth taken on three occasions only at light in Pará and cannot be considered common. My first and only larva was one found full-grown on February 22nd,

1916, feeding in the forest shade on a species of *Citharexylum* (*Verbenaceae*). This, though green and bearing a general resemblance to *rustica*, differed in two particulars. The side-stripes and numerous spots were of a pronounced lemon-yellow and the former were unequal, the first three and the seventh being fully twice the width of the remaining three. The thoracic tubercles and thick rough horn were also yellow; there was no pink or red, and the description given by Burmeister (cf. in R. & J.) is totally incorrect.

The pupa differs from *rustica* and closely resembles *albiplaga* in its possession of a short, stout, though well-projected, free proboscis-sheath. Emergence in this case was much protracted, the pupal period occupying  $4\frac{1}{2}$  months, and causing me much anxiety during a pleasant stay with Mr. B. Preston Clark in Boston. Despite the cold, however, a perfect male moth put in its appearance on board the *New York* when nearing Liverpool, and emerged in my cabin after midnight on June 18th.

#### *Protoparce vestalis.*

Jord., *Nov. Zool.* xxiv. p. 59 (1917).

Two extremely fine males of this new and interesting species were captured on lamp-posts in Pará on May 6th and June 13th, 1912, and necessitated a climb on each occasion. By comparison at Tring they are obviously distinct, being larger than *floristan* and of a more snowy-white character with a more defined pattern, and reminding one of the coloration of the Barn-owl.

I naturally hope to come across the species again, but as yet remain as much in the dark as the rest of human-kind regarding the moth and its early stages. It is not unreasonable, perhaps, to associate it with *Verbenaceae*, but this, after all, is a somewhat "tall order." I may mention, however, that on an imported *Verbenaceous* bush, known as "Páo de Angola," growing in a garden here, I took a full-grown larva of *rustica* on February 14th, 1919; whereupon the lady of the house informed me that but a fortnight previously she had found and killed half a dozen other caterpillars which were eating her bush to pieces. These, she said, were of similar size and form, possessing a tail, and, though green in ground-colour, were different in that they had yellow bands edged with black.

If correct in her description, they cannot have been either *rustica* or *lichenae*; and I cannot but fear that this dire calamity must have fallen upon heads no less worthy than those of *vestalis* or *dalica*! She and the gardener promise not to do it again, cuttings of the plant have been taken, and, so far as life and opportunity afford, the scent will be followed up.

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We append here the description of the larva of a species observed at Pernambuco.

#### 88. *Neogene dynaeus.* (Plate 9.)

R. & J. p. 114.

For many miles round the city of Pernambuco, on waste ground, in fields and meadows and at road-sides, grows a sticky green *Verbenaceous* herb which is found useful in dispersing fleas in the neighbourhood of dogs and hens, and is universally known as "meladinha."

This proves to be the natural food-supply of the above species, which, it

## SUBFAMILY AMBULICINAE.

137. *Protambulyx eurycles*. (Plate 10.)

R. & J. p. 175.

Though a plentiful moth in both sexes at light in Pará, and occasionally found at rest by day among foliage, I have only too little to record of its life-history, having but once, after diligent and repeated searching of *Anacardiaceous* trees, discovered a full-grown larva on "tapiririca."

As *P. strigilis* occurs so frequently and over such a wide area, feeding on "Cajú" and several different species of *Spondias*, etc., and has at least three distinct larval varieties apart from the type, I had several times previously become convinced that I had at last secured *eurycles* or its rarer congener *goeldii*. These were always figured anew, but always produced typical *strigilis*. Seeing that the moth is so often seen on lamp-posts, it is both surprising and disappointing not to have taken more larvae. I have likewise failed, after repeated attempts, to induce this species or any other Pará *Sphingid* to lay eggs, though provided with refreshment, appropriate foliage, and the run of my gauze-covered bathroom.

This species, richer and browner than *strigilis*, may be described as a little in excess of it in the matter of size. The larva, as one would expect, is very similar, the chief differences noted being that the horn was green rather than blue, and that four of the side-stripes, or what corresponded to them, were broken up into very irregular patches of ochreous yellow on a uniformly green ground of rough texture. The pupae of this subfamily, like the last, are formed in subterranean cavities, probably at some distance from the food-plant.

The pupa of *eurycles* is exactly like that of *strigilis*, of a warm, glossy brown, long and cylindrical, ample and round in the head-piece, but devoid of any of those peculiarities which characterize *Acherontiinae*.

Length of proboscis in male moth  $1\frac{3}{8}$  in.

appears, can be taken in any month of the year, and would undoubtedly be a very common moth in the district were it not that its larva is literally decimated by a hymenopterous parasite. There is nothing to indicate the presence of the foe within until the final instar, when the maggots appear and spin small creamy white cocoons all over the moribund form of their victim, standing up on end like tufts of hair. I once took the larva of *rustica* on this plant, but neither "meladinha" nor *dynaeus* occur near Pará.

The larva in nature is generally whitish green with a red mesial line terminating in a fine curved black horn. This is supported on either side by a dorsal series of round white spots ringed with black. There are additional black patches, but the extent of these is very variable. With larvae kept in the dark from early days, the black, in successive moultings, frequently increases so much as to prevail over the green as a ground-colour. Though drawn on slightly too robust a scale, four figures were made at full growth to show this variation; for in the earlier instars, except in the matter of size, there is but little essential change from the form and coloration of the adult.

The pupa, like all the rest of this subfamily, is formed in a subterranean cavity. It is light brown, small compared with the larva, and not very elegant in form, and possesses a diminutive lobe turned down on the breast to represent the free proboscis-sheath.

142. *Protambulyx goeldii*.

R. &amp; J. p. 178.

A species accounted rare and local, but recorded from the other side of the continent in Bolivia, and one which I have myself taken in Pará on some dozen occasions in 1912-13 and several times since. I also took a moth on the lower Amazon near the Narrows which came to the lights of the boat. The other specimens were all drawn to electric arc lamps in the city; most of them were in perfect condition, and all but one, a lovely female, were of the opposite sex. A second perfect female was captured at light in April 1919.

This species, named after the founder of the Pará Museum, is surely the most elegant of all our Pará *Sphingidae* in the perfection of its form and in the bold yet delicate blending of its greens and yellows.

It is a matter of considerable regret that I am unable as yet to record anything of its early stages. From its obvious alliance to the adjacent species, it can hardly be other than an *Anacardiaceous* feeder, and probably possesses a correspondingly similar larval form.

Length of proboscis in female moth  $1\frac{1}{8}$  in.

143. *Protambulyx strigilis*. (Plates 3 & 10.)

R. &amp; J. p. 179.

A very common species in Pará as a moth at light.

Larvae also most frequently observed on saplings of "Cajú" and "Taperibá" (*Anacardiaceae*), the denuded stalks or frass on the sand beneath revealing the particular spray where the larva has been feeding, and to which it clings head downwards by two pairs of claspers only, geometer-wise.

As with *eurycles*, the front portion tapers off extremely towards the head, while the claspers on segments 7, 8, and 9, being retractile, are seldom used save when the caterpillar is eating or moving its position. The horn, which is of a light cobalt blue, is well erected and slightly turned up, and it is long and rough but of light construction.

The body is generally of a vivid green, well ringed and rough in texture, sprinkled over with fine yellow dots and a series of the same in line to mark the side-stripes. These are less conspicuous than in *Protoparce*, except the seventh leading up to the horn, which is always an ample white band. Three special varieties of the larva have been noted, the first two at least seeming to depend exclusively upon the particular species of food-plant chosen by the moth. They may be described thus: (1) Utterly devoid of any spots or stripes except the white seventh. This form is invariably and exclusively associated with a fern-like species of *Anacardiaceae* (genus *Rhus*), the leaves of which are of a very smooth and glossy green without protruding ribs. I presume that this form of the larva by being similarly plain is the better disguised, but it is little short of miraculous by what process it accomplishes the feat. (2) Green with yellow dots like the type and small inconspicuous blue spiracles, which are constant in all specimens. It differs in possessing a short broad band of pure white outlined with brown, as a remnant of the full stripe-pattern. This is situated immediately above the line of yellow dots on segment 7, and it sometimes possesses a similar band on segment 8. This form, on parallel lines with var. 1,



is similarly restricted to the very crinkled dark green leaves of a somewhat uncommon species of *Spondias* growing in the Utinga water-works region, and its harmony with the plant is emphasized by the possession of a slightly deeper tone of green. (3) Though the "Cajueiro" or Cachew tree often produces the type, a light pink and yellow form variegated with touches of warm brown is sometimes found on it, seeming to imitate the coppery tint of its newly-expanding leaves.

A nervous irritability is a character in common between this species and *eurycles*, as already noted for *Cocytius antaeus*, the larva when disturbed wagging itself violently from side to side.

The pupa, like the former, is of a warm glossy brown, possessing large eye-cases but no free proboscis-sheath, and outwardly resembles a thin *Oryba*.

Length of proboscis in female moth  $1\frac{1}{4}$  in., in male  $1\frac{1}{8}$  in.

#### 145. *Amplipterus gannascus*.

R. & J. p. 181.

#### 146. *Amplipterus ypsilon*.

R. & J. p. 182.

#### 147. *Amplipterus palmeri*.

R. & J. p. 183.

Here I have so little to say, not yet having had the good fortune of tracing the early stages, that I have perforce to deal with all three species in one short paragraph. Though scarcely abundant in Pará, *gannascus* and *palmeri* both occur with comparative frequency at the city lamps. Of *ypsilon* I took a perfect female at light on July 17th, 1912, and this constitutes, I believe, a record for the species in this part of the world. Though there is an abundance of *Lauraceae* plants in the district, and among them several species of *Oreodaphne* or *Ocotea*, the suggested food-plant, and though the moths generally appear in the pink of condition, as if freshly emerged, I have repeatedly failed after many attempts to track any of them to headquarters. When professional collectors on their travels do succeed in rearing a moth from its larva, it is regrettable that they so often pay scant attention to the plant, and are not precise in description nor careful enough, when the opportunity offers, to acquire information as to identity. From the rich herbarium at the South Kensington Museum this is generally to be had for the asking at the hands of the courteous and learned Professor in charge of the Botanical Department, or one of his assistants.

This completes my notes on the *Ambulicinae* for the present. They are decidedly meagre and unsatisfactory, but I have hopes of being yet able to learn something more of the early stages of the Pará representatives of this particularly beautiful subfamily.

### SUBFAMILY SESIINAE.

This third great subfamily of the *Sphingidae* is represented in Pará by no fewer than 16 genera and 47 species. Of some 36 of these I now know something about the early stages; on the remainder my notes for the present must necessarily be brief. I must, however, deal at somewhat greater length with *Isognathus*, and, referring to the close relationship which its species obviously bear to *Pseudosphinx tetrio*, I would note that the latter differs outwardly from *Isognathus*

in three particulars (see R. & J. p. 352)—viz. its greater size, an entire absence of yellow in the moth, and the colour of the pupa, which is red-brown with black lines instead of orange, brilliantly delineated with black, so marked a feature with all the species of *Isognathus*, and shared to a less extent by *Erinnyis* and others. The very obvious alliance between the two genera is emphasized by the following considerations:

(1) The common adoption of the various species of *Plumiera* as food-plant, to which all but three species appear to be restricted in nature.

(2) The tendency observable on the part of the larvae of several species of *Isognathus*, which is the normal habit of *Pseudosphinx*, to live gregariously in small numbers.

(3) The insistence of a transverse belted design, exhibited in the early instars of at least five species of *Isognathus*, and maintained by *swainsoni* subsp.? as well as *P. tetrico* to the end of the larval period.

(4) The strange and somewhat garish arrangement of colours which characterize the larvae of both genera.

(5) The repetition of a couple of sharp spurs on the anal flap, together with the universal whip-like and flexible black tail, terminating with a minute bifid fork, and more or less clothed with tiny setiferous tubercles.

Though I have had the good fortune to trace out the life-histories of all the species yet known except *rimosa*, and even add a new species or two to the genus, it is apparent that there are obscurities still, and that the present sequential order of the species is wrong throughout.

Reverting to the white larva of *Protoparce albiplaga* with its black and yellow design, considered in relation to the larvae of *Pseudosphinx* and *Isognathus*, may I be allowed to theorize for a moment, and suggest that the colour-scheme of all these larvae, and their tendency towards the gregarious habit, present us with an interesting case of reversion to, or possibly the retention of, ancestral type? With *albiplaga* it seems to me possible that, while most of its other structural features have advanced on evolutionary lines exactly parallel to those which have produced its fellow-species, and modified the great majority on the Darwinian principle of Natural Selection, this species and the *Isognathus* group, to take prominent examples, have preferred to face danger in the broad light of day with a contempt for duplicity. I may mention that the very young larva of *albiplaga* bears an extraordinary superficial resemblance to *I. swainsoni*, being belted white and black with a long curved black tail and a couple of tall black spurs on the anal flap.

These spurs appear to be a feature which was once as universal in *Sphingidae* as the tail, but, while tending to die out, has not yet quite vanished, and is therefore most noteworthy as indicating a common, if distant, ancestry. The importance of this consideration lies in the fact that, while these anal-flap spurs are still so pronounced a feature in *Isognathus* and are strongly developed in *Protoparce albiplaga*, being marked up to the end of its larval period by a couple of reduced black tubercles, the feature is nevertheless obviously shared by such comparatively distant species, but only up to the end of the second instar, as *Cocytius duponchel* (very slightly in *cluentius* and *antaeus*), and even pronouncedly in *Protambulyx strigilis*.

Speaking generally, larvae seem, in some mysterious way which we cannot pretend to delineate, to have been controlled by the obvious advantages and

extra security gained by resemblance to surroundings; by being green, for example, and looking like leaves, or brown and resembling twigs and dead leaves, or by hiding away altogether, instead of, as aforetime, as I assume, living in gregarious batches.

If the idea be feasible at all, my supposition is that all these species and many others throughout lepidoptera which have adopted or retained "warning colours," seem, as it were, to endorse the principle that, notwithstanding a certain amount of incidental loss and destruction, for them at any rate "honesty is the best policy." Therefore it is that their larvae, being bright and showy, and consequently not much to be desired by the predatory foes of their kind, become an even more formidable spectacle when congregated in numbers.

Again, many young *Sphingid* larvae belonging to different groups show a significant feature in common in the first instar.

I refer to the primitive tail, which at this period is long, rough, bilobed and flexible. With the majority this organ becomes speedily modified, but with the *Isognathus* group, though proportionately enlarged or reduced, it is in its essential features retained to the end of the larval period. In one species, *I. swainsoni*, so little change takes place that the full-grown larva, a zebra-like white and black creature with a touch of ochreous-yellow, is hardly more than the baby caterpillar magnified. My further supposition therefore is that, in *Isognathus* as a genus and in *swainsoni* as a species we have the nearest approximation to ancestral form. This genus accordingly seems admirably placed in *Sesiinae*, the central subfamily of *Sphingidae*, for it emphasizes the radial, in preference to the impossible linear, system of classification. If, however, it should be thought better to instance a large, hardy, and robust Hawk-moth, at once common, widely distributed, and invariably gregarious, the species which satisfies all conditions is ready at hand in *Pseudosphinx tetrio*, as the standard type or nearest modern representative of the ancestral *Sphingid* form; for it, too, in the adult larval stage is only a great big baby, and from its well-known abundance and wide distribution it affords a better starting-point or basis for the argument than *swainsoni*.

Once again, if the ancestral *Sphinx* formed a brightly-coloured and striped pupa beneath a web on the surface, as does *Isognathus* to-day, or a highly lustrous brown pupa with black design like *P. tetrio*, affording scope for development, it seems quite to accord with my theory that some of the offshoots should have adopted the subterranean method for the safety of their pupae, thus becoming modified to a plain brown without design, and that others, like *Xylophanes*, while still spinning a fragmentary web on the surface, should have found it expedient to sink into obscurity by producing pupae which resemble wood, dead leaves, or pieces of bone. I may be suggesting the impossible, but on the chance that some enthusiastic entomologist, who is also an evolutionist expert, may be sufficiently interested to look into the matter and elaborate its details, I have propounded my romance, and I can only trust that it may not be considered far-fetched.

#### 287. *Pseudosphinx tetrio*. (Plates T.Z.S.)

R. & J. p. 353.

One of the commonest moths in Pará as in other parts of the continent, its immense black, yellow-ringed, and red-headed larva frequently showing up

in gardens and public squares on the Frangipanni tree. A large batch often completely strips the tree of its leaves, and this gregarious habit, already alluded to in connection with *P. albiplaga*, as exceptional in *Sphingidae*, can, I think, only be explained on the supposition that the possessor of bright warning colours enjoys some immunity from predatory attack. These great larvae may often be seen sunning themselves on the trunk and twitching their heads about in a seemingly nervous fashion. A few strands of silk are spun beneath fallen leaves to form the puparium, and the highly glossed pupa is marked with black lines, especially on the wing-cases, as in *Isognathus*.

The female moth is considerably larger than the male and of a lighter grey, and both sexes, which come freely to light, show no special local variation. I have never found the species attacked by parasites.

Length of proboscis in female moth nearly 2 in., in male 1½ in.

### GENUS ISOGNATHUS.

As I have occasion only too frequently to deplore my inability, after prolonged residence in the country, to record anything about the early stages of certain species both rare and common, may I be allowed a small boast in respect to *Isognathus*, where I have had an almost continuous run of good luck? This genus, as it seems to me, is one of the most interesting, and yet, so far as my acquaintance with its species goes, is one where the greatest confusion prevails and entire revision is necessary. I will therefore record my experiences in rough chronological order for what they are worth, and point to the conclusions to which they seem to lead.

I began with *P. tetro* and *I. swainsoni* (see *T.Z.S.* p. 92), finding both species in 1918 in the Interior of Peru feeding on "caucho de monte," a tree which I wrongly described as a wild *Ficus*, but is in reality a species of *Plumiera* (not *Plumeria*, as in R. & J.), *Apocynaceae*.

In my first month after reaching Pará, July 1911, I took the single, white-banded larva, which produced a crippled moth like *swainsoni* and which, until more material is available for comparison, can, I think, only be regarded as the local caterpillar form of this species, as rare here as it was common there.

Returning to Pará in 1912, I restarted my investigation of the *Plumierae*, *sucuúba*, *fallax*, *phagedaenica*, etc., and, though I never chanced on the same caterpillar again, I very frequently took young and matured examples of *leachi*, the larva of which up to the fourth instar is very similar, but totally unlike in the last stage.

The next to turn up was a single full-grown larva of *excelsior* on one of the same plants, different in important respects from *leachi*, as the figures show, but obviously an adjacent species with a longer tail and designed on the same model. From that day to this I have taken the larvae of *menechus* in all stages, twice on *Artocarpus integrifolia* (*Moraceae*), but in every other case on *Plumiera*.

Journeying to Manáos, the examination of the local *Plumierae* at once yielded three species, a full-grown *leachi*, eight tiny *caricae* which I successfully reared to the moth on my return to Pará, and a new species referred to below. In 1917 I again took *leachi* and *caricae* at Porto Velho, and *caricae* once again at Pernambuco in 1918, all being found exclusively on *Plumiera*. Before this, however, I had accidentally come across a single larva of an *Isognathus* on *Allamanda*



*cathartica* which turned out to be *scyron*; this led to the finding of so many others, that I was soon aware that it was undoubtedly the commonest species of the genus in Pará. Reverting to my entirely new species, two young larvae in the second instar were found feeding on a narrow-leaved species of *Plumiera* at Tarumã near Manáos in January 1913. One died in moulting, the other fed up during my return to Pará, pupated, and duly emerged on March 20. I subsequently found more young larvae and some eggs in February and March 1917, not only on the shores of the Tarumã lagoon but on the banks of the Rio Negro nearer to Manáos, and in November of that year I rediscovered the species at Nazareth on the Rio Faro, in the State of Pará. I have now bred it on some eight occasions, and it has been designated *mossi* in my honour by Mr. B. Preston Clark, of Boston, Mass.

On two different occasions odd larvae of *caricae* were discovered among the rough vegetation lining the beach at Chapeo Virado, Mosqueiro, twenty miles north down the river; and now, as recently as the middle of March 1919, I find the species to be very abundant there, a few being taken on *Plumiera*, but the majority, upwards of a hundred in all stages of growth, occurring on small bushes of *Allamanda* growing wild in the sand close to the water's edge. Though other *Isognathi* will grudgingly partake of the alternative pabulum in captivity, this appears to be the only species to be found in nature on both *Plumiera* and *Allamanda*. On the other hand, while thriving equally well on either, it appears to be strangely fastidious in regard to locality and to the precise position and growth of the plant chosen. Out of my 90 Pará species *caricae* is the only one that has not yet been noted in either larval or imaginal condition close to the city. This is strange, for the species is obviously prolific, and its two food-plants are abundant here. By a comparison with *P. tetrico* and the various species of *Isognathus* in regard to early stages, as well as in the moth, *caricae* is perhaps the most difficult to place accurately. Seeing that its larval form and habits resemble those of *tetrico*, and that its pattern as a moth, as stated in the Revision, is more ancestral than that of the other species of *Isognathus*, it would seem to be more correct to place it next to *tetrico*—that is, at the beginning rather than at the end of its genus. It should, however, in this position, be regarded as an offshoot; for otherwise it interrupts what would appear to be an equally natural sequence from *tetrico* to *swainsoni*, etc.

My last species is one which I have recently taken in abundance at Pernambuco, and which my friend T. T. Dyer has still more recently had the good fortune to capture here in Pará as a male at light on February 24, 1919, thus adding a species to our already extensive list of local *Sphingidae* which must be as rare in Pará as it is common in Pernambuco.

My first acquaintance with it was as a moth at light in this latter place in May 1918, and I took it at the time as a worn but exceptionally grey specimen of *scyron*. Finding out my mistake, and returning thither in September, I explored all available plants of *Plumiera* and *Allamanda*, and was almost at once rewarded by the discovery of many larvae in all stages, found feeding in gardens on *Allamanda cathartica*, but never once on *Plumiera*. These larvae were so similar to *scyron* and so different to those described by Schaus and Gundlach (R. & J. p. 358), as found on *Plumiera* and producing *rimosa*, that I was again led to associate my Pernambuco species with *scyron* and regard it as an extreme local race of this species. This I am now convinced cannot be

the case, if it be only by the finding of a single moth, Mr. Dyer's perfect grey male, alongside the typical brown and only known form of *scyron*. Again, though the moth tallies with the description given under the head of *rimosa papayae* in R. & J. p. 359, I am strongly of opinion that the first name is erroneous and the second simply misleading, the unhappy hit, as it seems, of Boisduval in 1875; for in regard to the latter, the subspecific term *papayae* only puts one off the scent, as in my experience and that of others not one species of the entire genus ever touches *Carica papaya* as a food-plant. The same remark applies with equal force to Linne's name *caricae*, a mistake stereotyped since 1764. Possibly it was the discovery of the larvae of the common *Erinnyis ello* and *alope*, as more or less close relatives feeding on *Cacrica papaya*, which has led to this unwarranted assumption.

It may here be noted that the entire group is all but exclusively associated with *Apocynaceae*, and that *Plumiera* belongs to that Order and not to *Euphorbiaceae*. In appearance and habits as an *Allamanda*-feeder, the new species is obviously more closely allied to *scyron* than to any other, and must be granted an independent name. Since writing the above, Mr. Preston Clark has received my consignment of a dozen perfect bred specimens from Pernambuco. He is convinced that this is a new and distinct species ranking between *rimosa* and *scyron*, which he proposes to call *allamandae*. Finally, I gather that *congratulans* has already dropped out of the category of true species, and is now regarded simply as an extremely dark subspecies of *rimosa* from Cuba.

Piecing then together all the scraps of information which have accrued concerning this group, more especially in so far as they relate to early stages and food-plants, may I take the liberty of suggesting the following order as a nearer approximation to the true sequence?—1. *tetrio*. 2. *caricae*. 3. *swainsoni*. 4. *leachi*. 5. *excelsior*. 6. *menechus*. 7. *mossi*. 8. *rimosa*. 9. *allamandae*. 10. *scyron*. While retaining the old numbers for reference, I feel bound to adopt this order in my present notes so as to avoid further confusion and not interrupt certain natural sequences.

#### 295. *Isognathus caricae*. (Plate 3.)

R. & J. p. 360.

Not found as a moth, and taken only at the distance of 20 miles from Pará. The young larva on emergence from the egg is almost black, but after moulting bears six lateral patches of white, a dull red head, a yellow patch at base of tail, and a row of dorsal bristles.

In the succeeding instars considerable development takes place, with an ever-increasing number of intricate markings in blue and red and finely pencilled lines in white and yellow, as shown in the figures. It is to be noted that the customary white belts in this case are hardly more than a couple of fine white rings near the interstices of each segment, first on a dull black ground, becoming intensely black and velvety in the final instar. In the redness of its head, the comparative shortness and thickness of its tail (which, however, generally bears a white ring about the middle), and in the coloured patch at its base, *caricae* undoubtedly approximates to *tetrio*. In the strong yellow ring on segment 2, the yellow lateral skin-folds and sundry other marks, it shows a departure from all the rest.

Among those taken in the last instar at Chapeo Virado many were brilliantly adorned on the back of each segment with square patches of carmine-red, giving them an exceptionally rich and handsome appearance. In the matter of size and agility, they reminded one much of *tetrio*, readily falling to the ground when approached, exuding large drops of a yellow fluid from invisible apertures in any part of the skin, and without any apparent damage (noted as a characteristic of the entire group, but to a less degree), and making off with great alacrity over the grass and hot sand from those defoliated stems and gnawed stalks of *Allamanda* where they had been feeding and basking in a blazing sun.

A large and free cocoon of strong red-brown silk is spun among grass and débris on the surface of the earth, and the pupa, which is formed in three days, is of a distinctly lighter straw-yellow than that of any other species of the genus.

As though to emphasize its difference from all the rest, even in later life, the dark band bordering the hindwing of the moth, so characteristic a feature throughout *Isognathus*, is in *caricae* merely represented by some seven or eight dark radial streaks on a light yellow ground.

Length of proboscis in both sexes  $1\frac{3}{8}$  in.

289. *Isognathus swainsoni* subsp. ? (Plates 3 & 4, and compare *T.Z.S. swainsoni*, Plate 8.)

R. & J. p. 355.

This may be a new and hitherto undescribed species, one nearly full-fed larva which pupated but produced a cripple in August 1911, and one wasted moth in the following year, being all that I have yet to record. This moth, with a very broad dark border on the yellow hindwing, resembles *swainsoni*, which species I bred in Peru from larvae with no trace of red on their heads, and had rather shorter tails; moreover, the white predominated over the black.

My Pará larva was essentially black with white belts, and as red as *P. tetrio* on head, plate, anus, and claspers to the end of its caterpillar existence. With such scant material, however, I am inclined for the present to regard both moth and caterpillar as simply the eastern geographical race or a local form of *swainsoni*, a specimen of which is recorded as having been taken at electric light in Pará by Dr. Goeldi and sent to the Bern Museum. It is evidently very rare here, as all attempts, oft-repeated throughout the district, to retrace this remarkable and highly conspicuous larva on the "sucuúbas" of the matto, or the Frangipanni of gardens, on which latter it fed in captivity, have so far failed.

Pupa formed in a surface cocoon, and in itself indeterminable from *leachi* and the rest (except *caricae*), the various species showing little if any essential difference *inter se* beyond the matter of size. When living they are all of a bright and lustrous cadmium-yellow, with numerous tar-black streaks marking the wing-sections, clearly defined and somewhat variable big spots on head and thorax, and finer transverse lines and spots on the abdominal segments. They become uniformly dark before emergence.

288. *Isognathus leachi*. (Plates 3 & 4.)

R. & J. p. 355.

Quite a common species at light in Pará. Like others of the genus, frequently taken as a larva on various wild species of *Plumiera*, and will readily take to Frangipanni in captivity.



The young black-and-white-belted larva with ochreous extremities in the first three instars appears to be identical with *swainsoni*. A great change, however, takes place in the fourth instar, the ground-colour lightening to mauve and the white belts becoming creamy, rounded off before reaching the legs and claspers, and being finely outlined in black. A still more remarkable change in the final instar produces an entirely distinct-looking larva, the head being salmon-pink shaded on the face by umber-brown, the back adorned with a series of irregular X-like marks and the sides with light-coloured ovals. A couple of light longitudinal stripes divide the dorsal from the lateral areas. The entire ground-colour is now of a delicate violet, legs black, claspers ochre in black settings, and all the light patches are finely outlined with black.

No parasitic attack observed.

Length of proboscis in male moth  $1\frac{3}{8}$  in.

#### 294. *Isognathus excelsior*. (Plate 4.)

R. & J. p. 359.

Moth common at light in Pará in 1912 and a few every year since, but never so abundantly. The larva, only once taken at full growth on *sucuúba*, was similar to *leachi*, but differed in the following respects: tail bluish at base, stouter, rougher, and nearly twice as long, quite the longest of the genus, in fact; ground-colour dark steel-grey; dorsal and lateral patches, together with interrupted stripes, claspers, and upper half of legs of a warm ochreous colour, the dorsal patches more V-like, being cut off posteriorly by the transverse black belts which complete each segment; anus light but adorned by nine dark marks, a couple on the flap representing the hard tubercles or spurs which are shared by all these species alike. On the analogy afforded by *swainsoni* and *leachi*, it is highly probable that in the early instars *excelsior* partakes of the same black-and-white-belted design which characterizes those species. As the moths have nearly always appeared in fresh and perfect condition, I fail to understand the extraordinary rarity of this larva by comparison with *leachi* and *menechus*, unless, like the latter, it possesses some alternative and possibly preferred natural food-plant.

Length of proboscis in male moth  $1\frac{1}{2}$  in.

#### 291. *Isognathus menechus*. (Plate 4.)

R. & J. p. 356.

Frequently bred from larvae found on the "sucubas" of Pará, and on several occasions also I have taken it feeding on the leaves of the Jaca tree, *Artocarpus integrifolia* (Moraceae), but, as a moth, only once or twice has it occurred at light. This difference in the degree of susceptibility to the attractiveness of light with species known to be common, and which are yet but seldom thus ensnared, is very extraordinary. Not less strange is the observation frequently made that certain arc lamps, apparently equally attractive and well-placed, should be variously selected by different kinds of moths, one, for example, being the rendezvous of a host of common *Sphingids*, another being the particular lamp where the greatest variety of *Syntomidae* have occurred, and so on with other groups, while the rarer or more exceptional *Sphingidae*,



such as *Oryba kadeni* and *achemenides* and the species under consideration (though here it is not rare), will, like the usher of the poet, be found "remote from all," the same species of moth, for example, occurring time and again in the same position and on some particularly favoured white wall that catches the light of a street-lamp. Though not without its exceptions, of course, this small phenomenon has been so frequently noted by my friends as well as by myself that I make a passing mention of it, for it seems to suggest that artificial light may, in accordance with its degree of intensity, quality, or peculiar waves of vibration, extend a varying attractive influence upon different species and even upon different families and groups of insects. It may be for some such subtle reason that here and there we meet with an exception even among the *Sphingidae*, as a family so notably drawn to light, but with instances occurring, like *menechus*, where the impelling rays find but little response in its optic retina.

The larva of *menechus*, with but slight modifications, once again corresponds closely with *leachi*, for example, in that its first three instars are characterized by the black-and-white-belted design with ochreous extremities, while the fourth and fifth instars differ immensely from this, from one another, and from others of the genus at these particular stages. To describe these changes in all their details is difficult and perhaps unnecessary, as the main differences can readily be gauged by a careful comparison of the figures. It is, however, interesting to note that the oval patches, which adorn the sides of *leachi* and *excelsior* in their final stages, are prepared for in *menechus* by a series of finely curved black lateral lines in the third instar, perfected in the fourth, and merely enlarged in the final stage. The dorsal area in this species develops marks of a more elongate and subdivided character, increasing depth of colour, and in general foreshadows the linear or longitudinal stripe-formation which reaches its climax in *mossi* (sp. nov. Clark).

While *excelsior* possesses the longest tail, *menechus* would seem to exceed all others of the genus, except perhaps *caricae*, in the bulk and weight of its full-fed larva, occasionally falling but little short of a small *P. tetrio*. A larva found on *jaceira* (the Jaca tree) once produced dipterous parasites.

Length of proboscis in female moth  $1\frac{3}{8}$  in.

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### *Isognathus mossi*. (Plates 4 & 10.)

*Isognathus mossi* Clark (1919).

Two larvae in the second or third instar were taken on my second expedition to Manáos in January 1913, and were presumed to be those of *rimosa*, a species which at that time I had never seen. These were found feeding on a narrow-leaved and possibly undescribed species of *Plumiera* which grows plentifully on the white sandy shores of the Tarumã lagoon and the Rio Negro near to Manáos.

It would fill a chapter to narrate the details of my subsequent endeavours to obtain more of this unknown rarity: how various kind and interested friends in Manáos in 1917 arranged special expeditions to Tarumã for me by their private motor-launches; how, before leaving for Iquitos, I secured a stung egg and then two diminutive larvae, only to have them ruthlessly destroyed as soon as I

got on board by a miserable horde of ants ; how on my return I got three more hardly bigger, and next day found the corpse of one sucked dry by a bloodthirsty spider, etc., etc. But suffice it to say that in the end I managed after prolonged and diligent search—and my thanks will ever be due to Messrs. Sutton and Fairweather and Captain Roxo—to procure some 5 or 6 more in their second, third, and fourth instars. Leaving Manáos on March 22, I at last succeeded in protecting them from foes and feeding them up to good-sized larvae on the boat returning to Pará, and finally I had the extraordinary good fortune to rediscover the species at Nazareth on the Rio Faro on the same voyage.

As the *Cuyabá* had to stop here for some hours to take in timber, I availed myself of the opportunity of going ashore and searching for fresh fodder. This place is situated on the boundary line between the States of Pará and Amazonas, and from the former locality is nearer to Belem by some 350 miles. The outlook was propitious, for the white sandy beaches lining water as black as the Rio Negro were well clothed with a varied scrub vegetation. Exceeding my utmost anticipations, I was again successful, for not only did the same particular variety of *Plumiera* grow there plentifully, but my new *Isognathus* was actually there as well, showing a remarkable constancy to a special *type* of plant and locality. In great jubilation I returned to my boat with not only enough fresh *sucuúba* to last for the rest of the voyage, but with an additional larva found at full growth on the stem of a plant and a couple of eggs, which latter, however, were stung and useless, as I could see at a glance. I now had 8 larvae, and all but 1 fed up well, pupated, and in Pará three weeks later 7 perfect males and females of this very distinct new species emerged.

The pupa is of the normal *Isognathus* colour, pattern, and form.

The moth may be described as intermediate in size between *menechus* and *rimosa*, rounder and broader in wing and of a more sooty grey than any of the others, while the strong black band on the yellow hindwing is fully as broad as in *menechus* or *excelsior*.

The newly hatched larva, which very readily falls from its leaf, is dead black with a few touches of white in its posterior half and a black tail of almost its length curved forward. After moulting, it possesses a distinctly chequered design in black and white.

In the third instar this is maintained, the longitudinal white lines on a black ground being interrupted by the transverse black rings of the interstices. The extremities are ochreous, as in *menechus*, and its black tail with a white ring corresponds with that species in its form and length. The chief differences noted in the last two instars were the amalgamation of the spiracular patches into one continuous broad lemon-white band, the increased yellowness of head and plate, the anus conversely growing duller, while the ground-colour becomes a warm chocolate-brown with longitudinal stripes of Indian red and lemon-white adorning the back and sides.

### ***Isognathus allamandae*. (Plate 10.)**

*Isognathus allamandae* Clark (1920).

Having already dealt at some length with this species, I need not repeat what has already been said on p. 376. Let me, however, emphasize a few points which distinguish the larva. The pattern throughout, like that of *scyron* and

the later stages of *mossi*, is one of numerous longitudinal stripes and lines in grey and white, the spiracular band being more or less definitely pink. Compared with *scyron*, which it most closely resembles, it is more clearly lined but paler and greyer, *scyron* developing from pale grey into a dirty brown with a subdued brown chequered design not found in this species. Small black and yellow marks adorn the front of the plate. The dark grey tail is exactly like that of *scyron*—that is, both are equally short in proportion to the full-grown caterpillar when contrasted with a species like *leachi*, for example, and both are *twice* ringed with white.

It is a dull and dowdy creature, and in the final instar, like *scyron*, it always hides away in the shade during the heat of the day on the dry stems of its food-plant or on some adjacent object as dull as itself. On *Allamanda cathartica* in gardens and on a closely related wild species alone did I ever find it, and, if present at all, it generally occurred in fair numbers, the same moth having obviously deposited a number of eggs separately on different parts of the plant. The favoured situation was where the *Allamanda* was growing as a verandah creeper, and here from the varied size of many larvae it was no less obvious that one beheld the progeny of more than one mother. Rather loosely-spun cocoons were found among the dried portions of ferns growing next the wall beneath, many containing empty shells, but some newly formed, and not a few containing old pupae riddled with holes by the exodus of parasites.

The pupa itself, though more slender in proportion to the size of the moth, is in colour and pattern constructed on exactly the same lines as *scyron* and the others. Though all the above observations were made in Pernambuco, Mr. Dyer's single male, taken at light in Pará on February 24, 1919, provides sufficient justification for the inclusion of this species as one of the Pará *Sphingidae*, no matter how rare it may be, and apparently is, locally.

I note that Schaus says, in reference to *rimosa inclitus*, that the larva changes to pupa in from 10 to 14 days. This is surely a mistake, 3 or 4 days at most with all my species, and so far as I can remember with all other *Sphingidae*, being the limit of time during which the larva lies in its puparium before the final moult, and most of them emerge in little more than 3 weeks later.

#### 290. *Isognathus scyron*. (Plates 2 & 4.)

R. & J. p. 356.

This is undoubtedly the commonest and, except for the one just dealt with, the smallest species of *Isognathus* in Pará, the moth frequenting lamps and the larva nearly always to be obtained in the public and private gardens of the city by searching the leaves and stems of the lovely *Apocynaceous* shrub or creeper *Allamanda cathartica*. With this, like the former, it appears to be exclusively associated, never in nature having been taken on *Plumiera*. The ova and young larvae when grey are easily found on the under-surface of leaves, but in the last instar, being of an earthy-brown colour, they successfully hide away during the day on the dusty-brown stalks or in curled-up dead leaves. Having studied its development from the egg, several of which are often laid upon the same plant, the following notes may be of interest.

1st instar.—Sooty black, the young larva when examined under the lens exhibiting strong characteristic features. Head dirty white above, clean below,

and divided by a lateral black belt, as if masked. Segment 2 with a couple of prominent black dorsal tubercles surmounted by fine hairs and backed by a transverse white belt which connects two subspiracular white bands. These bands, which are very white in the anterior half, become hardly visible from segment 7 to 11 inclusive, and appear to be sooted over. The upper parts of segment 12 and the anus are clear white sprinkled with black dots. Below on the black anal flap are situated the couple of strongly developed black spurs, which are reduced in altitude inversely with the growth of the caterpillar, but always present. Many fine bristles adorn the back, and the curved dark grey tail, which at this period is fully three-quarters of its entire length, is rough and distinctly bi-lobed at the extremity.

In instar 2 the dorsal and lateral areas become grey with black dots.

In instar 3 a lighter grey is assumed, bearing a distinct medio-dorsal black line. The light lateral band is now uniformly white, contains the spiracles, and is bordered above with black. The plate behind the head is now yellow and adorned with two small black tubercles and two other black spots. The tail now and in the two succeeding instars is ringed near the base and near the tip with white.

In instar 4 the design of the adult larva prevails, the colour in individual specimens varying between a light vinous and an umber-brown freckled with darker touches, the head and plate a dull yellow, the back sombrely lined, and the sides relieved by the spiracular bands, which are now of a very dirty or clouded pink and contain light spiracles.

The pupa, which is commonly found spun under moss on tree-trunks, is rather stouter than the former species but otherwise identical: and it is occasionally found riddled by the holes of parasites.

Length of proboscis in female moth  $1\frac{1}{4}$  in., in male 1 in.

### GENUS *ERINNYIS*.

Here I have a note to record in relation to the pupae. As with *Isognathus*, so also in *Erinnyis*, is there a standard generic pattern of pupa to which the species wonderfully approximate and which ought not to be confounded with the former. While allowing for their variability in size, the type is undoubtedly like *Isognathus* in general form and colour, and is similarly adorned with black stripes on the wing-cases and with short transverse black dashes on the abdominal segments, but it differs in certain important respects: (1) The yellow colour generally inclines to a mahogany red and both extremities tend to be suffused with black. It must here be remembered that the bright colours, whatever they originally were, are seldom as bright after the emergence of the moth, and the precise tone or tint cannot be gauged from the empty pupa-shells of a collection. (2) The black design on head and thorax, if apparent at all, is much less pronounced and perfect. (3) It is longer for its size, or, in other words, somewhat narrower in proportion to its length. (4) The cremaster, though sharp-pointed, is invariably stouter at its base. (5) Its surface, though glossy, is rather less highly glazed. By a general grasp of these features it will be seen that several of the descriptions given in the Revision of the pupae of *Isognathus* and *Erinnyis* are very deficient, and some actually erroneous,



A loose-spun but ample cocoon, similar in all respects to *Isognathus*, is formed by all these species under dead leaves or concealed among herbage on the surface.

296. *Erinnyis alope*. (Plate T.Z.S.)

R. & J. p. 362.

Commonly observed as a moth at light in Pará or as a larva feeding on *Hevea*, *Carica*, *Curcas* (*Jatropha*), *Manihot*, and other *Euphorbiaceous* plants. If green in the early instars, it is generally of a dark brown richly mottled in the final stage of the caterpillar with a yellowish ventral area, and is readily distinguished from *ello* by its more prominent tusk-like blunt horn, which is smooth and light-coloured.

Its well-known thoracic patch of colour is shared in common, though in varying tones of red and black, by *ello*, *oenotrus*, and *crameri*, but not by *lassauxi* and *obscura*. Pupa very similar to *ello* but rather longer.

Length of proboscis in male moth  $1\frac{3}{4}$  in.

297. *Erinnyis lassauxi*, forms *lassauxi* and *omphaleae*. (Plate 10.)

R. & J. p. 363.

Moth not uncommon at light in Pará, and now frequently bred from ova and larvae found on a garden creeper with sweet-scented white flowers, known locally as "angelica doar" (*Asclepiadaceae*), but never on *Morrenia*, as recorded by Burmeister, who also gives the same food-plant for *oenotrus*. I doubt if he was correct in either case, and he most certainly could never have seen the larva of *lassauxi* when he said that it was very much like that of *ello*, for nothing more different in adjacent species could well be imagined! One might be excused for *anticipating* that such would probably be the case, but the fact is far different. So utterly unlike was my first-found larva, that I was unable even to guess its genus, or do more than rank it in *Sesiinae*. Only when it formed a pupa outwardly identical with *alope* did I judge that it must be *lassauxi*, for I had already taken the larvae of all the other local species of *Erinnyis* except *domingonis*, and this was twice the size. Not having my figures by me now, I can only describe it very generally by referring to its truly remarkable mimicry of the food-plant, the white-knobbed swollen process on the thoracic segments exactly simulating the end of a flowering stalk from which the flowers had fallen, these white lobes representing drops of the congealed milk or latex which is so characteristic of this plant and other *Asclepiac*, and the four side-patches of light brown in strange design on a sage-green ground, inclining to milky-white dorsally, admirably repeating the twining green stems with their ever-present light and brown scars. Not a mark but counted for something in the general scheme of resemblance to surroundings; and if this does not happen to be its natural or original food-plant, it can doubtless be sustained by a very similar wild species with large leathery leaves growing in the matto. After the first accidental find I have frequently taken it in gardens, but only on this plant, the larvae, except when very young or when eating, generally reposing in a strangely contorted attitude among the stalks.

As regards the moth, and in response to the suggestion made on p. 364 of the Revision, I may state that the two forms *f. lassauxi* and *f. omphaleae* with

the cinnamon-rufous patch of varying size on hindwing are both very distinctly present here, two fine specimens of the latter being entirely without the black spots on under-surface of abdomen. As I used to take both forms of this moth in Chanchamayo, Peru, it is obvious that they do not represent geographical races or subspecies.

Length of proboscis in both sexes  $1\frac{3}{4}$  in.

298. *Erinnyis ello*. (Plate T.Z.S.)

R. & J. p. 365.

Enough has already been said in the general introduction and elsewhere of this extremely common species, and the only additional touch of interest that I might here record is that I once found the larva in its fourth instar in Barbados feeding on the leaves of the deadly "manchineel" (*Euphorbiaceae*), and that its horn in this case, hitherto unnoticed, was like a knob, swollen but tipped at its extremity, and capable of a small degree of inflation and contraction.

Length of proboscis in both sexes  $1\frac{1}{2}$  in.

300. *Erinnyis oenotrus*. (Plate 10.)

R. & J. p. 367.

Of very frequent occurrence as a moth at light in Pará, less often observed as a larva, and taken only for the first time in July 1917 on a small bush of *Zschokkea* sp. ? (*Apoc.*), growing in the Pará Bosque. In November of the same year I took 5 more at Porto Velho on the same plant and on a species of *Echites* with dark green and rather hairy leaves, as rare here as it was abundant there. On this same *Apocynaceous* plant I also took several larvae of *Pachylia resumens*, to be referred to again.

In early days the larva is of a uniform light green, the dorsal and lateral areas divided by the customary pair of light stripes leading to a long, curved tail. In the later instars it has both green and grey-brown forms, the latter much freckled throughout with tiny brown touches and a double series of brown spots. Though distinct enough from the others to the eye, it is difficult to describe beyond saying that it is like *ello*, but proportionately longer and more slender, and often rests on the brown stalks with three pairs of claspers retracted, giving it a very geometer-like appearance. Its horn, from being like a knob with a tip in the fourth instar, is reduced in the last stage to the merest sharp point, exactly on a par with *ello*. The colour of the pupa is rather brighter than that species, and is less obscured by black at the extremities.

Length of proboscis in female moth  $1\frac{1}{4}$  in., in male  $1\frac{5}{8}$  in.

301. *Erinnyis crameri*. (Plate 7.)

R. & J. p. 368.

As common a species as a moth at light in Pará as the former, but in the larval form only seldom seen. The first was discovered accidentally in August 1914 as a pale green larva feeding on a species of *Tabernaemontana* (*Apocynaceae*), and this led to more finds on the same plant and to one on a kindred species.

Its tail up to the last instar and its transverse light belt on the thoracic segments recall *ello*; there are also the customary pair of light stripes dividing the dorsal from the lateral area.

In the final stage the larva generally assumes a uniform ochreous-brown coloration, inclining to blue and freckled with light spots and black dots. The claspers are ringed with velvety blue-black, the face and legs lined with black, and the interstices of the thoracic segments adorned with two belts of bright vermilion. The second of these is centred with black, but neither of the belts is in the least degree visible when the larva is at rest, reposing like the last species geometer-wise with retracted claspers and stretched across the fork of a bough, a perfect stick among sticks and most easily overlooked.

Pupa very similar to *ello*.

### 302. *Erinnyis obscura obscura*. (Plate 7.)

R. & J. p. 368.

A fairly common species at light in Pará, and once again but seldom seen in the larval condition. This, however, was first found in May 1913, and has occasionally been taken since by searching a somewhat inconspicuous small-leaved creeper, *Gonolobus* sp.? (*Asclep.*). These occur in both the green and grey-brown varieties which characterize *ello*, and, though a smaller species, and without the dorsal patch of colour on the thoracic segments, it bears a general resemblance to that species. Like all the others of this genus, its anterior claspers are retractile, and it protects itself by adopting the same geometer-like attitude when at rest.

The pupa, though a little lighter in tone and only half the size, is practically identical with *lassauxi*, i.e. with rather more black than *oenotrus* and less than *ello* and *alope*.

### 303. *Erinnyis domingonis*.

R. & J. p. 370.

Much rarer than the preceding species in Pará, taken freely at light in 1912 but only very occasionally since, and the larva remaining undiscovered. From its obvious close relationship to *obscura*, it is natural to assume that the larva is constructed on much the same lines as that species, and that it will eventually be found to be also associated with *Gonolobus* or some kindred plant in the Order *Asclepiadaceae*.

### 305. *Grammodia caicus*. (Plate 7.)

R. & J. p. 371.

An interesting species not hitherto recorded for Pará, the moth occasionally coming to light, and the larva, after the first accidental find at Val de Caes, four miles down the river, being frequently taken in small numbers on two species of *Echites* and once on *Zschokkea* (*Apocynaceae*). The larva is a somewhat plain creature, varying in colour between pink, light brown, and pale olive-green, and possessing a straight, erect horn up to the last instar, when there is hardly more than a hump. With the dorsal area enclosed by two stripes from face to tale, it at once suggests *Erinnyis*, but there are some evenly distributed light spots, and in form it is really more that of an elongate *Noctuid*.

The cocoon is in all respects like that of the previous genus, a moderately stout-spun web amongst vegetation on the surface. The pupa, too, is extremely

similar to that of *Erinnyis*, but the light yellow ground-colour is more banded and spotted with black and it is distinctly less glossy.

### 306. *Pachylia ficus*. (Plate T.Z.S.)

R. & J. p. 373.

Again we come to a species so widely common and of which so much has already been said in the general introduction and elsewhere that there is little more to add. Though not so often drawn to light as might be expected, its great fat green larva is nearly always to be found on the neatly cropped *Ficus benjamina* trees which adorn the avenidas and praças of the city. It occurs here also on several other species of *Ficus* with foliage of very diverse character, and it is sometimes obtained from the leaves of the common fig-tree in gardens, but here, at any rate, I have never found it on *Artocarpus* or *Cecropia*, the forms of plant-life so greatly preferred by its congener *syces*. The strange lichenous variety of *ficus* also sometimes occurs, and the caterpillar, when it has assumed the vivid orange coloration prior to pupation, is constantly being picked up in the road by non-entomological friends, who are quite disappointed to learn that they have not in this case been privileged to add a rarity to the collection.

### 307. *Pachylia syces syces*. (Plate T.Z.S.)

R. & J. p. 374.

Not uncommon but rarely taken as a moth at light in Pará. When met with in the larval condition, it has always been found associated with *Moraceae*, *Artocarpus integrifolia*, *Ficus* sp.?, and *Cecropia*, and too often is it already doomed to destruction by dipterous as well as hymenopterous parasites. I have now frequently bred the moth, and found it a very common species in Pernambuco on the Jaca tree which so largely prevails there.

The larva, after assuming its characteristic series of black belts, comes down to earth and is then frequently seen by the natives. On those occasions when the crevices of the roots of its own tree offer sufficient inducement to it to stay, its large, glossy brown, and vivacious pupa may readily be found in a loose-spun cocoon under stones and dead leaves.

### 308. *Pachylia darceta*.

R. & J. p. 376.

Though the female is rarer than the male, the moth in both sexes is of frequent occurrence at the electric lights of Pará, and I once took a male similarly in the streets of Manáos.

This large species, however, is one which up to date has baffled all my attempts to elucidate the mysteries attaching to its early stages; and after having had my faith shaken by what has recently come to light in regard to the larva and food-plants of *resumens*, I incline to the view that *darceta*, too, is a somewhat distant cousin, is not to be found associated with *Moraceae*, and may possibly feed on a species of *Davilla* (*Dilleniaceae*). This, at any rate, is the favoured pabulum of such allied genera as *Aleuron* and *Enyo*, and frass, too big for their species but appropriate for *darceta*, has been noted beneath such a plant, suggesting the idea. Some of these creepers growing in dense thickets are naturally



very difficult to explore fully. On the other hand, *darceta* may be associated with some completely different type of growth and live well above one's head. That some very large species are thus accustomed to inhabit the upper branches of enormously high trees, utterly beyond the reach of the most skilled climber, is too apparent by the frequency with which one discovers the excrement in some void place on the ground beneath, sometimes of great size and possessing peculiarities of form new to the eye.

Length of proboscis in male moth  $1\frac{3}{8}$  in.

### 309. *Pachylia resumens*. (Plate 10.)

R. & J. p. 376.

Moth in both sexes of very frequent occurrence at light in Pará as elsewhere, but the larva rarely seen. Indeed, being misled by the statement that it was known, and that it resembled a small edition of *ficus* (vide Revision, p. 378), on whose authority I know not, I wasted much time during my first five years in Pará in exploring *Ficus* trees of all descriptions; but the "smaller" larvae resembling *ficus* always grew big, and were, in fact, that species in every instance.

Once again, therefore, one has to deplore the lack of careful and thorough observation on the part of some moth-collectors in foreign parts, who too readily assume that they have seen the larva of the moth they have caught without having taken the trouble to rear a single specimen. In point of fact, the larva of *resumens*, beyond being green, is not in the least like *ficus*, and could never be confounded with that species by any one who had really seen it. The yellow side-stripes are not only more numerous, but they form a series of V's at the mesial line and lead up to the horn. In *ficus* and *syces* they run contrariwise, and terminate abruptly with the light longitudinal lines which enclose the dorsal area. In *resumens* this area, though lighter, is not clearly divided off by lines at all. The long, turned-down tail of early days is replaced in the last instar by a tiny point surmounting a prominent hump. Again, the texture of the skin, the swollen nature of the thoracic segments, and the black-and-yellow ringed base of the legs on segments 3 and 4, give *resumens* far more the appearance of being a closer ally to *Perigonia* or *Sesia* than to its neighbours in *Pachylia*. The cylindrical glossy dark brown pupa with its long, sharp-pointed cremaster seems also more to reproduce the form of *Epistor* than that of *Pachylia*. Finally, in its food-supply it appears to be limited to certain species of *Echites* in *Apocynaceae*, sharing one with *Leucorhampha*, but ignoring at least three other varieties. It was in Porto Velho that I first took the larva in November 1917 feeding on a species with dark green and rather hairy leaves, and which appears very rarely here. In Pará, however, I have twice subsequently taken it by the railway line feeding on a distinct species of *Echites* with large, yellowish, and rather glossy leaves.

Length of proboscis in male moth 1 in.

We come now to the only two known species of *Oryba*, and if a proud mother is justified in exhibiting her bonny twins to an admiring world, it is with a kindred satisfaction that I present my two golden babes, partly because they are both so handsome and interesting in all their stages, and partly because, after keeping

me waiting for a long time, they both ultimately rewarded my patience by coming to light in more than the technical sense.

### 310. *Oryba kadeni*. (Plate 5.)

R. & J. p. 379.

By no means uncommon in Pará, this exceptionally handsome moth with its rich combination of green, yellow, and black is much drawn to light, both sexes often being found in the neighbourhood of electric lamps by day, though not so often captured. This species and its congener seem to be endowed with an extra degree of nervous vitality, and make off in a wild flight, especially when approached in bright sunshine. I first figured the larva from two specimens found in the Interior of Peru, feeding on some very long-leaved plant of the Order *Rubiaceae*. Both pupated, but subsequently died owing to the rigours of a four days' journey to Lima. I correctly diagnosed the species at the time through the enormous eye-cases of the pupa, *kadeni* possessing, I believe, the largest eyes of all lepidoptera known; but with the lack of absolute certainty I decided, on the expert advice of my friend Dr. Jordan, at Tring, to defer the publication of the figure. The matter is now settled beyond doubt by the recurrence of the larva on very many occasions in Pará in all stages of growth on a long-leaved species of *Palicourea* with bunches of red and white flower (*Rubiaceae*).

Though normally as yellow as a sunflower, with large black spots and stripes and, when full-grown, as big as *Acherontia atropos*, making it a very conspicuous object, I have twice found a brown-and-white-banded variety of the adult larva, so different in design as to suggest another species. Indeed, I thought that I had then obtained *achemenides* until its identity was revealed on emergence. The young larva is pale green with a whip-like bifid tail, and, with modifications of this appendage, a pale yellow or pink-brown colour is assumed, both tone and design gradually intensifying and forecasting the adult stage. How this most striking caterpillar can have been passed unheeded by collectors of moths and butterflies in the American tropics for so long is a puzzle, and it seems to suggest that those who are engaged in stocking our museums might occasionally do better service and deepen every one's interest in the study, their own included, if they would oftener leave the net and search for larvae. In my own case it is only by so doing that I have taken many of my best *Sphingidae*, and out of four at least that are absolutely new to science, two have never been taken on the wing and only bred from the larvae. There are few things in nature to equal, still less to excel, even in the very moths which they produce, the larvae of *Sphingidae* in their superlative elegance of form and curve, blend of colour, and perfection of imitative design. The trouble of course is that they do not offer the same facilities for preservation as do the moths. A blown caterpillar, especially when large and green, as so many of the *Sphingidae* are, becomes too often a parody of its former self. Better success is met with at times in species that are ornate and deeply coloured, and when care has been taken not to over-blow them. But to interest a wider public, the accurate depiction of the living larvae on their food-plants in their characteristic attitudes at all stages is obviously the great ideal to be aimed at. How many strange and wondrous forms of life have been seen only to be at once forgotten, or occur simply as a

fading reminiscence in the mind of the solitary observer who has been privileged to wander through the forest and swamp of the tropics! Such deficiencies can and should be met by more descriptive notes, more hand-drawing, or more photography, with facilities for reproduction on a more extended and organized scale than has hitherto been attempted.

The puparium of *kadeni* is a subterranean cavity, the walls of which are supported by a slight amount of silk. The pupa is of a bright mahogany-brown, stout but elegantly curved, with enormously large eye-cases and a very strong, broad, but sharply-pointed cremaster.

Length of proboscis in female moth  $\frac{3}{4}$  in.

### 311. *Oryba achemenides*. (Plate 5.)

R. & J. p. 379.

This moth, though reckoned a rarity, is by no means uncommon at light in Pará, but it is difficult, except by rearing, to obtain in perfect condition. It seems particularly fond of settling on overhead wires and in other exalted and impossible positions. It sits, like *kadeni*, with its wings spread at a wide angle, and flies off like a bird when approached. The resemblance between this species and the former is by no means so close in its early history as a general similarity in the moths would lead one to expect. Indeed, the parallelism between the two species hardly extends beyond the fact that they both have yellow caterpillars with brown varieties, and that they are both *Rubiaceous* feeders. This species, however, as I at last discovered after long and fruitless searching on *Palicourea*, only feeds on *Ourouparia*, a strongly-built creeper which generally grows on the outskirts of swampy matto. The plant possesses glossy ovate leaves and big curved thorns like the claws of a vulture, and goes by the local and most appropriate designation of "Unha de gavião." The tails of both *Orybas* when young are on the model of *Isognathus*, being whip-like and flexible, dark in colour, light-ringed, and distinctly bi-lobed at the tip. The evolutionary progress of the caudal appendage is, however, different, the tail being more sickle-like and prominently erected in the fourth instar of *achemenides*, suggesting the thorn of its food-plant, and becoming only a small hard button in the final stage; while with *kadeni*, the long, slight, and curved-down tail of the fourth instar lapses into a tiny sharp point in the last stage. Both species possess very smooth velvety skins, but the difference is otherwise very great, segments 4 and 5 in *achemenides*, especially in the last three instars, being swollen out laterally in diamond-fashion to an enormous extent, giving the caterpillar a very strange appearance utterly unlike *kadeni*. The latter is almost uniformly cylindrical and of a deep cadmium yellow with black spots, while *achemenides* is marked with 6 white and 8 green irregular patches in lieu of the lateral oblique stripes directed towards the tail. The medio-dorsal line is represented by a series of dark marks at the interstices, and the dorsal area is defined by two irregular green lines from the face to the horn, the ground-colour being of a delicate lemon-yellow. The equally common brown variety is of course identical in form with this, but the strong combination of light and dark colour on the head and anterior segments, together with a big white square spot on the rich brown of segment 4, constitute very striking differences, and give this innocent creature the general appearance of being formidable and snake-like.

In the pupa the diameter of the eye-case is distinctly less than that of *kadeni*, and the cremaster is shorter and blunter.

### 312. *Leucorhampha triptolemus*. (Plates 6 & 9.)

R. & J. p. 381.

This species, though but rarely seen as a moth at light in Pará, has proved to be fairly common and widespread in the district in its larval condition, and merely needs to be searched for on its favoured food-plants, two species of *Echites* (*Apocynaceae*), growing in special localities. Its near of kin, *ornatus*, strongly prefers the leaves of "Páo de colher" (*Zschokkea* sp., *Apoc.*), growing in the shade of the forest, but as both species occasionally take the alternative pabulum, an element of uncertainty is produced, for they are extremely alike. Indeed for some time I confused them, and in the original sketch for this article I wrote as follows: "If these names really represent distinct species, I can only say that both occur in Pará, and that the line marking their specific differences is an exceedingly fine one in all stages of their being. Both, for example, feed on various species of *Echites*, and the moths, which to my eye only differ in the presence of a bronze-green scaling in *ornatus*, and more extended yellow belts between the abdominal segments in *triptolemus*, proceed from larvae and pupae in which I am unable to detect any distinction beyond that which is incidental to individual variation."

Such was my view at the time, but I am now fully satisfied that the species are distinct, and while still insisting on their close relationship and great similarity, especially in the larval stage, subsequent experience enables me now to affirm: (1) that the egg of *triptolemus* is distinctly smaller than that of *ornatus*, the latter being exceptionally large, and from the outset, as it were, rightly foreshadowing a larger and more robust insect, though to the eye the ultimate difference may be but slight; (2) that the larva of *triptolemus*, though identical with *ornatus* in average size, form, habits, colour-scheme, and essential markings, is generally browner and more heavily marked; (3) that *triptolemus* has a plain, lemon-coloured variety with light green markings, similar to *achemenides* but not yet noted in *ornatus*; (4) that the pupa of *triptolemus*, while appearing identical, nevertheless differs in that it is generally smaller, has a rather finer cremaster, and, most important of all, that this cremaster under the lens is shown to be possessed of two small divergent points not found in *ornatus*; and (5) that the moth of *triptolemus*, reverting to the question of colour and scale-distribution, is of a cooler brown shade with a minimum of green scaling, possesses a longer and finer silver streak, is less elegant and pointed in the apex of forewing, and narrower or more squat in the breadth of hindwing.

The description which I now quote was written in November 1915 for the larva of *ornatus*, but as it applies equally well for *triptolemus* and must be regarded as doing double duty, I prefer to insert it here. The larva is quite one of the most remarkable of living creatures that I have ever seen, a perfect Aaron's rod, combining in the most novel and striking way the principles of protective resemblance with an aggressive snake-mimicry. When at rest as an adult caterpillar, it hangs by two pairs of claspers in the vertical from the stem of its food-plant, and appears to be nothing but a broken branch covered with a dull, creamy white lichen. A strange black chequered dorsal design, with a



gradual intensification of the grey on certain segments completes the deception. The wonder, however, is if possible exceeded when, on being disturbed, this marvel of creative evolution endeavours once more to deceive by turning into a snake, and in quite a different way to that adopted by *Xylophanes* or even by its fairly close relative *Madoryx pluto*. Though this wonderful transformation wants to be seen in life to be fully appreciated, I may explain briefly that the effect is produced by the creature turning itself over and exhibiting its ventral area, which is adorned by a broad band of dark olive-green with the three anterior sets of elaspers completely withdrawn and scarcely visible. The thoracic segments, which are always swollen, become puffed out laterally to an exaggerated extent; a pair of black eyes on segment 4, hitherto concealed and situated behind the now recumbent and wholly inconspicuous legs, open out; the cheeks appear to be adorned by yellow scales with black edges; and the fraudulent notion that one is beholding merely the head and neck of a formidable, if small, snake is carried to a nicety by the rigidity of the curve adopted. Then, as if to mesmerize, a swaying side-to-side motion is kept up for an appreciable number of seconds, before the creature, seeming to realize that an attack is no further contemplated, gradually closes its false eyes and relapses once more into diurnal slumbers. That this mimicry of the fore-part of a small serpent, if mimicry it be, for it is hard to give it any other name, should be chiefly produced on the ventral surface, a feature peculiar in itself, and that every detail should so contribute in perfecting the deception, is altogether remarkable.

Prior to pupation the lighter tones of the larva turn to orange. It then spins a moderate cocoon among débris, and changes in three days to a uniformly dark and glossy pupa. My first specimen (of *ornatus*) at this particular period produced, to my utter disgust and disappointment, 72 writhing dipterous maggots, the presence of which it was impossible to foretell, as the demeanour of their over-burdened host was in all respects normal and it bore no external defacement. I naturally had no peace until I had explored the matto far and near for its food-plant and tracked down my larva once again.

Length of proboscis in male moth  $1\frac{1}{2}$  in.

#### 314. *Leucorhampha ornatus*. (Plates 6 & 10.)

R. & J. p. 382.

Though not really scarce in the larval stage throughout the humid and shaded parts of the matto, it is rarer than the preceding species, and I never remember to have seen this particular moth at the electric lamps of Pará, which can scarcely fail at times to attract it like its congener. For a full description of this species and its intimate relationship with *triptolemus*, it is necessary carefully to study the foregoing. It is there apparent that one general account must suffice for the adult larvae of both species; and though there may be many small points of specific difference which I have overlooked, I believe I am not far wrong when I assert that the descriptive notes of the earlier instars of *ornatus* given below apply very closely in detail to the corresponding stages of *triptolemus*.

After my first accidental find of a stung larva I discovered empty egg-shells on *Zschokkea*, and full ones later on on a kindred *Apocinaceous* species (sp. ?)

with a free-flowing white latex. These first tiny larvae had obviously perished soon after emergence.

I then procured similar eggs on the near relative of *Echites* known as *Amblyanthera versicolor*, but these were filled with the minute grubs of hymenopterous parasites. Ultimately I succeeded in rearing this highly interesting and remarkable caterpillar to its moth from a single big green egg, found on the under-surface of a young fresh leaf of the first-named plant, and the process has several times been repeated since. The notes that I then made are worth recording, for they well exemplify the extraordinarily rapid growth and development which takes place in very many species in this part of the world; the entire cycle of changes from the hatching of the egg to the formation of the pupa being exactly 24 days, while 18 days more sufficed for the production of a perfect female moth.

Green egg developed band of crimson 2 days before hatching.

December 19, 1915, at noon, plain light green larva emerged, tail shortly becoming red-brown and mobile. Alimentary duct visible as a medio-dorsal line. Did not appear to eat much beside egg-shell, but grew appreciably and prepared to moult on evening of December 21.

December 22, at 10 a.m., moulted, first instar having been passed in the remarkably short period of 72 hours. Colour soon changed to grey-green, and by 8 p.m. on December 23 was of a glossy pale maroon. Undersurface dark, dorsal area graduated from light to dark sienna. Tail held in trailing posture and dark at tip. Geometer-attitude first adopted when in repose.

December 25, at noon, moulted second time. Colours intensified, a couple of black ocelli showing on the dorsal area of third thoracic segment, losing their intensity in the next instar, and being replaced by a much more highly elaborated pair on the ventral surface of the same segment. Tail of increased length, flattened laterally about centre.

December 29, at noon, moulted third time for fourth instar. Colours more intensified, especially dark on ventral area, the snake-representation and general pattern of the adult larva being anticipated in many details. Tail like a curved knife-blade.

January 3, at noon, moulted fourth time for final instar, as already described for *triptolemus*. Tail now exchanged for a minute light red point.

January 9, at noon, exactly 21 days to the hour, light colour changed to reddish orange, and at midnight began to spin cocoon among leaves and earth. Shortly orange colour faded out again.

January 12, during afternoon, pupated, the pupa resembling *triptolemus*, but being without the minute bifurcation at the tip of the cremaster which characterizes that species.

Length of proboscis in male moth  $1\frac{1}{2}$  in.

### 316. *Madoryx oiclus*.

R. & J. p. 383.

Of this species I have but little to tell, having only managed to pick up a stray and not very perfect male on the pavement beneath an arc globe in one of the main streets of Pará on July 8, 1912, and another perfect male at light in April 1919. However, my friend Mr. T. T. Dyer, with an increasing enthusiasm

for studying the lamps, has had the good fortune to take a couple of nearly perfect females, but neither of us have yet learnt anything about its early habits or its larva, which is doubtless as weird and snake-like as its relatives. From its apparent intimacy with *bubastus*, it is not improbable that it is a *Tecoma* feeder; but with such a labyrinth of green as we possess in these parts, one can only deplore the lack of that precise knowledge in regard to its particular tree and locality, which, for the time at least, bars all further progress.

Length of proboscis in male moth  $1\frac{3}{4}$  in.

### 317. *Madoryx pluto*. (Plate 6.)

R. & J. p. 384.

This species can hardly be described as common in Pará, but I have secured a good series of the moth in both sexes from electric lamps and bred a few others from larvae obtained on four or five occasions. The short descriptions of the larva and cocoon given in the Revision on pp. 383 and 385 are quite correct. I am very sceptical, however, when I see it described as a feeder on *Jussiaea* (*Onagraceae*), of which we possess many varieties, ever serviceable to *Pholus fasciatus* and *eacus*, but not one that would ever provide sufficient space or protection on its stem for the formation of the cocoon of *pluto*, as I have found it. Its two chief food-plants here appear to be *Miconia minutiflora* (*Melastomaceae*) and "Cafe rana" sp. ? (*Vochysiaceae*). The statement that its "stout chrysalis resembles that of *Pseudosphinx tetrio*" is wholly incorrect, and should be replaced by its "long and elegant chrysalis is dead black with ochreous interstices between three of the abdominal segments." The pupa of *pluto*, like all adjacent species, is exceedingly nervous and lively.

The larva in its final instar, if the championship among frauds be already won by the *Leucorhampha* species, nevertheless runs them closely, and takes a very high second place in the perfect success of those devices resorted to in first simulating the living stalk or stem of its food-plant, and then by endeavouring to terrorize one into the belief that one is gazing at an open-mouthed snake with red jaws and a couple of fierce, blue-black eyes set immediately above them. This particular effect is produced entirely on the dorsal area by the larva lowering its head towards its legs, puffing out its thoracic segments (not laterally this time), and exhibiting these wonderfully brilliant touches of external ornament which at all other times when the caterpillar is sleeping or even when it is eating or in motion are entirely concealed within the interstices of its segments, and looks a perfect stick of a light brown coloration. Though I secured two photos, to take its portrait as a snake in pencil and paint was an exceedingly difficult task, for it would never maintain the attitude for a sufficient length of time, and soon got tired of even repeating the hoax for the edification of my much-impressed friends. Writing now in April 1919, this species seems to have become as rare and unprocureable as almost everything else in these parts; and though it may seem fanciful, I cannot help feeling that the general dearth of lepidopterous life, which appears to prevail throughout northern Brazil and is noted by all friends of the soil, must be due to some widespread epidemic on a par with the influenza among human beings, and may possibly be attributable fundamentally to that same malign influence, whatever it be.

In support of the view, I mention that a number of full-grown larvae

of different genera—such as *Protambulyx*, *Epistor*, and *Xylophanes*, apparently otherwise healthy and unmolested by parasites, have recently been found hanging dead from their stalks.

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318. *Madoryx bubastus butleri*.

R. & J. p. 385.

This is not a Pará moth, and is one of my six interlopers referred to on p. 357.

Consequent upon a short visit to the West Indies in July 1915, I am able here to insert a brief note in regard to what I take to be this species, but possess now no material for comparison.

(1) The moth is distinctly smaller and browner than *oiclus*, which, rather than *pluto*, it chiefly resembles.

(2) The larva, though I never saw it, obviously feeds on what is locally known as the Whitewood cedar, *Tecoma leucorylon* (*Bignoniaceae*), an abundant tree in the Islands of St. Vincent, Bequia, and St. Lucia.

(3) It spins an ample web or cocoon and covers it with scraps, like *pluto* does, in the crevices of the trunk of that tree.

(4) Its pupa is of a lighter brown than that of *pluto*, with light interstices, but is smaller.

(5) From the frequency with which I found the old cocoons, it is obviously a common species in these three islands at least.

I can say nothing of its larva, as I was only able in the short time at my disposal to procure two full cocoons, from which perfect moths emerged within the next ten days. This unfortunately occurred after a day's exploration of the ruins of St. Pierre, Martinique, and as I had no killing-bottle they both got damaged beyond repair.

320. *Hemeroplanes nomius*.

R. & J. p. 388.

A species of frequent occurrence, especially the male, at the electric arc lamps of Pará, and once similarly obtained at Manáos, but as yet remains untraced in its early stages.

Length of proboscis in male moth  $\frac{3}{4}$  in.

321. *Hemeroplanes pan*.

R. & J. p. 388.

Length of proboscis in male moth  $\frac{1}{2}$  in.

324. *Hemeroplanes parce*.

R. & J. p. 390.

Both these species, like the former, are known to have a wide distribution, and both occur with equal frequency and in perfect condition at the electric lights in Pará. Though comparatively small moths, they are stout enough to proceed from moderate-sized larvae, and the mystery surrounding their early stages is very hard to account for. Their obviously close alliance with *inuus*



makes it probable that they are at least among that large number of species that favour *Apocynaceae* plants as a food-supply for their larvae, but as yet nothing can be discovered. It is unfortunate that among our Brazilian *Sphingidae*, so far as my experience goes, not a single caught female of any species will ever consent to lay in captivity. Though treated with every consideration in my bathroom, each one in turn batters itself to pieces and dies full of eggs.

325. *Hemeroplanes inuus*. (Plate 7.)

R. & J. p. 391.

In 1912 more frequently met with than the three foregoing species as a moth at light in Pará. The egg is laid upon the tender leaves of "Pepino do matto," *Ambelania tenuiflora* (*Apocynaceae*), young or small trees in open places seeming to be preferred. The larva, which I first obtained in May 1914, has been found very sparingly since by working such trees at this time of year. It is elongate in shape after the manner of *Erinnyis*, and not at all snake-like as in the foregoing genera. The head is large, the ground-colour plain green, and a couple of light lines from face to tail enclose the dorsal area. These lines are of a clear lemon tint on segments 2 and 12, and the sides are relieved by orange spiracles. The tail, which in the early instars is pale green with minute touches of black, long and trailed, becomes a stout, curved, and well-erected blue-black horn in the last stage. From this description of *inuus* it seems highly improbable that the larva referred to in the Revision on p. 387 was that of its near relative *pan*. Excrement small, light green, and neatly hexagonal. The pupa is of a plain and glossy dark brown, and is formed beneath a slight web on the surface of the earth after the larva has turned pink and wandered away from its food-plant.

Length of proboscis in male moth  $\frac{5}{8}$  in.

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328. *Aleuron carinata*.

R. & J. p. 395.

Here I have nothing more to record than the capture of a single female moth on March 24, 1917, which was attracted to the lights of my boat at Parintins, near the boundary line between the States of Amazonas and Pará. The species has not yet turned up here.

331. *Aleuron chloroptera*.

R. & J. p. 396.

Evidently a rare species in Pará, my first perfect moth having occurred at light in November 1915, and only six specimens having been noted since, four of them being captured by Mr. T. T. Dyer.

From the habits of the three following species, I think it probable that the whole genus are *Dilleniaceous* feeders with preferences for particular species of *Davilla*. The early stages of *chloroptera*, however, still remain to be discovered.

333. *Aleuron iphis*. (Plate 7.)334. *Aleuron neglectum*.

R. & J. p. 398.

Both species have now been fairly frequently taken at light in Pará and up-river, but cannot be regarded as common here.

The larvae, from their general resemblance to one another, were not differentiated at the time, and I can therefore only show one figure, which for the present must stand for both species. They were found in August and September 1914, feeding upon a comparatively scarce form of *Davilla* (*Dilleniaceae*), which is longer in leaf and less rough than the common *D. rugosa*, and have not been taken since.

This latter plant, a kind of creeping bush which grows very abundantly at the roadside in many open sunny places, will serve as an alternative food-plant in captivity. Larvae green or brown, possessing both the enclosed dorsal area and oblique side-stripes leading to the tail. The thoracic segments are swollen out laterally, the legs on segments 3 and 4 spring from bright crimson patches, and the horn evolves from the sickle-pattern, as shown in *Enyo japix*, to a mere point in the last instar. The pupae are of a straw yellow like those of *Isognathus*, but naturally much smaller and with less black ornamentation, and are similarly formed beneath a web on the surface among debris.

Length of proboscis in male moth  $\frac{7}{8}$  in.

335. *Enyo japix japix*. (Plate 7.)

R. & J. p. 399.

Probably not rare, but only occasionally taken at arc lamps in the city. This species vies with its congener in being the smallest Sphingid in Pará. The larva, which resembles the foregoing, is green or pink-brown, possessing exaggerated thoracic segments and a sickle-like tail, evolving to a mere point in the last instar. I have but twice taken it feeding on *Davilla rugosa* (*Dill.*), and once on a kindred species in June 1919.

Pupa yellow with black lines on exactly the same model as the previous species of *Aleuron*. For the precise distinctions which obtain between *Enyo* and *Aleuron* I must refer my readers to the figures, no written descriptions having been made at the time. The great difference between the green and maroon forms rather led me to anticipate a distinct species on the second occasion.

336. *Enyo pronœ pronœ*.

R. & J. p. 400.

This is the one and only species of *Sphingidae*, so far as I am aware, which has been recorded for Pará by others but has evaded both myself and my one enthusiastic colleague who takes any interest in the study. Unless I have mixed up my earlier specimens, now in England, with *japix*, I have not seen the moth, and can do nothing more than refer to the note in the Revision, p. 401.

337. *Epistor lugubris lugubris*. (Plates 7 & 10.)

R. & J. p. 403.

338. *Epistor ocypete*. (Plates 7 & 10.)

R. &amp; J. p. 405.

Both exceedingly common at light in Pará, especially the former. I take these two species together for the convenience of description, and because, though undoubtedly distinct, their larvae are at times almost impossible to differentiate. With an increasing acquaintance of them both, I find it less easy, strange to say, than I once thought, to point to their essential differences, due mainly to the fact that both have a large range of variety in colour and markings.

They are practically of the same size; both have straight, thick, leaden-coloured horns, enclosed dorsal areas, and 8 or 9 oblique side-stripes directed tailwards; both assume various greens and pinks as a ground-colour, and both feed on various species of *Cissus* (*Vitaceae*). The word *Citrus* on p. 402 of the Revision is unquestionably a slip or a misprint for *Cissus*, for surely no one is going to be audacious enough to suggest that an *Epistor* ever sank so low as to leave the juice of the grape and suck an orange!

On the other hand, *ocypete* forms an interesting connecting-link with the two former genera by its fondness for *Davilla rugosa* (*Dill.*), on which it is much more frequently found. I think also that I am right in saying that *ocypete* is rougher in surface, more besprinkled with white or yellow dots, and that its dorsal and lateral stripes are more clearly white and more strongly defined with a deeper tone of the prevailing colour of the individual specimen, be it blue-green, yellow-green, or a shade of carmine red. Both species have yellow-green forms bearing a mesial and a double lateral series of more or less prominent red patches evenly situated on all their segments, and reminding one much of the variation so commonly seen in the European *Smerinthus populi*. In the early stages *lugubris* is often thus or entirely pink, and generally changes later to blue-green, especially when feeding on the similarly-coloured leaves of *Cissus sicyoides*, known locally as "carão" or "pareira braba." On another species of *Cissus*, known as "cipo pucá," it is sometimes irregularly marked with red-brown on a warm green ground, and once or twice I have taken it as if splashed with black ink or tar.

The larvae of both species are hardy and voracious feeders, and produce an unusually large quantity of moderate-sized and rather round moist green excrement. But few parasites have as yet been noted in association with this genus, but I once bred a single large black wasp from a larva of *ocypete*.

The pupae are plain brown and glossy, with long sharp cremasters and a microscopic amount of bifurcation at their tips. They are formed a little below the surface of the earth without much admixture of silk.

Length of proboscis an inch or less.

339. *Epistor gorgon*. (Plate 7.)

R. &amp; J. p. 405.

Though occasionally taken at light, this is much rarer than the two former species in Pará. The disparity in shape and colour between the two sexes of the moth is a strange and misleading feature to the uninitiated. Twice only have I bred the species from larvae found feeding on *Cissus sicyoides*. This is like *lugubris* in colour and design, but the horn is dark brown and definitely

curved, and the same brown colour not only borders the anal segment but bisects the anal flap. The thoracic segments, too, are more puffed out laterally.

Pupa like the foregoing but bigger, with a very long pointed cremaster a slight degree more forked.

#### 340. *Epistor taedium australis*.

R. & J. p. 406.

Of this species I can say no more than that a single male moth was taken at a Pará electric lamp early in 1918, and was thought to be only a small dark specimen of *gorgon*. By comparison later, however, I became convinced that it was distinct. I submitted it to Mr. Preston Clark, of Boston, who declares it to be a male of *taedium australis*. It is doubtless a rare species here, and almost certain to be another *Cissus* feeder.

#### 341. *Epistor cavifer*. (Plate 10.)

R. & J. p. 407.

From a single moderate-sized green egg found in January 1919 on *Cissus sicyoides* in Utinga (the Pará water-works territory), I reared a small green *Sphingid* larva. This seemed so like many others that, up to the final instar, I did not figure it, anticipating only *gorgon* which I had already drawn and painted. At this stage, however, it appeared so much more elegant and interesting that I began to entertain hopes in regard to one or other of the rarer kindred species, and decided that at least it merited a second portrait. It then formed a typical *Epistor* pupa like *gorgon* with a long sharp cremaster, and justified my hopes on February 18th by emerging into a perfect male of *cavifer*, a species which I had never hitherto met with in Pará. Curiously enough, during the latter part of March I secured four more young larvae of this species, feeding on a large vine-like form of *Cissus* in the Pará "Bosque," all of which attained full growth. Then one unaccountably succumbed to some prevailing larval epidemic, while the remaining three pupated satisfactorily, as I thought. Even one of these, however, was doomed, for a week or so later it lay limp and motionless with the abdominal segments distended, and then through a small dorsal aperture in the thorax there appeared the unholy dark form of a dipterous cocoon.

From the second or third instar these larvae were very distinct from *lugubris* and *ocypete*, and shared the characters of *gorgon*, viz. more swollen thoracic segments, irregularly edged on approaching the ventral area with dark brown. Furthermore, the anal segment was ringed and the flap bisected with this same colour, and the horn, especially in the last instar, was a perfect hoop, very long, immensely curved, and of a dead sepia tone. It may be mentioned here that this somewhat striking and unusual ornamentation of the anal segment, apart from the horn, which is so pronounced a feature in *cavifer* and *gorgon*, is not infrequently, but only vaguely, foreshadowed in pink in *lugubris* and *ocypete* in those yellow-green forms possessing a strong consecutive series of pink spots. At this stage also the spiracular area, especially on segments 6 to 10 inclusive, is beautifully adorned with a nondescript light brown design on a delicate apple-green ground; and though the oblique side-stripes lead up to the horn, they are bowed and not strongly delineated, while the dorsal area is inversely marked



with a series of V's pointing headwards. I find now that I figured this larva from a specimen taken in the Interior of Peru in 1909, but as I failed to rear the moth the figure remained unidentified and consequently unpublished. I have never consciously seen the moth at light, and can only regard it as a rare species hereabouts.

353. *Nyceryx coffeae*.

R. & J. p. 417.

A single and very perfect specimen of a beautiful Hawk-moth, quite new to my eye, has suddenly turned up in Pará. I took it from the wire of a bright electric arc globe opposite my house at midnight on May 25, 1919.

365. *Perigonia pallida*.

R. & J. p. 425.

Fairly common as a moth at light in Pará.

Larva probably a *Rubiaceous* feeder, but all efforts to trace its early stages have so far failed.

367. *Perigonia lusca* f. *restituta*. (Plate 7.)

R. & J. p. 426.

Generally common at light in Pará, and often found burnt in the débris from broken arc globes.

Larva uniformly cylindrical, plain apple-green or white-green, with very narrow white mesial stripe. The head is blue-green and the horn only slightly curved. The last of the 7 light oblique side-stripes leading to the horn is, as in the case of so many species, though not in the genus *Epistor*, heavily edged with dark green above and sometimes touched with black. This and the succeeding species of *Eupyrrhoglossum* and *Sesia* share a feature in common which is calculated to terrify away intruders. I refer to a certain strained attitude sometimes adopted, these larvae when disturbed throwing their heads back and exhibiting large lunules of velvety black in cadmium or lemon-yellow settings on the ventral area of the second and third thoracic or leg segments. At all other times these markings are completely hidden. The larva of *lusca* feeds sometimes on *Oourouparia guianensis*, but more often on the leaves of two species of coffee, *Coffea arabica* and *liberica*, all *Rubiaceous* plants.

The pupa differs but little from *Epistor* in appearance, or in the position chosen for its formation.

371. *Eupyrrhoglossum sagra*. (Plate 9.)

R. & J. p. 430.

A rare moth in Pará, though apparently a common species elsewhere, with a very wide range of distribution. Until lately I had never taken the species here, and recorded it simply on the authority of two friends, Mr. F. Ducke of the Pará Museum, who captured a specimen at Pinheiro, 10 miles down the river; and Mr. T. T. Dyer, who took another in good condition at a lamp in the city on March 5, 1919.

On April 21, however, I had the good fortune to procure a single larva

of this species feeding on *Sabicea aspera* (*Rubiaceae*), or, to be more accurate, preparing for its penultimate moult on the underside of a *Miconia* leaf, which was obviously not its food-plant. This produced a perfect moth on May 12, 1919. On the completion of its ecdysis, I found that this was another species which I had figured in Peru, but that as it subsequently died it remained unidentified. I have made two new figures, and am now practically certain that yet a third Peruvian illustration of a larva with the same general bearings, but green and stouter, can only be referred to that of its congener, *E. corvus*. This latter species, however, is not a native of Pará, and the figure remains unpublished.

The larva of *sagra* in the fourth instar is of a warm brown, with the customary 7 dark oblique side-stripes and 4 light red patches below these stripes on segments 8, 9, 10, and 11. The horn is much erected, curved back, and then turned up. In both this and the final instar it is extremely rough and file-like on the upper edge, and disproportionately so about the middle of the lower edge, terminating in a sharp black spike. In both also segment 2 is pointed, and forms a cowl for the head. The chief differences in the last stage are as follows: colour intensified to brown madder, dorsal area light pink, latter portion of mesial stripe deep maroon, light bordered and broadened about the centre; bent stripe on thoracic segments and a distinct mesial line marking the ventral area; patches of colour on segments 8-11 now emerald-green and white, suggesting the figure 5 four times repeated, one green spot on 7 and a patch of green dots at a higher elevation below the stripe on 12; spiracles light red; legs ochreous, on segments 3 and 4 springing from yellow-ringed black patches; a dark tract behind horn to anal flap; horn very rough as before on upper and lower edges, but black spike now down-turned; the whole larval area besprinkled with minute light dots. Excrement dark brown, roundish, and the segmental divisions much obliterated. In so many ways does this species show its obvious kinship with *Sesia* that, were it not for certain anatomical considerations in the moth, deemed important by the expert, the clumsy word *Eupyrrhoglossum* might well be eliminated, and its couple of species included in that genus.

### 373. *Sesia ceculus*. (Plate 7.)

R. & J. p. 433.

A common species about Pará, as elsewhere, but only rarely drawn to light, and more often seen, like the Humming Bird moth of Europe, flying over grass and flowers along roads and railway cuttings, and generally late in the afternoon. Two forms of the larva have frequently been met with, and so different are they in colour and markings, and so constant is this difference in direct association with food-plant, that for long I was almost convinced that they represented two species. But the resulting moths are identical in all respects, and I have now come to the conclusion that this is only a parallel case with that of *P. strigilis*, for example, and that neither of them admit of any specific subdivision. The difference in the colour-scheme and pattern of their larvae in these cases would appear to be purely a matter of environment, depending wholly upon the favoured food-plant, and by superficial resemblance conferring upon them a temporary protective benefit. The two plants chosen by *ceculus* in Pará, though very different from one another, are both *Rubiaceous* creepers, *Orouparia guianensis* and *Sabicea aspera*.

Both larvae are green, but the form found on *Ourouparia* is bluer, always inclines to white on the dorsal area, and never has more than the normal 7 oblique side-stripes, the first and the seventh being far more pronounced in white than the rest. The commoner variety, however, which is equally constant when found on *Sabicea*, though varying in the intensity of the side-stripes, now light red or maroon in colour, has always an extra bent stripe on the thoracic segments, and often the commencement of a posterior stripe just in front of the last spiracle. In this case the first and seventh stripes are hardly more prominent than the others, though the seventh always connects with the medio-dorsal line, and is sometimes supported beneath by lemon-yellow. The anal flap is, as in so many of the allied species, marked with a red-brown passage proceeding from the base of the horn.

The puparium is formed just below the surface of the earth with a modicum of silk uniting dead leaves, etc., and the pupa is shorter and more dumpy than those of *Epistor* and *Perigonia*.

Length of proboscis in male moth  $\frac{3}{4}$  in.

376. *Sesia titan*. (Plate 7.)

R. & J. p. 436.

377. *Sesia fadus*. (Plate 7.)

R. & J. p. 437.

We come now to the last two species of the subfamily *Sesiinae*, which, with its 47 species or more, out of a total of not much over 120 for the world, is indeed strongly represented in Pará.

Though it was long before I saw either *titan* or *fadus* at all, and have but seldom since taken the moths at light or observed them during the day, my experience of a few years in the place proves that both species may be reckoned fairly common here, and that they constitute but one instance out of a number in *Sphingidae* where two or more species are so closely related as to be easily confused, but where, nevertheless, there is no question about their specific distinction. I deal with them together to facilitate comparison.

Once again the importance of the study of the early stages is emphasized, and having now been fortunate enough to work out the secrets of their life-histories, I find both species to be associated with *Rubiaceae* and locally plentiful in the larval condition, *titan* feeding on *Randia formosa* ("açucena"), and very occasionally upon *Genipa americana* ("genipapeiro"), while *fadus* is invariably found on the fresh leaves of the saplings of this latter tree. In both cases it is not uncommon to find three or four ova and several young larvae on the same plant, but if left too long they generally disappear, and are probably consumed by lizards. Such has too often been my experience when, for the betterment of their growth, I have trusted young larvae to nature, unprotected from its decimating forces.

The larvae of both these species are of a plain apple-green colour, finely sprinkled with white dots, possessing the usual 7 oblique side-stripes, the first and seventh being the whitest and most pronounced, and the seventh containing a greater or less degree of pure pink and a touch of lemon. The mesial line is dull green and terminates with a stout, curved, and leaden-grey horn. The

second and third pairs of legs in both species, as with *ceculus*, *E. sagra*, and *P. lusca*, spring from large black lunules set in cadmium or lemon-yellow.

A handsomely variegated larva in brown with yellow side-patches, recalling the normal form of *E. sagra*, but with the first and seventh stripes alone clearly defined in cream-white and edged above with black, once occurred on *Randia*. It produced on emergence, as I had anticipated, a typical specimen of *titan*.

The pupae, like *ceculus* and *E. sagra*, are dumpy, of a plain glossy brown, and with sharply-pointed cremasters. Though the moths are now sufficiently well known, I am bound to confess that in their larval and pupal conditions, apart from the considerations of pabula, etc., they appear to offer but few differentiating features sufficiently constant to enable one to say with absolute certainty which is which.

#### SUBFAMILY PHILAMPELINAE.

This fourth subfamily is, so far as I can ascertain, represented in Pará by but the one genus *Pholus*, but of the 19 species that are known, we can at any rate boast of possessing 9. Of these the larvae of 5 feed on *Vitaceae*, *Vitis*, *Cissus*, etc.; 2 on *Onagraceae*, various species of *Jussiaea*; and 2 remain altogether unknown as regards their food-plants and early stages. Those larvae that are green invariably ripen to a deep red on their dorsal areas at full growth, wander some distance away from the region of their excrement, and form their large puparia well underground without any apparent admixture of silk. As with most *Sphingidae* in these parts, the moths generally appear in less than a month. The eggs are usually to be found deposited singly on the under-surface of the freshest leaves.

#### 408. *Pholus anchemolus*. (Plates T.Z.S. & 9.)

R. & J. p. 478.

One of the commonest of the genus, both sexes frequently occurring throughout the year in Pará at the city arc lamps.

The immense plain green larva has a graduated series of broad oblique side-stripes, enclosing the spiracles and directed headwards. These, in increasing ratio, are situated on segments 9, 10, and 11, and are always of a clear lemon-yellow, not white, as stated in the Revision. Spots of irregular size and shape but of the same colour mark the sides of some or all of the four anterior segments. A deep vinous-coloured form with precisely the same markings is also taken here, but less commonly. It is to be found on *Cissus sicyoides*, *erosus*, etc., growing over palings or festooning trees in the shade, and up to the present in my experience it enjoys the happy reputation of being immune from parasitic attack. The pupa is of great length, of a dark red-brown colour, more glossy than *fasciatus* but duller than *vitis*, and is possessed of a long, stout, and well-curved cremaster.

Length of proboscis in both sexes  $2\frac{1}{2}$  in.

#### 410. *Pholus satellitia licaon*.

R. & J. p. 480.

The Revision records a specimen of this subspecies taken by Dr. Goeldi at electric light in Pará in March, some time before the year 1903, when everything



apparently was vastly more plentiful than it is to-day. I had almost begun to doubt the existence of *satellititia* here, but while I was away in Pernambuco during April and May 1918, my friend T. T. Dyer, without knowing it, took a larva on *Cissus*, from which he bred a perfect female of this moth, bearing considerable resemblance to a large *eacus*. I recognized the difference on my return, but as he had not anticipated anything new or exceptional, he could tell me nothing about the form or colour of the caterpillar. I have since taken a perfect male at light.

The record is useful in proving that this species, with its immense range of distribution from Canada to Argentina, and apparently common in some of its subspecific forms in other places, is still alive here though unaccountably rare.

#### 415. *Pholus obliquus*.

R. & J. p. 486.

Moth in both sexes fairly common at light in Pará and often in perfect condition. Examination of the abdominal contents of the females of both this species and *anchemolus* has on occasion revealed strings of small and immature green ova, indicating that some time would have to elapse, and that probably some feeding on the part of the moth would have to take place before oviposition were possible. All my attempts to get a picture of the larva of *obliquus* have so far disappointingly failed. During my absence in Pernambuco, as with the previous species, my friend T. T. Dyer had another piece of exceptional luck by finding one in the shade of the Utinga matto. It was nearing full growth and feeding on the common *Cissus sicyoides*, consuming also the flat, trunk-clinging leaves of some *Epiphite*, a seemingly strange departure. He was unable to figure it, but described it as a very large and handsome caterpillar in two shades of red-brown without stripes but with a series of lighter lateral markings.

After breeding a perfect female moth of *obliquus*, which he did simultaneously with my return, he kindly gave me the empty pupa-shell. This I may describe as practically identical in form and colour with *anchemolus*, and differing only in the cremaster, which is distinctly less curved, appears even stouter, and terminates with a minute but obvious fork. Though *obliquus* is undoubtedly a much rarer species than *anchemolus*, and recently (1919) has not been observed at all, that so many great larvae, especially of a species like this where the food-plant is known, should manage so skilfully to keep out of sight, is a problem which I can only explain on the supposition that they live high up in the trees or in the denser and more inaccessible parts of the forest.

#### 416. *Pholus eacus*. (Plate 9.)

R. & J. p. 487.

A perfect female moth was taken at light in Pará on May 21, 1912, and the species lost sight of till February 1916, when I discovered a full-grown larva upon an arborescent species of *Jussieua* (*Onagraceae*), probably *suffruticosa* or *salicifolia*, growing in a ditch.

This was of a plain light green with 6 broad oblique side-stripes in pale yellow, faintly margined above with red, and directed headwards. At the time I took it for an extra large specimen of the green variety of *fasciatus*, the form

which so frequently occurs in Pará on the same and kindred plants, and I kept it simply on account of its size. It then turned red, and formed a pupa more like that of *anchemolus*; but being busy at the time, and not anticipating anything new, it was only on the emergence of a lovely female moth of *eacus* on the evening of April 30 that I realized how faulty had been my observations, and how nearly I had lost a prize. Since those days *eacus* has been a fairly common species to me, for though but two or three specimens of the moth have been taken at light, many have been bred.

While I was at Iquitos in February 1917 my devoted and sharp-witted cook found me about 16 ova and larvae, and I have generally been able to procure more by returning to the same place at the same time and during the three succeeding months. This favoured locality is known as Entroncamento on the railway-line, 11 kilometres out of the city, and here this particular species of *Jussieua* grows to quite a respectable small tree in the ditches, and thrives on a tract of wet white sand. Unlike its less fastidious congener *fasciatus*, *eacus* in nature appears to be restricted to this species, and does not do well in captivity when only provided with other more readily obtained varieties of *Jussieua*. It has occurred in two other localities, but always on the same plant. The larva of *eacus* is as constant as *fasciatus* is variable, and is always green with only 6 light stripes which are bordered above with red. Its egg, though much smaller than that of *anchemolus* or *labruscae*, is nearly twice the size of *fasciatus*, and rather whiter.

With a little experience one is able to pronounce with certainty upon the difference between *eacus* and the green form of *fasciatus*; but the general likeness between their larvae as *Jussieua* feeders would seem to indicate that *eacus* is out of place, and that in reality the two species are more closely related to one another than *fasciatus* is to *vitis*, with which it was once so erroneously confounded.

Though kept from the light, this moth tends to fade more than many others. Length of proboscis in female moth  $1\frac{1}{8}$  in.

422. *Pholus vitis vitis*. (Plates T.Z.S. & 10.)

R. & J. p. 491.

In regard to this already described and well-known species, I need say but little. Merely have I to record that the moth, though occasionally observed at electric lamps in Pará, and perhaps a trifle larger and brighter than those which I used to breed from the vines of Lima, is here comparatively rare. Our climate is too hot and wet for the vine to flourish, and I cannot remember to have taken the larva on more than six or eight occasions when searching for other larvae on *Cissus*.

423. *Pholus fasciatus*. (Plate T.Z.S. & 2.)

R. & J. p. 494.

This species, too, may be dismissed with a short paragraph, as it is now so well known. The moth is very common at light in Pará.

Several species of *Jussieua*, the natural food-plants, grow abundantly in ditches and in other wet places throughout the district, and it would appear that the larva of *fasciatus* is at all times and in all places to be found associated therewith. Among the many-coloured varieties of the larva already figured,

the green form with its 8 clearly-defined oblique side-stripes, comparatively rare about Lima, is here undoubtedly the prevailing form. No shade of difference can, of course, be detected in the moths, and I assume that this is but another nice adaptation to a greener and more flourishing vegetation. The egg of *fasciatus* is not only much the smallest of all the species of *Pholus* with which I am acquainted, but is probably one of the smallest of all *Sphingidae*, when considered in relation to the weight and bulk of the full-grown caterpillar or the size of its moth. The little light oval green egg and the tiny milk-white larva with its creët black tail which hatches from it are very similar to those of *Sesia ceculus*, and if anything a trifle smaller.

The pupa, which occasionally produces a big dipterous parasitic fly whose presence cannot always be detected in the larval condition, differs from all the other species of *Pholus* dealt with in being dead black in surface, relieved by brown in the interstices of the abdominal segments, and the cremaster is short and slender by comparison.

Length of proboscis in male nearly 2 in.

#### 424. *Pholus phorbas*.

R. & J. p. 495.

#### 425. *Pholus capronnieri*.

R. & J. p. 496.

These two beautiful species are not infrequently drawn to the electric are lamps of Pará, the males and females of both occurring in perfect condition, and being picked up on the pavement together with hosts of other commoner moths. Times, however, have changed for the worse, and they have hardly been seen since 1917.

Though I have not even yet abandoned the hope of some day finding their larvae, I have already searched hard, but with no result beyond the growing conviction that neither of them is associated with *Vitaceae* or *Onagraceae*.

#### 426. *Pholus labruscae*. (Plate T.Z.S.)

R. & J. p. 496.

A fairly common species as a moth at light in Pará, and the larva frequently taken on the various local forms of *Cissus* (*Vit.*), and once on a vine-like creeper in the Botanic Gardens, *Siphania glaziovæ* (*Menespermaceae*), introduced from the Upper Amazon.

My experience is that of others when I say that it is next to impossible in this hot and humid climate to prevent this lovely green moth from fading and contracting bleached or ochreous patches on wings and abdomen. I have little new to add to my notes and illustrations of the species made in Peru, and to the ample descriptions of its larva and pupa given on p. 497 of the Revision, beyond pointing once again to the marked difference which *labruscae* shows from all other known species of *Pholus* both in the larva and pupa, the latter being possessed of a very broad, rough, and flattened cremaster.

Length of proboscis in female moth  $2\frac{1}{2}$  in., in male  $2\frac{3}{8}$  in.

Size of excrement from full-grown larva  $\frac{3}{4} \times \frac{1}{2}$  in.

Outwardly *labruscae* would appear to merit a separate generic status every

bit as much as *Amphimoea walkeri* or *Pseudosphinx tetrio*, and even more, I venture to think, than *Eupyrrhoglossum saga* ; but from the point of view of one who is chiefly interested in co-ordinating an array of facts relating to early stages, and forming some rough estimation upon the degree of kinship between related species, the creation of new genera is a nuisance. Unless some nice point, some subtlety of scientific import in regard to generic distinction, has passed me by unnoted and unappreciated, it seems to me that the association of as many species as possible in a single genus, with here and there a slight readjustment in their sequential order or grouping, would be far more instructive than the mere multiplication of genera—an opposite process which seeks rather to emphasize differences of outstanding importance, but which, with our still very limited knowledge, is bound to be somewhat arbitrary and lacking in finality.

If it be conceded that the grouping of more species in fewer genera would aid the collector in the field, it naturally follows that greater benefit would accrue to the museum student, who always wants the fullest material possible for purposes of comparison.

#### SUBFAMILY CHOEROCAMPINAE.

This fifth and last subfamily of the *Sphingidae* is in Pará limited to the one exclusively American genus *Xylophanes* ; but as its local representation out of the 50 to 60 species known already amounts to a dozen species, one being quite new and others esteemed as rarities, the interest attaching to it is well sustained.

The larvae of seven species have been discovered, bred, and carefully figured in their various stages, and the remainder, as yet undiscovered, cannot be far away. It is noticeable that all but one are *Rubiaceous* feeders, and the inference that *Xylophanes*, as a compact genus, is in its entirety more or less restricted to *Rubiaceae*, should, if correct, materially aid the investigator of early stages by eliminating the more unlikely forms of plant-life. Most of the larvae are snake-like and secretive in habits, and some are much troubled by parasitic attack. The excrement bears specific peculiarities ; in *chiron* alone, of the species dealt with, being of the normal hexagonal and tripartite form. In the others it is almost or entirely devoid of this pattern and exceptionally large, while in species like *mossi*, *guianensis*, and *anubus* it is of phenomenal size, dark brown or blue-black in colour, and either rounded or of an irregular elongate formation.

These larvae, like so many others, tone to a redder hue and lave their bodies with a frothy substance from the mouth prior to leaving the plant for pupation. In this palpably sticky condition they appear nearly always to wander some distance away from where they have been feeding, and spin a glutinous web amongst vegetation and dead leaves on the surface of the earth to form their puparia.

Though the pupa of each species differs in the precise shape and form of the cremaster, and to a slight extent in tone of colour, a general type is adopted throughout, which may roughly be described as bone-coloured with a mesial dark line, more or less pronounced and continuous, marking both the dorsal and ventral areas. The region of the spiracles, themselves brick-red, is heavily spotted with black, and the entire surface is minutely freckled with light-brown or olive-green marks.



631. *Xylophanes pluto*.

R. &amp; J. p. 681.

Of this widely distributed and common species, with which I became acquainted some years ago in the Interior of Peru, I have here but to record the capture of a single perfect male at a Pará lamp near the end of March 1919. This was taken by Mr. T. T. Dyer, who is confident that he there and then missed another example of the same species, which was very strange, for its observed occurrence in this particular part of S. America is, so far as I know, without precedent.

In regard to *Erythroxylon*, its reputed food-plant, *E. coca*, which is so extensively grown as a drug in other parts, is in Pará a comparatively rare plant in gardens, and I have never found it touched by anything beyond a small *Geometrid* larva. The larva of *X. pluto* may subsist on other plants, but in any case it must be a very rare species hereabouts.

*Xylophanes mossi*. (Plates 5 & 8.)*Xylophanes mossi* Clark (1919).

In his paper on "New Sphingidae," published in the *Proceedings of the New England Zoological Club*, my generous friend B. Preston Clark has described this species, and been pleased to attach my name to it as its original discoverer. Strange to say, I have never yet taken it wild in the imaginal condition, but since 1914, when I found my first larva and some eggs, I have repeatedly bred the species. No definite months can be given, as I have taken or observed signs of the larva at almost all times of year, and too often have I had the mortification of being just a few days too late, finding the plant vigorously eaten and some enormous pellets of fresh excrement lying on the ground, but the larva gone. Even when it has been found, I have by no means always met with success, as the species is so ravaged by parasites; and I think I am fairly stating the case, when I say that I have bred from 15 to 20 perfect males and females out of some 60 larvae in 6 years, and just managed to miss about twice that number. The plant on which the larva feeds, *Pagamea guianensis* (*Loganiaceae*, or *Rubiaceae* according to Dr. Huber), is distinctly local, being restricted to the particular type of sandy soil found between Souza and Tapaná on the Pinheiro railway-line, but significantly absent from the adjacent Utinga water-works region. It is also fairly abundant in the Isle of Mosqueiro, and in all places where the plant grows I have traced the larva. As these localities range roughly from 10 to 25 kilometres from our city station, the distance may possibly account for the non-appearance of this moth at light. I say this advisedly, for though the *Sphingidae* as a family are known to be long and strong fliers, and it is beyond question that many species are thus drawn from very considerable distances, there is as yet no proof that all Hawk-moths wander far from home. And furthermore, if this be the case, it is more than probable that in the vast reaches of the tropics of this continent there are links in the *Sphingid* chain of life still extant, and many another species yet waiting to be revealed to science. I have already given a general description of the larva on p. 349 of the general introduction, and need only add the following: The small, down-turned tail of the adult larva is a most peculiar feature, differing from all other known species

of *Xylophanes* ; the head is small and typical of the genus ; the tapering anterior segments by no means reach their maximum with the ocelli on the 5th segment, as is so often the case, but only with segment 12 which appears enormously swollen ; and, finally, this stout caterpillar, whether it be of the normal pink and burnt sienna coloration with its 5 viridian-green side-patches or green-grey with 7 lemon-yellow side-stripes, is distinctly *Pholus*-like in appearance. The frass is enormous, blackish brown, rounded or of regular oval form, and tightly packed in thin successive layers. Seldom are more than 8 pellets dropped in the 24 hours. The growth is, nevertheless, extremely rapid, the last instar never exceeding 5 days, and the whole larval period being generally under 20. The pupa is typical of *Xylophanes* but rather redder than most, and it is possessed of a long, blade-like cremaster.

In regard to the parasitic attack to which this species is so lamentably prone, I have five observations to make :

(1) The egg is sometimes stung by a minute hymenopterous fly.

(2) A dipterous fly stings the young larva while it is still small, generally in the second or third instar, I believe.

(3) Neither then nor in the succeeding instars is there any apparent sign of the presence of the foe within, no lack of vitality observable in the larva, no irregular feeding, and no protracted growth, as is often the case, and nothing irregular in its colour or in the nature of its excrement.

(4) After spinning its puparium the larva invariably, whether healthy or otherwise, produces an abundance of brown slime in which it lies. When it is stung, however, it begins to look limp, and exhibits irregular brown stains on the second day.

(5) The larva is just alive on the third day and capable of feeble movement, but the dipterous maggots, in this case generally less than 10 in number from any individual, emerge from the body of the host to form their own cocoons separately in the soil. This occurs invariably on the evening of the third day, and precisely at the time when the larva, had it been healthy, would have cast its final skin and become a pupa. Repeated instances confirm these observations in every detail, and the accuracy with which the whole process is timed is little short of marvellous. Many *Sphingid* larvae, as already stated, lave their bodies with a sticky substance prior to pupation, and other species of *Xylophanes* make what we should call a mess of their puparia, but none, so far as I am aware, to a like extent. What particular purpose the froth or slime serves is not apparent ; it may be to assist ecdysis, or it may be to prevent the intrusion of small forms of creeping life at a period when both larval and pupal skins are peculiarly sensitive and liable to damage.

#### 638. *Xylophanes porcus continentalis*. (Plate 8.)

R. & J. p. 685.

Dating back to March 1912 when I found my first larva, and to the next three years during which I secured but half a dozen more, I esteemed the species rare in Pará. Since then, however, though only one moth of *porcus* has been recorded at light, I have so repeatedly taken its egg and the young or full-grown larva on fresh saplings of *Palicourea grandifolia* (*Rubiaceae*) in such localities

as Utinga, where this plant thrives in abundance, that I regard it now as almost the easiest species of the genus to obtain hereabouts.

Its food-plant is of wide but not universal distribution, growing in the shaded matto on the north and eastern outskirts of the city, but being apparently absent in the muddy region which borders the Rio Guamá. The eggs of *porcus* are generally deposited singly upon the upper side of the tenderest yellow-green leaves of the plant, and throughout its growth the larva is to be found on the under-surface of half-consumed leaves, clinging firmly to the mid-rib, never on the stems or the earth. It is always of a pure apple-green colour, with small light caerulean blue ocelli on segment 5, and 7 yellow side-stripes leading up to the horn, which is plain pink, smooth, and well curved.

The pupa is typical of *Xylophanes*, though somewhat more olive-green in tone, heavily lined with brown, and possesses a shorter but broader blade-like cremaster than the foregoing species.

Length of proboscis in female moth  $1\frac{1}{4}$  in., in male 1 in.

651. *Xylophanes guianensis*. (Plates 5 & 8.)

R. & J. p. 692.

This species, like the former, has, strange to say, only once been observed as a moth at light in Pará, but from the numerous occasions in at least seven different months when I have taken the larva on *Palicourea grandifolia* (*Rubiaceae*), or the egg, readily detected on the upper- or under-surface of its large, flat leaves, I am bound to regard it as by no means rare here. The larva up to the end of the fourth instar is long and thin, and being of the same colour as the upper surface of the leaf, a sage- or blue-green, it always reposes during the day in that position along the mid-rib and is easily passed over. At this period the dorsal area is enclosed by a couple of yellow longitudinal stripes, terminating in a straight, recumbent horn, adorned with small black tubercles.

In the last stage the enormously long pellets of blue-black frass beneath the tree frequently betoken its presence, but now having assumed a very dark vinous-brown colour, the larva is only to be found on the trunk, generally at the base in heavy shade, or even several feet away from it, resting on a stick or on the soil among dead leaves. The eye readily detects its characteristic bite, especially when the tree is small and the leaves very large and not too numerous.

From Mr. Schaus's description of the larva of *ceratomoides*, its next-of-kin, it would appear that *guianensis* corresponds pretty closely. A plain ochreous spot or two represents the ocellus on segment 5, and it possesses a long, stout, and perfectly straight blade-like horn, which is saw-edged above and below, and terminates in a spike.

The cremaster of the pupa is similarly large, flat, and broad, and spiked along its angled extremity.

The species is sometimes troubled by dipterous parasites.

Length of proboscis in male  $1\frac{1}{2}$  in.

652. *Xylophanes anubus*. (Plate 8.)

R. & J. p. 693.

Quite a common species in Pará, as elsewhere, judging from one's success with its larva, but once again, like the three former species, very seldom is it

drawn to light here. Indeed, throughout my time in Pará I have only twice come across the moth, one being taken in a strong cobweb, and the other, a female in almost perfect condition and of a peculiar chestnut colour, especially in the hindwings, being picked up dead in the Port of Pará Buildings in May 1915.

So different did this appear from all my bred examples, which are umbrous inclining to olive, that, until Dr. Jordan had examined it, I was of opinion that it was something distinct. I may here add that this suffusion of a delicate olive-green in all my Pará-bred specimens was never noted in those caught in Peru, which always seemed browner and more heavily lined.

The larva here feeds on a couple of species of *Palicourea* (*Rubiaceae*) with dark glossy leaves, the bigger of the two growing in dry and open parts where the forest has been cut down, the other, a more slender plant, being invariably associated with the sides of streams and boggy ground. Up to the end of the fourth instar the larva is of a pallid and subdued green, like the under-surface of the leaves referred to, and where during the day it constantly remains. The fifth segment is now considerably swollen, and its ocellus at this period is large and striking, a finely pencilled black ring containing a patch of lilac and an arc of pure light blue in front. Its tail, once long and drooped, is now and up to the end of its larval stage an ample and well-curved horn. In the last stage, like *guianensis*, *anubus* is brown, and invariably remains during the heat and brilliance of the day on the brown stems in the shade near the ground, or more often actually on the ground beneath dead leaves. The ocelli, which are now black in fine blue rings, are proportionately reduced, the dorsal area is enclosed by rufous and dark lines from head to horn, and the side-stripes are represented by 7 rather obscure and waved lines in moss-green directed tailwards. At this stage I have very frequently taken it, once the secret of its whereabouts was disclosed, but, as with *mossi* and *guianensis*, I suppose I have equally often been just too late, and experienced the keen disappointment of finding only stripped branches and an abundance of fresh frass. This again is enormous, but of umber or dark brown compared with that of the preceding species.

Though I have often pulled up everything alive or dead for yards around, and raked the ground till I have dripped with perspiration, I have never been able to trace this or any other species of *Xylophanes* but *tersa* to its puparium in nature.

The pupa is lighter and more slender than *guianensis*, with a blacker medio-dorsal line and a much finer cremaster.

The species is occasionally troubled by diptera, and I once bred a single blue-black wasp from a large white hymenopterous grub which emerged in the puparium from the body of a dying caterpillar.

Length of proboscis in male moth  $1\frac{3}{4}$  in.

#### 654. *Xylophanes amadis goeldii*.

R. & J. p. 694.

In this little-known form of *amadis*, Pará exhibits one of the prizes of its rich and variegated fauna. In the Revision there is but one record of a female having been taken at electric light in Pará during the month of May by Dr. Goeldi, and sent to the Bern Museum. In July and August 1912 I had the good fortune to take three males here in the same way. My next find was that of a



perfect female on a lamp in front of the Museu Goeldi in December 1916, and this I sent to Mr. Preston Clark, together with a male caught by Mr. Dyer in 1918. I then missed a male which had perched up at the top of a high lamp-post in January 1919, and my friend did the same towards the end of May. On March 28th of this year, however, I managed to secure another freshly-emerged female in very perfect condition on a lamp almost opposite my house in the Largo de Baptista Campos. In stuffing her long and narrow abdomen with wool, as a precautionary measure, I extracted 78 green eggs of moderate size. Diligent examination, oft repeated, of the *Rubiaceous* plants favoured by *anubus* and others, has so far completely failed to reveal the larva of this elegant species, which, although rare, is, from the above records, obviously well established in Pará, and would very likely be found to exist here in some numbers, could one but unravel the secrets of the early stages of its life.

Length of proboscis in female moth 2 in.

#### 655. *Xylophanes epaphus*.

R. & J. p. 696.

My general remarks on the previous species apply equally here, no larva or knowledge of food-plant or early stages having rewarded the repeated examination of all likely plants in the Order *Rubiaceae*. To know the habits of *epaphus* would be to discover a veritable gold-mine, for its food-plant is hardly likely to be anything more pretentious than some humble ground-weed like *Spermacoe* or *Psychotria*, growing in some particular shaded or even wet locality, and the find of a single caterpillar would almost certainly lead to the discovery not only of *amadis* but of kindred species like *docilis* and *cosmius* in their respective regions. This, however, has not yet been accomplished, and all I can do is to record the following captures of the moth at light in Pará, all males, I believe, and all in nearly perfect condition: one at Mira Mar, three miles down the river, in March 1912; two on the walls of the S. Braz market in June of that year; another subsequently taken by my friend T. T. Dyer in 1917, and the last falling to me in January 1920.

It will be noted that many of my records date back to 1912, which, though so wet, rain falling on 323 days, was by far the best year I have yet experienced in Pará or elsewhere for *Sphingidae*. I find that I recorded 66 species between April 8 and July 31, and no fewer than 51 in the first 53 days of that period.

#### 658. *Xylophanes chiron nechus*. (Plate 8.)

R. & J. p. 697.

One of the most showy of the genus in Pará in its livery of emerald-green—a sadly fugitive colour—and at the same time one of the commonest, the moth

#### *Xylophanes cosmius*.

R. & J. (1906).

Of this rare species, I became the lucky possessor of the first female known, a large specimen with a broad forewing considerably hooked at the apex, and in absolutely perfect condition. This was taken by a Mr. Hammerton in his house at Manáos in 1912, who most kindly gave it to me, and it is now in the Tring Museum collection.

frequently occurring at electric lamps. The larva is often found on *Palicourea grandifolia*, on various species of *Psychotria* and *Spermacoce*, all *Rubiaceae* plants, and, by way of showing an independence from the general rule adopted by its genus, has also several times been found on plants belonging to the Order  *Icacinaceae*. The rather small green egg has often been found on such plants, and the little glossy green larva resulting from it, with its comparatively slow growth, has often received the greatest attention, leaving me in suspense as regards its identity for a considerable time.

In the early instars the marks are faint, the skin thin, glossy, and semi-transparent, the muscular tissues clearly visible, and only the last two or three side-stripes indicated very obliquely tailwards in a lighter key. In the third and fourth instars its identity is unmistakable, a couple of ocelli adorning each side.

In the last stage these white ocelli in their crimson rings, finely outlined in black, on segments 5 and 6 which are swollen, constitute a special feature. A rather more elongate patch of lemon-yellow in some examples, but not commonly, similarly adorns segment 7, and the customary dorsal area enclosure is suggested by an interrupted series of three yellow spots on each succeeding segment. The band leading up to the horn is always the most pronounced in yellow or white, and is strongly edged above with black. There is also a fine but much interrupted medio-dorsal black line or series of black marks, the indication of some 5 side-stripes of a lighter hue than the ground-colour, which develops from plain green to a very light blue-green tint. The horn, which is long in early days and light-tipped, becomes stout in the last instar and terminates with a sharply down-turned black spike. This is grey at the sides and roughened with pink tubercles above and below. The legs are pink and the spiracles light. The larva tapers considerably to the head, and while laving itself with a sticky froth prior to pupation completely changes in colour, turning to an olive-brown with a prominent black patch or two on each segment.

The pupa is of the normal *Xylophanes* design and colour but exceptionally long in the head-piece, and possesses a rather flat and well-developed cremaster, which is, nevertheless, pointed and insignificant compared with those of the foregoing species.

Several varieties of dipterous parasites associate themselves with the species, and from a large and apparently healthy pupa I recently bred a single fly with the dimensions of a blue-bottle.

Length of proboscis in female moth 2 in.

#### 664. *Xylophanes tersa*. (Plates *T.Z.S.*)

R. & J. p. 703.

Little more need be said of this species beyond recording the fact that it is normal in Pará, as elsewhere, and as common at light as it is known to be in other parts of the continent.

The larvae frequent several species and allies of *Spermacoce* (*Rubiaceae*) at roadsides and on the banks of ditches, etc., and I once induced one to eat a vine leaf. Though often dark brown, they are here as frequently of a blue-green tint like the leaves, and are then generally to be found by day on the green

stalks. The frass is often light green and lined, but very irregular in size and form.

The pupa is distinguished by its sharp and narrow cremaster, and generally has much black on the wing-cases. The moth when at rest, in common with other species of the genus, holds its narrow wings spread out at a wide angle.

Length of proboscis in male moth  $1\frac{1}{4}$  in.

#### 667. *Xylophanes elara*.

R. & J. p. 704.

This appears to be a distinctly rare moth in Pará, only two perfect specimens having occurred at light in 1912, one being recorded for the month of August. Like *loelia* in size and shape, it is characterized by its delicate sage-green colour and a small dark orbicular spot in the centre of each forewing.

It can hardly be other than a *Rubiaceous* feeder, and is probably nourished on some form of *Spermacoce*, but here once again the early stages remain to be discovered.

#### 675. *Xylophanes loelia*. (Plate 8.)

E. & J. p. 710.

A species resembling a fawn-coloured but less strongly marked edition of *tersa*, with salmon-pink instead of yellow on the hindwings, and almost equally common at light in Pará.

The larva, which is green when young, with a couple of yellow lines enclosing the dorsal area and a straight horn, becomes ochreous-brown with a series of dark spots to mark the mesial line, and terminates with a prominent dark and distinctly curved horn in the last stage. Some 5 or 6 dark-brown side-stripes are visible, and the dark lines which now enclose the brown and spotted dorsal area are interrupted on segment 5 with a light and dark ocellus, half hidden in the skin-fold and giving the creature a distinctly wicked and deadly appearance, more so than in the case of *tersa*.

It feeds on several varieties of *Spermacoce* (*Rubiaceae*), which literally cover many of our grassy travessas; and, like other species of this genus that are secretive and hidden by day, the larva is best obtained by exploring such regions with a lantern after dark, when it is usually to be found high up on the extremities of the plant, and is readily detected among the small green leaves.

#### 672. *Xylophanes maculator wolffi*.

R. & J. p. 707.

A species unknown in Pará, and the last of my six extras. On March 7, 1917, during my week's stay at Iquitos, I had the good fortune to take the first female known of this rare Peruvian subspecies. I found it by day on the wire gauze covering the verandah of the house of Mr. and Mrs. Harrison, with whom I was stopping.

The moth was in perfect condition, and thinking that it might possibly be a new species, I sent it to my friend Mr. Preston Clark, who identified it as above.

The pupa, though like *tersa*, has a lighter dorsal stripe and much less black on its wing-cases ; the sharp-pointed cremaster, too, is longer and stouter.

Length of proboscis in male moth nearly  $1\frac{1}{2}$  in.

677. **Xylophanes thyelia.**

R. & J. p. 711.

Of this closing species, which was moderately common at light in Pará in 1912 but only occasionally seen since, I have once again to confess my ignorance of its larva, and regret my inability up to date to record anything of its early stages.



# THE SPHINGIDAE OF PARÁ AND THE AMAZON. DETAIL INDEX.

References.	Plate Figures.	Genus.	Species.	Months of Appearance.		Locality and Comparative Abundance.	Food-plants.
				Larvae.	Imagines.		
		SUBFAMILY Acherontiinae					
4	† †	<i>Herse</i>	<i>cingulata</i>	§	§	General and common. Larvae less seldom noticed	Convolvulaceae
31	Plate 1, fig. 1, a, b, c, d, e Plate 2, fig. 6	<i>Cocytius</i>	<i>cluentius</i>	i, ii, vi, vii	iii, iv, v, vii, viii	General and moderately common at light in Pará. Occasional larvae, and sometimes "stung" by dipterous parasites	Anonaceae, especially <i>Anona muricata</i> , <i>Anona reticulata</i> , and <i>Guatteria</i> sp.? ( <i>Virira</i> ) Piperaceae— Twice on <i>Piper aduncum</i> (unknown)
32		<i>Cocytius</i>	<i>bedzebuli</i>		vii/12, twice	Rare. Only three specimens at light in Pará, 1911, 1912. Larvae worked for but undiscovered	
33	Plate 1, fig. 2, a, b, c	<i>Cocytius</i>	<i>duponchel</i>	§	§	General and very common at light in Pará. Larvae of frequent occurrence. Ova sometimes "stung." Larvae rarely produces dipterous parasites	Anonaceae— <i>Anona muricata</i> " reticulata " squamosa Rollinia orthopetala
34	† †	<i>Cocytius</i>	<i>antaeus medor</i>	§	§	General and moderately common at light in Pará. Larvae only taken occasionally. Ova sometimes "stung"	Anonaceae— <i>Anona muricata</i> " reticulata " squamosa Rollinia orthopetala (unknown)
35	"	<i>Cocytius</i>	<i>lucifer</i>		iii, iv, v, vii, viii, ix	Very spasmodic in appearance. Common at light in Pará, 1912. Larvae worked for but undiscovered	(unknown)
36	61	<i>Amphimoea</i>	<i>walkeri</i>		iii, v, vii, viii, x	Rare. One moth in 1911. About a dozen at light in Pará, 1912. Larvae worked for but undiscovered	(unknown)
37	† †	<i>Protoparce</i>	<i>sexta paphus</i>	§	§	General and common. Larvae equally abundant, the smooth form predominating slightly over that which possesses fine hair. Only occasionally troubled by diptera	Solanaceae—many species of Solanum, Capsicum peppers, Tomato, Tobacco, etc. Verbenaceae— Aegiphila

42	77	<i>Protoparce</i>	<i>diffusa tropicalis</i>	§	iii, v, viii	Only occasional specimens at light in Pará or on tree trunks. Larva not noted in Pará. Sometimes "stung" by hymenoptera	Solanaceae— Solanum campaniforme "Jurubebas," etc.
44	44	<i>Protoparce</i>	<i>hannibal</i>	§	§	General but not abundant. Common at light in Pará, 1912. Larvae occasionally "stung" by diptera	Solanaceae— <i>Solanum campaniforme</i> Cestrum floribundum Datura cornigera Verbenaceae— Clerodendron fragrans Aegiphila elata Solanum sp.? Aegiphila cuspidata
53	84	<i>Protoparce</i>	<i>perplexa</i>	iii, iv, v	iv, v	Rare and local	
54	86	<i>Protoparce</i>	<i>rustica rustica</i>	iii, vi, viii	§	General but not very common in Pará. Larvae occasionally	Bigoniaceae— <i>Crescencia cujele</i> Boraginaceae— <i>Cordia tetrandra</i> also White Jasmine Boraginaceae— <i>Cordia</i> sp.? Anonaceae— Rollinia orthopetala (unknown)
57	88	<i>Protoparce</i>	<i>albipilaga</i>	ii, xi	iii, v, vii	General, but not common in Pará. Larvae in small gregarious batches, but only occasionally observed. Once "stung" by diptera	
62	92	<i>Protoparce</i>	<i>dalica</i>	ii	vi	One ♀ moth taken at light in Pará, July 1912. Larvae worked for but undiscovered	
		<i>Protoparce</i>	<i>florestan</i>		vi	Moth at light in Pará, and once bred	Verbenaceae— <i>Citharexylum</i> sp.?
		<i>Protoparce</i>	<i>vestalis</i>		v, vi	Moth twice at light in Pará, 1912. Larvae worked for but undiscovered	
135	175	SUBFAMILY <i>Protambulyx</i>	<b>Ambulicinae</b> <i>eurycles</i>		§	Common periodically at light in Pará. Females less common. Also up river	Anacardiaceae— "Tapiritica"
140	178	<i>Protambulyx</i>	<i>goddi</i>		i, ii, iii, iv, vii, viii, x	Rare. About twenty specimens. Only two females at light in Pará. Chiefly in 1912	Anacardiaceae probably
141	179	<i>Protambulyx</i>	<i>strigilis</i>	§	§	Very common at light in Pará	Anacardiaceae— Anacardium occidentale (cajineiro) "giganteum" Spondias lutea (tapereba)

\* Revision of the Lepidopterous Family Sphingidae, by Rothschild and Jordan, Tring Museum, England.

† Larva } already figured and published in "Sphingidae of Peru," Transactions of the Zoological Society of London, vol. xx. pt. ii. no. 1, April 1912.

‡ Pupae }  
§ Probably to be found in any month of the year.

# THE SPHINGIDAE OF PARÁ AND THE AMAZON—Continued.

References.	Plate Figures.	Genus.	Species.	Months of Appearance.		Locality and Comparative Abundance.	Food-plants.
				Larvae.	Imagines.		
143	181	<i>Amphypterus</i>	<i>gannascus</i>		§ vii	Fairly common periodically at light in Pará One moth ♀, at light in Pará, July 17, 1912	
144	182	<i>Amphypterus</i>	<i>ypsilon</i>		iv, vi, vii, viii, xi	Fairly common periodically at light in Pará	
145	183	<i>Amphypterus</i>	<i>palmeri</i>				
		SUBFAMILY <i>Sesiinae</i>					
283	† † Plate 4, fig. 1, a, b	<i>Pseudosphinx</i>	<i>tetrico</i>	§	§	Very common at light in Pará. Larvae gregarious and abundant	Apocynaceae— <i>Plumiera alba</i> (frangipanni or Jasmin de Caienna) <i>Plumiera sucúba</i> and other species
355	Plate 3, fig. 4 Plate 4, fig. 7, a, b	<i>Iseognathus</i>	<i>swainsoni</i> subsp. ?	vii	viii	One crippled moth bred from single larva found near Pará in July 1911. One worn moth taken at light	Apocynaceae— <i>Plumiera sucúba</i>
284	Plate 4, fig. 2, a, b, c, d Plate 3, fig. 6	<i>Iseognathus</i>	<i>leachi</i>	i, ii, iii, iv, v	§	Common periodically at light in Pará	Apocynaceae— <i>Plumiera sucúba</i> (phagedaenica and other species)
	Plate 4, fig. 6, a, b, c Plate 10, fig. 2, a, b, c, d, e Plate 10, fig. 3, a, b, c	<i>Iseognathus</i>	<i>mossi</i>	i, ii, iii	iii, iv	Not in Pará. Bred from larvae found near Manáos and Rio Faro	Will eat <i>Allamanda</i> in captivity Apocynaceae— <i>Plumiera</i> sp. ?
286	Plate 4, fig. 5, a, b, c, d Plate 2, fig. 5	<i>Iseognathus</i>	<i>allamandae</i>	x, xi	x, xi, xii	Pará, one moth Pernambuco common	<i>Allamanda cathartica</i>
356	Plate 4, fig. 5, a, b, c, d Plate 2, fig. 5	<i>Iseognathus</i>	<i>scyron</i>	§	§	Very common in Pará at light. Larvae equally common. Occasionally troubled by diptera	Apocynaceae— <i>Allamanda cathartica</i> Never found on <i>Plumiera</i>
287	Plate 4, fig. 4, a, b, c, d	<i>Iseognathus</i>	<i>menechus</i>	i, ii, iii, iv, v, vii, xii	§	Often bred from larvae. Less frequently taken at light in Pará	Apocynaceae— <i>Plumiera sucúba</i> Will eat <i>Allamanda</i> in captivity Moraceae— <i>Artocarpus integrifolia</i>

290	359	Plate 4, fig. 3	<i>Isochnathus</i>	<i>excelsior</i>	i, ii	iv, v, vii, viii, ix, xi	Common at light in Pará, 1912. Only occasionally taken since. One full-grown larva died	Apocynaceae— <i>Plumiera sucutuba</i>
291	360	Plate 3, fig. 5, a, b, c, d	<i>Isochnathus</i>	<i>caricae</i>	i, ii	iii	Mosqueiro near Pará, common. Also in Manaós and Porto Velho	Apocynaceae— <i>Plumiera sucutuba</i> Allamanda
292	362	†	<i>Erinnyis</i>	<i>alope</i>	§	§	General and very common at light in Pará. Larvae of frequent occurrence	Euphorbiaceae— Hevea brasiliensis
293	363	Plate 10, fig. 8, a, b, c	<i>Erinnyis</i>	<i>lassauzi</i>		iii, iv, v, vii, ix	Moderately common in Pará	Manihot utilisima (mandioca) Papayaceae— Carica papaya (Mamoeiro)
294	365	† ‡	<i>Erinnyis</i>	<i>ello</i>	§	§	The commonest sphingid in Pará, as elsewhere. Larvae frequently met with, but never in numbers. Only once found "stung," pro- ducing sixteen dipterous maggots	Asclepiadaceae— Angelica doar Papayaceae— Carica papaya Euphorbiaceae— Hevea brasiliensis Manihot utilisima Papayaceae— Carica papaya and other species Sapotaceae— Lucuma cainito (abiu)
296	367	Pl. 10, fig. 12, a, b	<i>Erinnyis</i>	<i>oenotrus</i>		§	Common at light in Pará	Apocynaceae— Zschokkea and Echites
297	368	Plate 7, fig. 3, a, b	<i>Erinnyis</i>	<i>cramer</i>	viii, ix	§	Common at light in Pará. Larvae occasionally obtained by diligent searching	Apocynaceae— Tabernaemontana of various species
298	369	Plate 7, fig. 2, a, b	<i>Erinnyis</i>	<i>obscura obscura</i>	v	§	Common at light in Pará. Larva seldom seen	Asclepiadaceae— Gonolobus sp. ?
299	370		<i>Erinnyis</i>	<i>domingonis</i>		ii, iii, iv, v, x	Fairly common at light in Pará, 1912. Seldom seen since. Larvae worked for but undiscovered	
301	371	Plate 7, fig. 1, a, b, c, d	<i>Grammodia</i>	<i>caicus</i>	i, v, vi, vii, xii	i, v, vi	Occasionally at light in Pará. Frequently bred from larvae found at Val de Caes near Pará, where the food-plant is more abun- dant	Apocynaceae— Echites sp. Zschokkea sp. ? (Páo de colher)

\* Revision of the Lepidopterous Family Sphingidae, by Rothschild and Jordan, Tring Museum, England.

† Larva

‡ Pupa

§ Probably to be found in any month of the year.

Transactions of the Zoological Society of London, vol. xx. pt. ii. no. i, April 1912.



THE SPHINGIDAE OF PARÁ AND THE AMAZON—Continued.

References.	Plate Figures.	Genus.	Species.	Months of Appearance.		Locality and Comparative Abundance.	Food-plants.
				Larvae.	Imagines.		
302	† †	<i>Pachylia</i>	<i>ficus</i>	§	§	General and very common. Larvae equally abundant	Moraceae— Ficus bejamina and many other species
303	† †	<i>Pachylia</i>	<i>syces syces</i>	iv,v,vi,ix	vi,vii,viii	Occasionally at light. Larvae not common in Pará	Moraceae— Artocarpus integrifolia (jaca) Cecropia (imbauba) Seldom on Ficus in Pará
304		<i>Pachylia</i>	<i>darecta</i>		§	Of frequent occurrence at light in Pará; female rarer. Larvae worked for but undiscovered	
305	Plate 10, fig. 4, <i>a, b, c, d</i>	<i>Pachylia</i>	<i>resumens</i>		§ xii	Fairly common at light in Pará.	Apocynaceae— Zschokkea and Echites
306	Plate 5, fig. 1, <i>a to j</i>	<i>Oryba</i>	<i>kadeni</i>	ii,iii,iv,vi, x, xi	iii,iv,v,vi, vii, xi	Never abundant, but of frequent occurrence at light in Pará. Food-plants in appropriate positions usually reveal larvae or their signs. Larva once found with external eggs of dipterous fly behind head	Rubiaceae— Palicourea sp. ? Remijia sp. ? (Manaos) Polygonaceae— Coccoloba latifolia (once)
307	Plate 5, fig. 2, <i>a to e</i>	<i>Oryba</i>	<i>achemenides</i>	i, ii, iii, ix, xi, xii	iii, iv, vii, viii, ix, xi, xii	Frequently occurs at light in Pará like the preceding species; and the larvae are equally often traced, though not always obtained	Rubiaceae— Ourouparia guianensis (unha de gavião)
308	Plate 6, fig. 1, <i>a to j</i> Plate 9, fig. 5, <i>a, b, c, d</i>	<i>Leucorhampha</i>	<i>triplolemus</i>	iii, iv	iv, vi, xii	Rare at light in Pará—three specimens in eight years. Often bred. Ova sometimes "stung"	Apocynaceae— Zschokkea sp. (Páo de colher) Echites sp. Amblyanthura versicolor
310	Plate 6, fig. 1, <i>a to j</i> Plate 10, fig. 7	<i>Leucorhampha</i>	<i>ornatus</i>	i, ii, iii, xii	i, ii, iii	Often bred. Rare at light. Seventy-two diptera from single larva.	Apocynaceae— Zschokkea sp. (Páo de colher) Echites sp. Amblyanthura versicolor
312		<i>Madoryx</i>	<i>oidus</i>		vii	Rare at light in Pará. Two males, two females only	

313	384	Plate 6, fig. 2, <i>a to e</i>	<i>Madoryx</i>	<i>pluto</i>	v, vii, viii	vi, vii, viii, ix	Rare, but of repeated occurrence at light in Pará. 1912. Larvae and cocoon only occasionally obtained by diligent searching. Of spasmodic occurrence at light in Pará. Common in 1912. Larvae undiscovered.	Melastomaceae— <i>Miconia minutiflora</i> (canella de velho) Vochysiaceae— <i>Erismia calcaratum</i>
316	388		<i>Hemeroplanes</i>	<i>nomius</i>		iv, v, vi, vii, ix, xii		
317	"		<i>Hemeroplanes</i>	<i>pan</i>		i, v, vii, viii	Occasionally at light in Pará.	
320	390		<i>Hemeroplanes</i>	<i>parce</i>		iv, v, vii, viii, ix	Larvae undiscovered. Fairly common at light in Pará, especially in 1912. Larvae undiscovered.	
321	391	Plate 7, fig. 14, <i>a, b</i>	<i>Hemeroplanes</i>	<i>inuus</i>	iv, v, vi	v, vi, vii, viii, x, xii	Common at light in Pará. Larvae occasionally, when worked for.	Apocynaceae— <i>Ambelania tenuiflora</i> (pepino do matto)
327	396		<i>Aleuron</i>	<i>chloroptera</i>		xi	Rare at light in Pará	Dilleniaceae— <i>Davilla</i> sp.?
329	398		<i>Aleuron</i>	<i>iphis</i>	viii, ix	ix, x	Rare at light in Pará	Dilleniaceae— <i>Davilla</i> sp.?
330	"	Plate 7, fig. 7	<i>Aleuron</i>	<i>neglectum</i>	viii, ix	v, ix	Rare at light in Pará. Bred from larva.	" " <i>rugosa</i> (in captivity)
331	400	Plate 7, fig. 8, <i>a, b, c, d</i>	<i>Euryo</i>	<i>japix japix</i>	ii, vii	iii, vii, ix	Occasionally at light in Pará. Bred from larva.	Dilleniaceae— <i>Davilla</i> sp.?
333	404	Plate 7, fig. 4, <i>a, b</i>	<i>Epistor</i>	<i>lugubris lugubris</i>	§	§	General and very common at light in Pará.	" " <i>rugosa</i> (in captivity) Ampelideae (= Vitaceae)— <i>Cissus sicyoides</i>
334	405	Plate 7, fig. 5 Plate 10, fig. 6	<i>Epistor</i>	<i>ocypete</i>	iv, v, vi	§	Common at light in Pará. Larvae only occasionally.	" " <i>erosus</i> Rubiaceae. Once thrived in captivity on Spermacoce
335	"	Plate 7, fig. 6, <i>a, b</i>	<i>Epistor</i>	<i>gorgon</i>	ix	v, vi, vii, ix, x, xi	Fairly common at light in Pará, 1912; only occasionally seen since.	Dilleniaceae— <i>Davilla rugosa</i> and other species Also <i>Cissus</i> (Vitaceae) Vitaceae— <i>Cissus sicyoides</i>
336	406		<i>Epistor</i>	<i>taedium</i>		ii	Once at light in Pará	<i>Cissus sicyoides</i>
337	407	Plate 10, fig. 1, <i>a, b, c</i>	<i>Epistor</i>	<i>canifer</i>	i		Rare in Pará. Twice bred	" " <i>erosus</i>

\* Revision of the Lepidopterous Family *Sphingidae*, by Rothschild and Jordon, Tring Museum, England.

† Larva.

‡ Pupa.

§ Probably to be found in any month of the year.

already figured and published in "Sphingidae of Peru," *Transactions of the Zoological Society of London*, vol. xx. pt. ii. no. 1, April 1912.

THE SPHINGIDAE OF PARÁ AND THE AMAZON—Continued.

References.	Plate Figures.	Genus.	Species.	Months of Appearance.		Locality and Comparative Abundance.	Food-plants.
				Larvae.	Imagines.		
349	417	<i>Nyceryx</i>	<i>coffene</i>		v	One perfect moth at light in 1919	
361	425	<i>Perigonia</i>	<i>pallida</i>		i, vii, viii, ix, xii	Of frequent occurrence at light in Pará. Larvae undiscovered	
363	Plate 7, fig. 13	<i>Perigonia</i>	<i>lusca f. resitula</i>	ii, iii	i, ii, iii, xii	Of frequent occurrence at light in Pará. Larva once "stung" by diptera	Rubiaceae— Ourouparia guianensis (unha de gavião) Coffea arabica Coffea liberica Rubiaceae— Sabicea aspera Rubiaceae— Sabicea aspera Rubiaceae— Ourouparia guianensis (unha de gavião)
367	Plate 9, fig. 6, a, b	<i>Eupyrthoglossum</i>	<i>sagra</i>			Moth rare at Pará. Once bred	
369	Plate 7, fig. 11	<i>Sesia</i>	<i>cecylus</i>	iii, iv, v	iv, v	Common in Pará. Often bred larva	
	Plate 7, fig. 12	<i>Sesia</i>	<i>cecylus</i>	i, ii, iii, iv	iii, iv	Only occasionally at light. Larvae to be obtained freely by searching	
372	Plate 7, fig. 9, a, b	<i>Sesia</i>	<i>titian</i>	i, ii, iii	iii, iv	Only occasionally taken at light in Pará. Larvae freely obtained by searching	Rubiaceae— Randia formosa (apucena) Genipa americana (genipapeiro)
373	Plate 7, fig. 10	<i>Sesia</i>	<i>fadus</i>	i, ii, iii	i, ii, iii, ix	Only occasionally taken at light in Pará. Larvae freely obtained by searching food-plants both at Pará and Maráos	Rubiaceae— Genipa americana (genipapeiro)
SUBFAMILY Philampelinae							
404	† † Plate 9, fig. 7, a, b	<i>Pholus</i>	<i>anchemolus</i>	§	§	General and very common at light in Pará. Larvae not so frequently noticed	Vitaceae— Cissus sicyoides (carão) " erosus " sp. ? Cissus sicyoides Cissus sicyoides
406	482	<i>Pholus</i>	<i>satellitica licoon</i>		iii, v, vii, viii, xii	Very rare in Pará	
411	486	<i>Pholus</i>	<i>obliquus</i>			Of frequent occurrence at light in Pará.	
412	Plate 9, fig. 8, a, b, c	<i>Pholus</i>	<i>ecus</i>	iii, iv	iv, v	Not rare locally in larval condition	Onagraceae— Jussiaea suffruticosa

418	493	<i>Pholus</i>	<i>vitis vitis</i>	ii, iii, iv	i, v, vii, xii	Occasionally at light in Pará, but not common, as in other parts Common at light in Pará, and frequently taken in larval con- dition	Vitaceae— Cissus sicyoides
419	494	<i>Pholus</i>	<i>fasciatus</i>	§	§		Onagraceae— Jussiaena lineifolia
420	496	<i>Pholus</i>	<i>capronnierii</i>		iv, v, vi, vii, viii, xi, xii	Of frequent occurrence at light in Pará, but never abundant. Larvae undiscovered	" latifolia
421	495	<i>Pholus</i>	<i>phorbis</i>		vii, ix	Rare at light in Pará. Larvae undiscovered	
422	"	<i>Pholus</i>	<i>labruscae</i>	v, viii	§	General and common at light in Pará. Larvae sometimes "stung" by diptera	Ampelideae or Vitaceae— Cissus sicyoides
624	681	SUBFAMILY <b>Choerocampinae</b>					" cerosus
		<i>Xylophanes</i>	<i>pluto</i>				Loganiaceae—
		<i>Xylophanes</i>	<i>mossi</i>	ii, iii, iv, v, viii, ix	iv, vi	Very rare at light in Pará Rare about Pará. Traced at Mosqueiro. Never seen at light. Bred from larvae, but generally "stung" by dipterous parasites. Ova sometimes "stung"	Pagamea guianensis
631	686	<i>Xylophanes</i>	<i>porcus</i>	iii, viii	iii, iv, ix	Not rare about Pará, but seldom seen wild as a moth	Rubiaceae— Palicourea grandifolia
644	692	<i>Xylophanes</i>	<i>confuentalis</i> <i>guyanensis</i>	ii, iii, iv, vi, vii, viii, xii	iii, iv, v, vi, viii, x	Not uncommon about Pará, but moth seldom seen at light. Larvae frequently obtained and bred. Occasionally "stung" by diptera	Rubiaceae— Palicourea grandifolia
645	693	<i>Xylophanes</i>	<i>anubus</i>	iii, iv, v	v	Not rare about Pará. Never seen at light. Larva occasionally troubled by diptera, and once by a large hymenopterous fly	Rubiaceae— Palicourea, two species with glossy leaves
647	696	<i>Xylophanes</i>	<i>anadis goldii</i>		vii, viii	Rare at light in Pará. Three specimens in 1912, and three since. Larvae undiscovered	
648	"	<i>Xylophanes</i>	<i>epaphus</i>		iii, vi	Rare at light in Pará. Larvae undiscovered	
		<i>Xylophanes</i>	<i>cosmius</i>			One female caught in Manaus	

\* Revision of the Lepidopterous Family Sphingidae, by Rothschild and Jordan, Tring Museum, England.

† Larva } already figured and published in "Sphingidae of Pern," Transactions of the Zoological Society of London, vol. xx, pt. ii, no. 1, April 1912.

‡ Pupa }  
§ Probably to be found in any month of the year.



# THE SPHINGIDAE OF PARÁ AND THE AMAZON—Continued.

Reference.	Plate Figures.	Genus.	Species.	Months of Appearance.		Locality and Comparative Abundance.	Food-plants.
				Larvae.	Imagines.		
651	Plate 8, fig. 6, a to f	<i>Xylophanes</i>	<i>chiron nechus</i>	i, ii, iii, viii, ix, x, xii	§	General and common at light in Pará. Frequently bred from larvae. Occasionally "stung" by both diptera and hymenoptera	Rubiaceae— <i>Palicourea grandifolia</i> Also Psychotria and Spermaceae
657	† ‡	<i>Xylophanes</i>	<i>tersa</i>	§	§	General and very common at light in Pará. Larvae frequently found when searched for	Icacinaceae sp. ? several times
660		<i>Xylophanes</i>	<i>elara</i>		viii	Rare in Pará. Two specimens taken at light in eight years. Larvae undiscovered	Rubiaceae— Spermaceae as above
668	Plate 8, fig. 3, a, b	<i>Xylophanes</i>	<i>loetia</i>	i, iv, v, vi	§	Common at light in Pará. Larvae freely obtained by searching after dark with a lantern	Viaceae—once thrived in captivity on Cissus
670		<i>Xylophanes</i>	<i>thyelia</i>		v, vii, xii	Only occasionally at light in Pará. Larvae undiscovered	

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† Larva } already figured and published in "Sphingidae of Peru," Transactions of the Zoological Society of London, vol. xx. pt. ii. no. 1, April 1912.

‡ Pupa }

§ Probably to be found in any month of the year.



EXPLANATION OF PLATE I.

1. *Cocytius cluentius* :  
    *a*, 3rd instar.  
    *b*, 4th    ,,  
    *c, d*, 5th    ,,  
    *e*, broken frass.
2. *Cocytius duponchel* :  
    *a*, 3rd instar.  
    *b, c*, 5th    ,,
3. *Protoparce florestan* :  
    at full growth.
4. *Protoparce hannibal* :  
    *a, b*, final instar.









## EXPLANATION OF PLATE II.

1. *Protoparce rustica rustica* :  
a, b, final instar.  
c, d, frass.
2. *Protoparce albiplaga* :  
at full growth.
3. *Protoparce perplexa* :  
final instar (not black enough, too blue).
4. *Pholus fasciatus* :  
at full growth.
5. *Isognathus scyron* :  
on emergence from egg, magnified 7 times  
(not black enough).
6. *Cocytius cluentius* :  
pupa.
7. *Protoparce florestan* :  
pupa.
8. *Protoparce hannibal* :  
pupa.



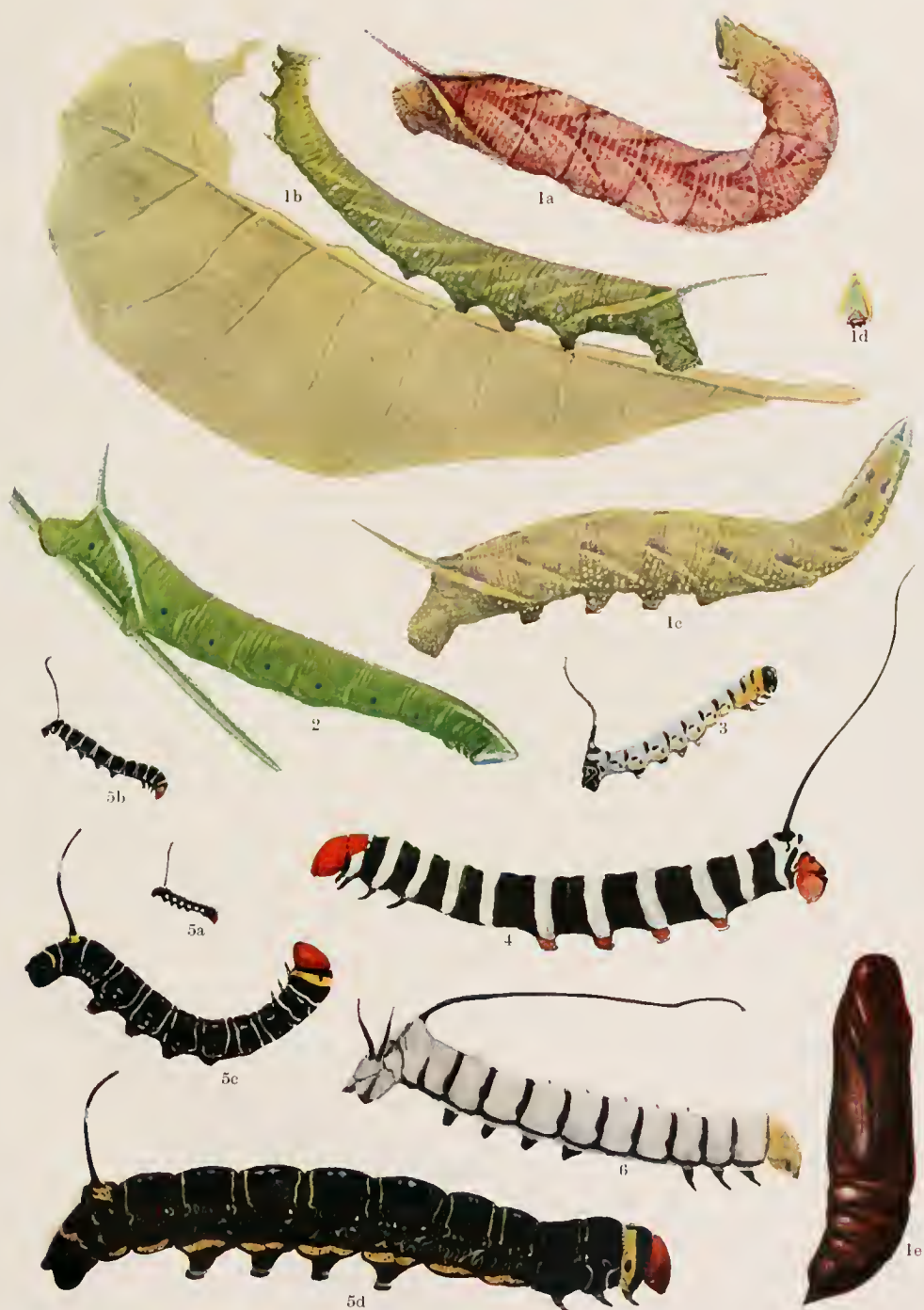






### EXPLANATION OF PLATE III.

1. *Protambulyx strigilis* :  
    *a, b, c*, final instar, with cachew leaf.  
    *d*, front of head.  
    *e*, pupa.
2. *Protambulyx strigilis* :  
    when feeding on *Rhus* (*Anacardiaceae*).
3. *Protoparce albiplaga* :  
    young larva.
4. *Isognathus swainsoni* subsp. ?
5. *Isognathus caricae* :  
    *a*, 1st instar.  
    *b*, 2nd    ,,  
    *c*, 4th    ,,  
    *d*, 5th    ,,
6. *Isognathus leachi* :  
    on emergence from egg, magnified 7 times.









## EXPLANATION OF PLATE IV.

1. *Pseudosphinx tetrio* :  
    *a*, 1st instar, on emergence from egg.  
    *b*, 2nd   ,,
2. *Isognathus leachi* :  
    *a*, 1st instar.  
    *b*, 3rd   ,,  
    *c*, 4th   ,,  
    *d*, 5th   ,,
3. *Isognathus excelsior* :  
    5th instar.
4. *Isognathus menechus* :  
    *a*, 2nd instar.  
    *b*, 3rd   ,,  
    *c*, 4th   ,, (4*c* is rather too brightly red).  
    *d*, 5th   ,,
5. *Isognathus scyron* :  
    *a*, 1st instar.  
    *b*, 2nd   ,,  
    *c*, 3rd   ,,  
    *d*, 5th   ,,
6. *Isognathus mossi* :  
    *a*, 3rd instar.  
    *b*, 4th   ,,  
    *c*, 5th   ,,
7. *Isognathus swainsoni* subsp. ? :  
    *a*, pupa.  
    *b*, pupa.









EXPLANATION OF PLATE V.

1. *Oryba kadeni* :

*a*, 1st instar.

*b*, 2nd „

*c*, 3rd „

*d*, *e*, 4th „

*f*, *g*, 5th „

*N.B.*—Fig. 1.*f* ought to be of a  
brighter cadmium yellow.

*h*, frass.

*j*, pupa.

2. *Oryba achemenides* :

*a*, 2nd instar.

*b*, 3rd „

*c*, 4th „

*d*, *e*, 5th „

3. *Xylophanes guianensis* :  
frass.

4. *Xylophanes mossi* :  
frass.















EXPLANATION OF PLATE VI.

1. *Leucorhampha ornatus* :

*a*, egg on *Zschokkea*.

*b*, 1st instar.

*c*, 2nd     ,,

*d*, 3rd     ,,

*e, f, g*, 4th     ,,

*h, j*, 5th     ,,

2. *Madoryx pluto* :

*a, b*, 4th instar : on *Miconia*.

*c, d*, 5th     ,,

*e*, pupa.







## EXPLANATION OF PLATE VII.

1. *Grammodia caicus* :  
     *a, b*, 3rd instar : on *Echites*.  
     *c, d*, 5th   ,,
2. *Erinnyis obscura obscura* :  
     *a, b*, final instar.
3. *Erinnyis crameri* :  
     *a*, 3rd instar.  
     *b*, 5th   ,,
4. *Epistor lugubris lugubris* :  
     *a*, 3rd instar.  
     *b*, 5th   ,,
5. *Epistor ocypete* :  
     final instar.
6. *Epistor gorgon* :  
     *a*, final instar.  
     *b*, pupa.
7. *Aleuron iphis* or *neglectum* :  
     final instar.
8. *Enyo japix japix* :  
     *a*, 4th instar.  
     *b, c*, 5th   ,,  
     *d*, pupa.
9. *Sesia titan* :  
     *a, b*, final instar.
10. *Sesia fadus* :  
     final instar.
11. *Sesia ceculus* :  
     final instar : on *Sabicea*.
12. *Sesia ceculus* :  
     final instar : on *Ourouparia*.
13. *Perigonia lusca* f. *restituta* :  
     final instar.
14. *Hemeroplanes inuus* :  
     *a*, 3rd instar.  
     *b*, 5th   ,,





## EXPLANATION OF PLATE VIII.

1. *Xylophanes mossi* :  
    *a*, 3rd instar.  
    *b*, 4th „, with frass.  
    *c, d*, 5th „
2. *Xylophanes anubus* :  
    *a*, 4th instar.  
    *b*, 5th „ (rather too dark and small).
3. *Xylophanes loelia* :  
    *a*, 4th instar.  
    *b*, 5th „
4. *Xylophanes guianensis* :  
    *a*, 4th instar.  
    *b*, 5th „  
    *c*, pupa.
5. *Xylophanes porcus continentalis* :  
    *a*, 4th instar.  
    *b*, 5th „  
    *c*, pupa.
6. *Xylophanes chiron nechus* :  
    *a*, 2nd instar.  
    *b*, 3rd „  
    *c*, 4th „  
    *d, e*, 5th „  
    *f*, pupa.



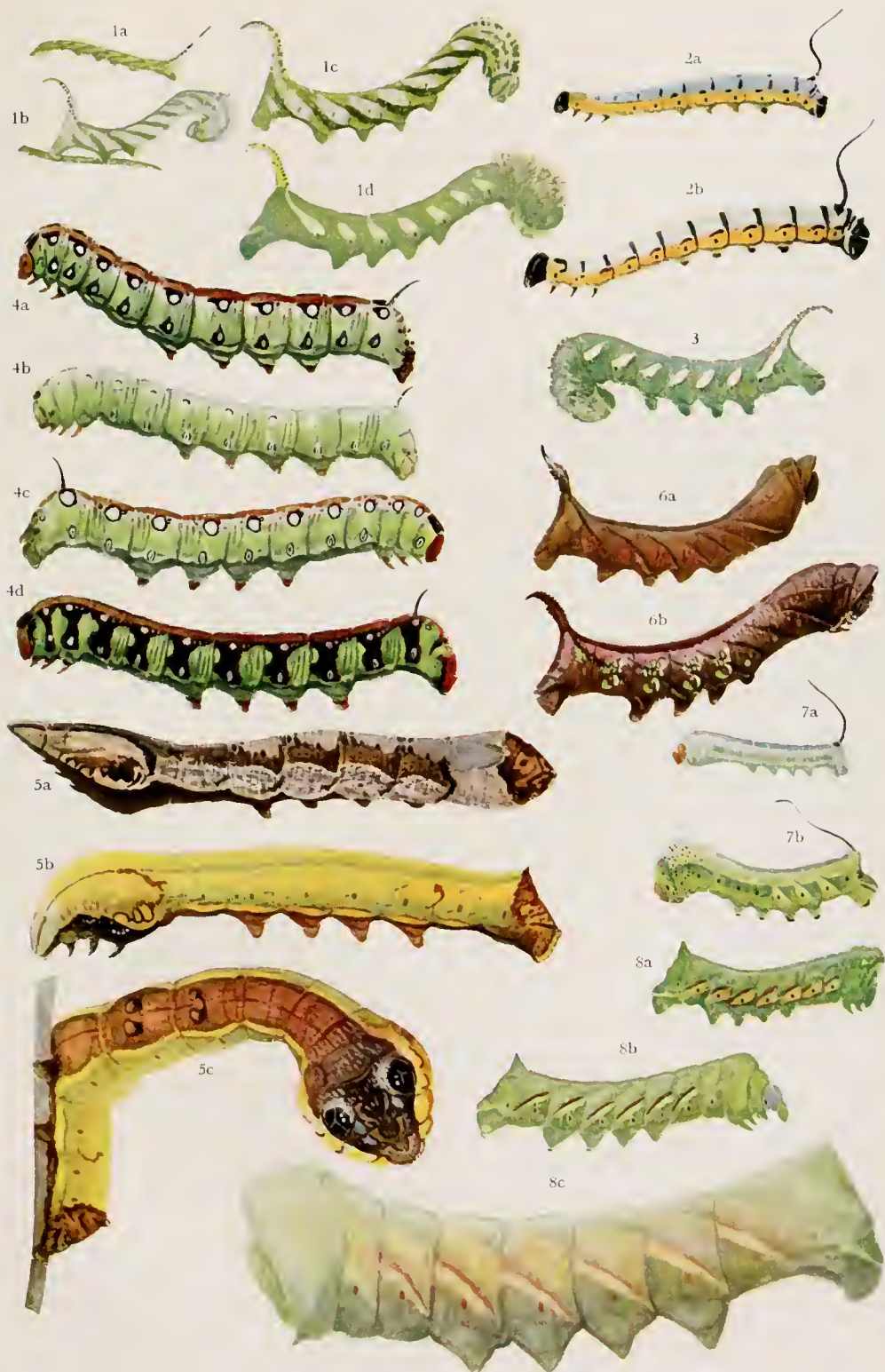






EXPLANATION OF PLATE IX.

1. *Protoparce perplexa* :
  - a, 2nd instar.
  - b, 3rd „
  - c, 4th „
  - d, 4th instar ; variety as found on *Aegiphila cuspidata*.
2. *Protoparce albiplaga* :
  - a, 3rd instar.
  - b, 4th „
3. *Protoparce hannibal*, as found on *Aegiphila elata*.
4. *Neogene dynaeus* :
  - a-d, varieties, full-grown ; Pernambuco.
5. *Leucorhampha triptolemus* :
  - a, full-grown.
  - b, yellow variety.
  - c, „ „
6. *Eupyrrhoglossum sagra* :
  - a, 4th instar.
  - b, 5th „
7. *Pholus anchemolus* :
  - a, 2nd instar.
  - b, 3rd „
8. *Pholus eacus* :
  - a, 4th instar.
  - b, 4th „
  - c, full-grown.







## EXPLANATION OF PLATE X.

1. *Epistor cavifer* :  
    *a*, 3rd instar.  
    *b*, 4th   ,,  
    *c*, full-grown.
2. *Isognathus mossi* :  
    *a*, 1st instar.  
    *b*, 2nd   ,,  
    *c*, 3rd   ,,  
    *d*, 4th   ,,  
    *e*, full-grown.
3. *Isognathus allamandae* :  
    *a*, 1st instar.  
    *b*, 3rd   ,,  
    *c*, full-grown.
4. *Pachylia resumens* :  
    *a*, 3rd instar.  
    *b*, 4th   ,,  
    *c*, full-grown.  
    *d*, pupa.
5. *Epistor lugubris* (black-marked variety).
6. *Epistor ocypete* (pink-marked variety).
7. *Leucorhampha ornatus* :  
    4th instar.
8. *Erinnyis lassauxi* :  
    *a*, 3rd instar.  
    *b*, 4th   ,,  
    *c*, full grown.
9. *Protambulyx strigilis* :  
    variety.
10. *Protambulyx eurycles* :  
    full-grown.
11. *Pholus vitis* :  
    3rd instar.
12. *Erinnyis oenotrus* :  
    *a*, 4th instar.  
    *b*, full grown.







MAP of the District





# TYPES OF BIRDS IN THE TRING MUSEUM.

By ERNST HARTERT, PH.D.

## B. Types in the General Collection.

*Continued from NOVITATES ZOOLOGICAE, 1919, p. 178.*

### NECTARINIIDAE.

339. *Aethopyga seheriae owstoni* Rothsch. = *Aethopyga seheriae owstoni*.

*Aethopyga seheriae owstoni* Rothschild, *Bull. B.O. Club*, xxv. p. 32 (Nauchau Island, Kwangtung, South China).

Type: ♂ ad., Nauchau Island, 6.i.1907. Collected by Alan Owston's collectors. No. 10.

340. *Aethopyga seheriae tonkinensis* Hart. = *Aethopyga seheriae tonkinensis*.

*Aethopyga seheriae tonkinensis* Hartert, *Bull. B.O. Club*, xxxviii. p. 7 (1917—Yen-Bai, Tonkin).

Type: ♂ ad., Yen-Bai, Tonkin, 7.ix.1911. N. Kuroda Coll.

341. *Aethopyga siparaja niasensis* Hart. = *Aethopyga siparaja niasensis*.

*Aethopyga siparaja niasensis* Hartert, *Orn. Monatsber.* vi. p. 92 (1898—Nias).

Type: ♂ ad., Gunong Sitolie, Nias, vii.1897. Raap leg.

342. *Aethopyga latouchii* Slater = *Aethopyga christinae latouchii*.

*Aethopyga latouchii* Slater, *Ibis*, 1891, p. 43 (Swatow).

Types: ♂♀ ad., Chiong Pô, Swatow, January 1888. J. D. Latouche leg.

(The genera *Urodepanis* and *Eudrepanis* are founded on differences in the shape of the middle tail-feathers in the male, while females cannot be separated generically from those of typical *Aethopyga*. I therefore do not recognize them.)

343. *Cinnyris afra graueri* Neum. = *Cinnyris afra graueri*.

*Cinnyris afra graueri* Neumann, *Bull. B.O. Club*, xxi. p. 55 (29.ii.1908—"Western Kivu Volcanoes").

Type: ♂ ad., "Vorberge der westlichen Kivu-Vulkane, im Urwalde, 2,400 m., 21.viii.1907." Rud. Grauer leg. No. 1,040.

Of this *Cinnyris schubotzi* Rehw., *Orn. Monatsber.*, March 1908, p. 47, is a synonym, though *graueri* may have only a day's priority.

† 344. *Cinnyris ansorgei* Hart. = *Cinnyris reichenowi* Sharpe.

*Cinnyris ansorgei* Hartert, in Ansorge's *Under the African Sun*, p. 350, pl. ii. fig. 1 (1899—Nandi).

Type: ♂ ad., Nandi, E. Africa, 16.iii.1898. W. J. Ansorge leg.

Though, at the time, believed to be distinct by Reichenow and Neumann, the supposed differences from *reichenowi* cannot be maintained.



345. *Cinnyris chloropygia bineschensis* Neum. = *Cinnyris chloropygia bineschensis*.

*Cinnyris chloropygia bineschensis* Neumann, *Orn. Monatsber.* 1903, p. 185 ("Binescho westlich von Kaffa am Quellgebiet des Gelo, Sobatsystem").

Type: ♂ ad., Village Detchabasa, Binesho, 22.iv.1901. Oscar Neumann leg. No. 1,153.

The differences stated by the author are quite conspicuous, though only one specimen was obtained.

346. *Cinnyris gutturalis inaestimata* Hart. = *Cinnyris senegalensis inaestimata*.

*Cinnyris gutturalis inaestimata* Hartert, Ansorge's *Under the African Sun*, p. 351 ("East Africa." Sic!).

Type: ♂ ad., Dar-es-Salaam, November 1895.

This form is quite distinct from *C. sen. gutturalis* of South Africa, as well as from *C. sen. saturator* Rehw. of South-Western Africa, being considerably smaller than both.

347. *Cinnyris alinae vulcanorum* Hartert subsp. nov.

(Ex Neumann MS. in Museo Tring.)

Type: ♂ ad., "Vorberge der westlichen Kivu-Vulkane, im Urwald, 2,400 m., 26.viii.1907." Rud. Grauer leg. No. 1,107.

Grauer collected 14 adult males, 3 females, and 3 young on the western Kivu Volcanoes and Karissimbi, as well as west of Baraka. These differ from *Cinnyris alinae alinae* of Mt. Ruwenzori (Ronssoro) in having the crown not purplish blue, merging into green on the nape, but more or less green all over, a few specimens only approaching *C. alinae alinae*.

The breast is also of a darker, more blackish brown, thus more in contrast with the lower abdomen. The females differ in lacking the lemon-yellow pectoral tufts, which are only indicated by a few yellowish white elongated feathers, besides which they are smaller and paler on the abdomen.

I have adopted the name proposed in MS. in the Tring Museum and the type selected by Professor Neumann, who failed to publish the name and description.

348. *Cinnyris oritis* Rehw. = *Cinnyris oritis*.

*Cinnyris oritis* Reichenow, *Journ. f. Orn.* 1892, p. 190 (Kamerun).

Cotype: ♂, Buea, Kamerun, 21.vi.1891, 950 m. Preuss leg. (Exchanged from the Berlin Museum.)

349. *Cinnyris infrenata* Hart. = *Cinnyris jugularis infrenata*.

*Cinnyris infrenata* Hartert, *Nov. Zool.* x. p. 29 (1903—Tukang Besi Islands).

Type: ♂ ad., Tomia, Tukang Besi group, S.E. of Celebes, 23.xii.1901. Heinrich Kühn leg. No. 4,419.

350. *Cinnyris frenata meyeri* Hart. = *Cinnyris jugularis meyeri*.

*Cinnyris frenata meyeri* Hartert, *Nov. Zool.* iv. p. 156 (1897—"Northern Celebes").

Type: ♂ ad., Menado tua, N. Celebes, 13.iv.1893. C. W. Curshaw leg.

351. *Cinnyris frenata dissentiens* Hart. = *Cinnyris jugularis dissentiens*.

*Cinnyris frenata dissentiens* Hartert, *Nov. Zool.* iii. p. 152 (1896—Bonthain Peak, South Celebes); *Nov. Zool.* iv. pp. 155, 156.

Type: ♂ ad., Indrulaman, Bonthain Peak, October 1895. Alfred Everett leg.

352. *Cinnyris frenata saleyerensis* Hart = *Cinnyris jugularis saleyerensis*,

*Cinnyris frenata saleyerensis* Hartert, *Nov. Zool.* iv. p. 156 (1897—"Insula Saleyer dicta").

Type: ♂ ad., Saleyer (Seleyer), November 1895. Alfred Everett leg.

353. *Cinnyris clementiae keiensis* Stres. = *Cinnyris clementiae keiensis*.

*Cinnyris clementiae keiensis* Stresemann, *Nov. Zool.* xx. p. 309 (1913—Key Islands).

Type: ♂ ad., Add, north of Great Key, 20.vii.1900. Heinrich Kühn leg. No. 2,792.

354. *Cinnyris zenobia buruensis* Hart. = *Cinnyris clementiae buruensis*.

*Cinnyris zenobia buruensis* Hartert, *Bull. B.O. Club*, xxvii. p. 12 (1910—Buru).

Type: ♂ ad., Bara (Buru), September 1898. Dumas leg.

About the priority of the name *clementiae* cf. Sherborn and Woodward, *Ann. and Mag. Nat. Hist.* (7) vii. 1901, p. 391, NOVITATES ZOOLOGICAE, xx p. 309.

355. *Cinnyris büttikoferi* Hart. = *Cinnyris büttikoferi*.

*Cinnyris büttikoferi* Hartert, *Nov. Zool.* iii. p. 581 (1896—Sumba).

Type: ♂ ad., Sumba, February 1896. Will. Doherty leg.

This interesting bird resembles very much *Cinnyris aurora* from the Philippine Islands; a comparative study of all forms of *Cinnyris* will probably lead to its being classed as a subspecies of *C. aurora*.

356. *Cinnyris solaris degener* Hart. = *Cinnyris solaris degener*.

*Cinnyris solaris degener* Hartert, *Nov. Zool.* xi. p. 214 (1904—South Flores).

Type: ♂ ad., Endeh, S. Flores, 12.ix.1896. Alfred Everett leg. No. 6,039.

357. *Cinnyris solaris exquisita* Hart. = *Cinnyris solaris exquisita*.

*Cinnyris solaris exquisita* Hartert, *Nov. Zool.* xi. p. 214 (1904—Wetter Island).

Type: ♂ ad., Wetter, 30.ix.1902. Heinrich Kühn leg. No. 5,609.

358. *Arachnothera longirostris prillwitzii* Hart. = *Arachnothera longirostra prillwitzii*.

*Arachnothera longirostris prillwitzii* Hartert, *Nov. Zool.* viii. p. 51 (1901—Java).

Type: "♀" ad., Mt. Gedeh, Java, 3,000 ft., 10.vii.1898. Ernst Prillwitz leg. No. 14.

359. *Arachnothera longirostra rothschildi* Oort = *Arachnothera longirostra rothschildi*.

*Arachnothera longirostra rothschildi* van Oort, *Notes Leyden Mus.* xxxii. p. 195 (1910—Natuna Islands, Bunguran).

Type (marked as *rothschildi* by van Oort, who had only our 10 Natuna specimens) : ♀ ad., Bunguran Island, September 1893. Alfred Everett leg.

360. *Arachnothera juliae* Sharpe = *Arachnothera juliae*.

*Arachnothera juliae* Sharpe, *Ibis*, 1887. p. 451. pl. xiv. (Kina Balu, Borneo).

Type : ♂ ad., Kina Balu, 3,000 feet, 19.ii.1887. John Whitehead leg. No. 984.

361. *Anthreptes longmari angolensis* Neum. = *Anthreptes longmari angolensis*.

*Anthreptes longmari angolensis* Neumann, *Journ. f. Orn.* 1906. p. 246 (Angola).

Type : ♂ ad., Duque de Braganza, northern Angola, 31.vii.1903. W. J. Ansorge leg. No. 838.

This form *seems* to be all right, but requires further confirmation, because of its variability.

362. *Cinnyris souimanga apolis* Hart., subsp. nov.

Subspecies *Cinnyris souimanga souimanga* dictae similis sed differt abdomine pallidiore, sulfurescente.

Years ago Lord Rothschild bought from a dealer in Paris, now deceased, a number of beautiful skins from Madagascar, all labelled "C. O. Madagascar," which, judging from the species and subspecies it contained, must mean *Côte occidentale*; i.e. west coast of Madagascar. Out of this collection Professor Neumann described a new form of *Abbotornis*, calling it *Abbotornis schistocercus* (*Bull. B.O. Club*, xxiii. p. 11, 1908), and it contains the light form of *Mirafra hova* known to inhabit West Madagascar. In this lot are also three males of *Cinnyris souimanga*, which differ from a series of 13 from various other parts of Madagascar in the Tring Museum, and about as many in the British Museum, by having the abdomen pale sulphur-yellow instead of more or less rich yellow, the flanks much paler, not olivaceous, and the ornamental pectoral tufts of a lighter yellow. Unfortunately the exact locality of these birds is not known, therefore the name *apolis*, meaning homeless. It is true that in the description of Brisson, from whom Gmelin took his *souimanga*, the abdomen is described as pale yellow, and that in Audebert & Vieillot's *Oiseaux dorées* it is not bright, not clear, light, sulphur-yellow as in *apolis*, but dirty as in *aldabranus*; but at that time specimens were not preserved as they are nowadays, and often faded (perhaps from spirits), so that the descriptions must be taken *cum grano salis*.

Type : ♂ ad., west coast of Madagascar. Purchased in Paris. "Native name Sohy."

363. *Anthreptes malaccensis wiglesworthi* Hart. = *Anthreptes malaccensis wiglesworthi*.

*Anthreptes malaccensis wiglesworthi* Hartert, *Nov. Zool.* ix. p. 209 (1902—Sulu Islands).

Type : ♂ ad., Sulu Island, 1.v.1883. Dr. Powell leg.

364. *Anthreptes hypogrammica intensior* Hart. = *Anthreptes hypogrammica intensior*.

*Anthreptes hypogrammica intensior* Hartert, *Bull. B.O. Club*, xxxviii. p. 27 (1917—Borneo).

Type : ♂ ad., Balingean, Sarawak, Borneo, 9.vi.1903. Brook leg. No. 22.

DICAEIDAE.

365. *Dicaeum mysoriense* Salvad. = *Dicaeum geelvinkianum mysoriense*.

*Dicaeum mysoriense* Salvadori, *Ann. Mus. Civ. Genova*, vii. p. 945 (1875—Korido, Misovi = Schouten Islands).

Cotype : ♂ ad., "Korido," Schouten Islands, 20.v.1875. Odoardo Beccari leg. Specimen "e" of Salvadori's list, marked in the author's handwriting "Typus" and "nov. sp."

366. *Dicaeum geelvinkianum diversum* R. & H. = *Dicaeum geelvinkianum diversum*.

*Dicaeum geelvinkianum diversum* Rothschild & Hartert, *Nov. Zool.* x. p. 215 (1903—"North coast of Dutch New Guinea").

Type : ♂ ad., Lower Ambernoh (= Mamberano or Rochussen) River. J. Dumas leg. No. 117.

367. *Dicaeum geelvinkianum rosseli* R. & H. = *Dicaeum geelvinkianum rosseli*.

*Dicaeum geelvinkianum rosseli* Rothschild & Hartert, *Bull. B.O. Club*, xxxv. p. 32 (December 1914—Rossel Island).

Type : ♂ ad., Rossel Island, Louisiade group, 3.ii.1898. A. S. Meek leg. No. 1,362.

368. *Dicaeum kühni* Hart. = *Dicaeum kühni*.

*Dicaeum kühni* Hartert, *Nov. Zool.* x. p. 25 (1903—Tukang Besi Islands).

Type : ♂ ad., Kalidupa, 31.xii.1901, Heinrich Kühn leg. No. 4,587.

This may be a subspecies of *D. celebicum*, and so might *D. sanghirense* and *sulaense*, but a lengthy study of all these forms is necessary to fully understand their relationship.

369. *Dicaeum neglectum* Hart. = *Dicaeum mackloti neglectum*.

*Dicaeum neglectum* Hartert, *Nov. Zool.* iv. p. 264 (1897—Lombok).

Type : ♂ ad., North Lombok, 2,000 feet, vii.1896. Alfred Everett leg.

370. *Dicaeum mackloti romae* Hart. = *Dicaeum mackloti romae*.

*Dicaeum mackloti romae* Hartert, *Nov. Zool.* xiii. p. 300 (1906—Roma Island).

Type : ♂ ad., Roma, 10.viii.1902. Heinr. Kühn leg. No. 5,399.

371. *Dicaeum apo* Hart. = *Dicaeum luzoniense apo*.

*Dicaeum apo* Hartert, *Bull. B.O. Club*, xiv. p. 79 (1904—Mt. Apo, Mindanao).

Type : ♂ ad., Mount Apo, Mindanao, 3,000 feet, x.1903. John Waterstradt leg.

372. *Dicaeum bonga* Hart. = *Dicaeum luzoniense bonga*.*Dicaeum bonga* Hartert, *Bull. B.O. Club*, xiv. p. 80 (1904—Bonga, Samar).

Type : ♂ ad., Bonga, Samar, Philippine Islands, 18.vi.1896. John Whitehead leg. No. B 631.

373. *Dicaeum trigonostigma megastoma* Hart. = *Dicaeum trigonostigma megasloma*.*Dicaeum trigonostigma megastoma* Hartert, *Bull. B.O. Club*, xxxviii. p. 74 (1918—Bunguran, Natuna Islands).

Type : ♂ ad., Bunguran, 7.x.1893. Alfred Everett leg.

374. *Dicaeum trigonostigma flaviclunis* Hart. = *Dicaeum trigonostigma flaviclunis*.*Dicaeum trigonostigma flaviclunis* Hartert, *Bull. B.O. Club*, xxxviii. p. 75 (1918—Java).

Type : ♂ ad., Karangbolong, S. Java, April—May 1901. Ernst Prillwitz leg.

375. *Dicaeum sollicitans* Hart. = *Dicaeum minullum sollicitans*.*Dicaeum sollicitans* Hartert, *Nov. Zool.* viii. p. 52 (1901—Java).

Type : ad., Mt. Gedeh, Java, 3—5,000 feet. Collected between October 1897 and January 1898, by Ernst Prillwitz. No. 73.

Stresemann collected this rare little bird on Bali.

376. *Dicaeum nigrilore* Hart. = *Dicaeum nigrilore*.*Dicaeum nigrilore* Hartert, *Bull. B.O. Club*, xv. p. 8 (1904—Mindanao).

Type : ♂ ad., Mount Apo, Mindanao, October 1903, 3,000 feet. John Waterstradt leg. No. W 302 a.

Waterstradt sent us 13 specimens of this very distinct species, all from Mt. Apo, some of them young. The latter have the crown and forehead of the same brown colour as the back.

377. *Prionochilus inexpectatus* Hart. = *Prionochilus bicolor inexpectatus*.\**Prionochilus inexpectatus* Hartert, *Nov. Zool.* ii. p. 64 (1895—Luzon, Mindoro).

Type : ♂ ad., North Mindoro, 30.xii.1894. Alfred Everett leg.

378. *Prionochilus Plateni* Blas. = *Prionochilus xanthopygius plateni*.*Prionochilus Plateni* Wilh. Blasius, *Braunsch. Anzeig.* No. 37, 12.ii.1888. p. 335; *Ornis*, 1888, p. 313 (Palawan).

Type : ♂ ad., Puerto Princessa, Palawan, 22.vii.1887. Dr. Platen leg. (Exchanged from Ad. Nehrkorn.)

\* Oberholser rejects the name *Prionochilus* because of the earlier name *Prionocheilus*, and adopted the name *Anaimos* Reichenbach, 1883. Though the two names are evidently only different Latin renderings of the same Greek name, I suppose they are easily distinguishable and should both be accepted. No nomenclatorial rule demands the contrary.



The names of new forms described by Blasius in the *Braunschweigische Anzeigen*, 1888, have priority over the names given by Sharpe in the *Ibis*, 1888. Blasius exhibited the Palawan collection, which was the property of Mr. Nehr Korn, at a meeting of the Braunschweig Natural History Society, and reports of the meeting were published, with full descriptions of the new birds, in the *Anzeigen* of February 12th and March 1st. These descriptions have been republished in the *Ornis*, 1888, where a full report of the collections is given. Though the descriptions in the *Ornis* appeared later, those in the *Braunschweigische Anzeigen* were earlier than Sharpe's, which appeared in the April *Ibis*. Objectionable as it is for any scientific person to allow diagnoses of new forms to be published for the first time in a newspaper, whether daily or weekly, or any other periodical not devoted to science entirely or primarily, such names must be accepted, as a line cannot be drawn between the various kinds of publications. This is universally admitted, and such names have been adopted. An exception therefore cannot be made in the case of Blasius's names, though Sharpe (cf. for example *Hand-list B.* v. p. 30) preferred his own.

† 378 a. *Prionochilus johannae* Sharpe = *Prionochilus xanthopygius plateni*.

*Prionochilus johannae* Sharpe, *Ibis*, April 1888. p. 201. pl. iv. fig. 1 (Palawan).

Type: ♂ ad., Taguso, Palawan, 25.vi.1887. John Whitehead leg. No. 1,427.

379. *Pristorhamphus versteri meeki* R. & H. = *Pristorhamphus versteri meeki*.

*Pristorhamphus versteri meeki* Rothschild & Hartert, *Bull. B.O. Club*, xxix. p. 36 (1911—Mt. Goliath).

Type: ♂ ad., Mount Goliath, Eastern Central Dutch New Guinea, 8.ii.1911. A. S. Meek Coll. No. 5,332.

C. Boden Kloss collected specimens on the Utakwa River, from 2,900 to 8,000 feet, in the Snow Mountains, of which Mt. Goliath is part of the eastern range.

380. *Pristorhamphus versteri albescens* R. & H. = *Pristorhamphus versteri albescens*.

*Pristorhamphus versteri albescens* Rothschild & Hartert, *Bull. B.O. Club*, xxix. p. 36 (1911—Mountains of British New Guinea).

Type: ♂ ad., Kotoi district, Owen Stanley Mountains, 4,000 feet, 12.viii.1898. A. S. Anthony leg.

381. *Eafa maculata* R. & H. = *Rhamphocharis maculata*.

*Eafa maculata* Rothschild & Hartert, *Nov. Zool.* x. p. 448 (1903—Owen Stanley Range, British New Guinea).

Type: (♀ ad.), Eafa district, Owen Stanley Mts., between 1,000 and 3,000 feet, 1902. A. S. Anthony leg. (Purchased from McIlwraith & McEacharn in London.)

(About the generic name, etc., see NOVITATES ZOOLOGICAE, 1907, p. 478.)

## INCERTAE SEDIS.\*

382. *Parmoptila ansorgei* Hart. = *Parmoptila woodhousei ansorgei*.

*Parmoptila ansorgei* Hartert, *Bull. B.O. Club*, xiv, p. 72 (1904—Angola).

Type: ♂ ad., Golungo Alto, N. Angola, 9.i.1904. W. J. Ansorge leg. No. 13.

This subspecies is very closely allied to *P. woodhousei woodhousei* from Gabun and Kamerun, differing only in being a little paler, both on the throat and head and on the upperside, and the wing is about 2 or 3 mm. longer. There is a good figure of *P. w. woodhousei* in the *Ibis*, 1909, plate II.

## ZOSTEROPIDAE.

383. *Zosterops polioogastra erlangeri* Neum. = *Zosterops polioogastra erlangeri*.

*Zosterops polioogastra erlangeri* Neumann, *Bull. B.O. Club*, xxi. p. 60 (1908—"High mountains of South Ethiopia, Shoa, Harar, Arussi Mountains, and the Omo region").

Type: ♂ ad., Gadut in Gofa, 31.i.1901. Oscar Neumann leg. No. 733.

384. *Zosterops omoensis* Neum. = *Zosterops omoensis*.

*Zosterops omoensis* Neumann, *Orn. Monatsber.* 1904. p. 162 ("Täler des Omo-Gebietes").

Type: ♂ ad., Senti valley, between Uba and Gofa, 28.i.1901. Oscar Neumann leg. No. 690.

I am inclined to think that *omoensis* must be a subspecies of *Z. abyssinicus*.

385. *Zosterops abyssinica socotrana* Neum. = *Zosterops abyssinica socotrana*.

*Zosterops abyssinica socotrana* Neumann, *Bull. B.O. Club*, xxi. p. 59 (1908—Sokotra).

Type: ♂ ad., Dahamis, Sokotra, 350 feet, 20.xii.1898. Ogilvie-Grant and Forbes Coll. No. 190.

This form is distinguished from *Z. abyssinica abyssinica* by the lighter, more whitish underside. The difference in the colour of bill and feet is striking in comparing our skins from Abyssinia and Sokotra, but the feet look dark again in those from the Wagar mountains, Somaliland.

? † 386. *Zosterops smithi* Neum. = *Zosterops senegalensis jubaensis*.

*Zosterops jubaensis* Erlanger, *Orn. Monatsber.* 1901. p. 182 (Damasso, Gurra, Juba River).

*Zosterops smithi* Neumann, *Orn. Monatsber.* 1902. p. 139 (Sillul, Bodele, Western Somaliland).

Type: ♂, Bodele, Sillul, 1.viii.1894. Donaldson Smith leg. No. 140.

Probably = *jubaensis*, but topotypical specimens of latter required to be certain of this.

\* The genera *Pholidornis* Hartl. 1857, *Parmoptila* Cass. 1859, and *Lobornis* Sharpe 1874 (the last evidently not distinct from *Parmoptila*, having been described from the young) are of very doubtful systematic position. In the *Cat. B. Brit. Mus.* x. Sharpe placed them among the *Dicaeidae*, before and after "*Prionochilus*," but in the *Hand-list*, iv. p. 233, he put them in the *Sylviidae*, evidently following Shelley, while Reichenow had them at the end of the *Paridae*. Neither of these positions seems to me satisfactory. The bill certainly has a striking resemblance with that of certain *Dicaeidae* (*Dicaeum*), but the strong feet and tarsi and the somewhat hard and scanty, almost scale-like plumage are utterly different. The strong feet, large-scaled (not scutellate!) tarsus, and hard plumage (chiefly in *Pholidornis*) remove them at once from the *Sylviidae*. The feet have certainly much resemblance to those of the *Paridae*, but the hard plumage and free nostrils, not overhung by antrorse feathers, are not at all characters of the *Paridae*. Perhaps this little group should form a separate family. It would be very valuable to study the biology and to discover nest and eggs of these interesting little birds.

387. *Zosterops superciliosa* Rehw. = *Zosterops senegalensis superciliosa*.

*Zosterops superciliosa* Reichenow, *Journ. f. Orn.* 1892. p. 192 (Kiri and Fadjulli).

Type or Cotype: ♂ ad., Fadjulli. Emin Pasha leg. (Purchased from Hartlaub.)

Neumann, *Orn. Monatsber.* 1904, p. 111, says that only two specimens, one in the British, one in the Tring Museum, existed, and he marked ours from Fadjulli as the type. Probably Reichenow borrowed this from Hartlaub before it came to Tring, and it was the only one he had seen at the time. Should he have examined the British Museum specimen as well, ours would be the cotype. Reichenow did not, and does not nowadays, quote the exact date and number, etc., of type specimens.

388. *Zosterops kaffensis* Neum. = *Zosterops virens kaffensis*.

*Zosterops kaffensis* Neumann, *Orn. Monatsber.* 1902. p. 10 (Kaffa); *Zosterops virens kaffensis* id., *Journ. f. Orn.* 1906. p. 243.

Type: ♂ ad., Anderatscha, Kaffa, 11.iii.1901. Oscar Neumann leg. No. 994.

389. *Zosterops schoana* Neum. = *Zosterops virens schoana*.

*Zosterops schoana* Neumann, *Orn. Monatsber.* 1903. p. 185 (Schoa).

*Zosterops virens schoana* id., *Journ. f. Orn.* 1906. p. 242.

Type: ♀ ad., Abuje, province of Gindcherat, Schoa, 3.x.1900. Oscar Neumann leg. No. 134.

390. *Zosterops westernensis vegeta* Hart. = *Zosterops lateralis vegeta*.

*Zosterops westernensis vegeta* Hartert, *Nov. Zool.* vi. p. 425 (1899—Cape York, N. Queensland).

Type: ♂ ad., Cape York, 15.vii.1898. Eichhorn leg. (No. 1,941 of the Meek collections.)

(Mathews, in his latest *List of the Birds of Australia*, makes *vegeta* a synonym of *Zosterops lateralis ramsayi*. [*Zosterops ramsayi* Masters, *Proc. Linn. Soc. N. S. Wales*, i. p. 56, 1875, from "Palm Island" in Torres Strait.] When I named *vegeta* I was not acquainted with Masters's description, but it does not suit my *vegeta*. The middle of the abdomen is whitish and not "light grey," and the wing measures 56–57, and not over 60 mm. ["2.4 inches"]. The suggestion that *vegeta* is *ramsayi* therefore cannot be accepted and must remain doubtful until specimens from "Palm Island" have been examined. Where "Palm Island" is I do not know, nor does Mathews (*in litt.*), as neither our maps nor the *Pacific Ocean Directory* give it.

391. *Zosterops sumbavensis* Guill. = *Zosterops intermedia sumbavensis*.

*Zosterops sumbavensis* Guillemard, *Proc. Zool. Soc. London*, 1885. p. 508 (Sumbawa).

Cotype: "♀?", Bima, Sumbawa, 14.viii.1883, specimen *b*. R. ff. Powell leg. (Guillemard Collection, made during the voyage of the yacht *Marchesa*.)

It is evident that the two specimens, *a* and *b*, are both discoloured, the brownish golden coloration not being the natural one. We have similarly

discoloured specimens of *Z. chloris*. Our specimens collected at Tambora (Doherty) and Bima (Everett) are very closely allied to *Z. intermedia intermedia* from South Celebes, but their wings are 2 to 3 mm. longer, the bills larger. This is therefore a very close subspecies of *intermedia*; but it is quite possible that a complete monographic study of the genus will lead to the grouping of even *intermedia* as a subspecies of another previously named species.

392. *Zosterops intermedia periplecta* Hart., subsp. nov.

Eight specimens of this *Zosterops*—three from Everett, five from Doherty—are underneath paler and on the upperside a little more olivaceous green, less golden than *Z. i. intermedia* and *Z. i. sumbavensis*, while the bills are at least as strong as in the latter, and the wings fully as long and sometimes even 1 or 2 mm. longer.

Type: ♂ ad., Lombok, 1,500 feet, May 1896. Alfred Everett leg.

393. *Zosterops unica* Hart. = *Zosterops unica*.

*Zosterops unica* Hartert, *Nov. Zool.* iv. p. 520 (1897—Nanga Ramau).

Type: adult (sex ?), Nanga Ramau, S. Flores, October 1896. Alfred Everett leg.

I have so far never seen a second specimen. It might be looked upon as a subspecies of *Z. intermedia*, but in a genus like *Zosterops* characters like the bright-yellow rump patch, black tail, smaller size, and apparently deep black bill suggest a separate species.

394. *Zosterops flavissima* Hart. = *Zosterops flavissima*.

*Zosterops flavissima* Hartert, *Nov. Zool.* x. p. 29 (1903—Tukang Besi Islands).

Type: ♂ ad., Binungku, Tukang Besi Islands, 9.xii.1901. Heinrich Kühn leg. No. 4,215.

395. *Zosterops obstinatus* Hart. = *Zosterops obstinatus obstinatus*.

*Zosterops obstinatus* Hartert, *Nov. Zool.* vii. p. 238 (1900—Batjan).

Type: ♀ ad., Batjan, 4,000 feet, September 1897. Will. Doherty leg.

396. *Zosterops obstinatus ternatanus* Stres. = *Zosterops obstinatus ternatanus*.

*Zosterops obstinatus ternatanus* Stresemann, *Nov. Zool.* xxi. p. 139 (1914—Ternate).

Type: ♀ ad., Ternate, 3—4,000 feet, September 1896. William Doherty leg.

397. *Zosterops obstinatus seranensis* Stres. = *Zosterops obstinatus seranensis*.

*Zosterops obstinatus seranensis* Stresemann, *Nov. Zool.* xxi. p. 139 (1914—Seran).

Type: ♂ ad., Gunong Pinaia, Ceram (Seran), 6,000 feet, 15.viii.1911. Erwin Stresemann leg. No. 878.

(In Stresemann's article on the birds of Ceram, *NOVITATES ZOOLOGICAE*, 1914, no mention is made of *Zosterops tudjuensis* Oort, *Notes Leyden Mus.* xxxiv.



p. 65, 1912, from the Pulu Tudju group north of Ceram. Though the description does not agree with *Z. o. seranensis*, it must be a near ally, and as the Pulu Tudju group appears to be very close to Ceram, should be included in the Ceram Fauna. Perhaps *obstinatus* and its allies, *ternatanus* and *seranensis*, might be looked upon as subspecies of *Z. chloris* !)

398. *Zosterops admiralitatis* R. & H. = *Zosterops fuscicapilla admiralitatis*.

*Zosterops admiralitatis* Rothschild & Hartert, *Bull. B.O. Club*, xxxiii. p. 108 (1914—Manus, Admiralty Islands); cf. also *Nov. Zool.* 1914. p. 298 !

Type : ♂ ad., Manus, 23.ix.1913. Eichhorn leg. (No. 6,132 of the A. S. Meek collections.)

399. *Zosterops semperi owstoni* Hart. = *Zosterops semperi owstoni*.

*Zosterops semperi owstoni* Hartert, *Nov. Zool.* vii. p. 2 (1900—Ruk Island).

Type : ad., Truk (or Ruk) Island, Carolines, 7.v.1896. (Collected by Alan Owston's Japanese collectors.)

400. *Zosterops meeki* Hartert = *Zosterops meeki*.

*Zosterops meeki* Hartert, *Nov. Zool.* v. p. 528 (1898—Sudest Island, Louisiade group).

Type : ♂ ad., Sudest Island, 18.iv.1898. A. S. Meek leg. No. 1,753.

We have now 10 specimens of this beautiful species.

401. *Zosterops palpebroso alani* Hart. = *Zosterops palpebroso alani*.

*Zosterops palpebroso alani* Hartert, *Bull. B.O. Club*, xv. p. 45 (1905—South Dionisio, Volcano Islands, south of the Bonin group).

Type : ♂ ad., South Dionisio, 29.v.1904. Collected by Alan Owston's Japanese collectors.

402. *Zosterops palpebroso foghaensis* Stres. = *Zosterops palpebroso foghaensis*.

*Zosterops palpebroso foghaensis* Stresemann, *Nov. Zool.* xix. p. 347 (1912—Gunong Fogha, Buru).

Type and unique specimen : ♀ ad., Gunong Fogha, 5,500 feet, 28.ii.1912. Erwin Stresemann leg. No. 1,091.

403. *Zosterops palpebroso harterti* Stres. = *Zosterops palpebroso harterti*.

*Zosterops palpebroso harterti* Stresemann, *Nov. Zool.* xix. p. 347 (1912—Alor).

Type : ♂ ad., Alor, 30.iii.1897. Alfred Everett leg.

† 404. *Zosterops clara* Sharpe = *Zosterops atricapilla* Salvad.

*Zosterops clara* Sharpe, *Ibis*, 1888. p. 479 (Kina Balu, Borneo).

Type : ♂ ad., Mt. Kina Balu, 4,000 feet, 9.iii.1888. John Whitehead leg. No. 2,179.

(Sharpe, when describing *Z. clara*, did not compare it with *Z. atricapilla* (Salvadori, *Ann. Mus. Genova*, xiv. p. 215, 1879), which he quite overlooked. After comparing two skins from Mt. Korinchi, Sumatra, collected by Robinson and Kloss, with six from Kina Balu, I must agree with Finsch, who united *clara*



and *atricapilla*. It is of course possible that slight differences may become obvious between the Sumatran and Bornean birds, but so far we are not justified in separating them.)

405. *Zosterops vellalavella* Hart. = *Zosterops vellalavella*.

*Zosterops vellalavella* Hartert, *Bull. B.O. Club*, xxi. p. 106 (1903—Vella Lavella Island, Solomon group).

Type : ♂ ad., Vella Lavella, 26.ii.1908. A. S. Meek Coll. No. 3,856.

406. *Zosterops kühni* Hart. = *Zosterops kühni*.

*Zosterops kühni* Hartert, *Bull. B.O. Club*, xvi. p. 82 (1906—Amboina).

Type : ♂ ad., Amboina, 16.ii.1906. Heinrich Kühn leg. No. 7,280.

407. *Zosterops kulambangrae* R. & H. = *Zosterops rendovae kulambangrae*.

*Zosterops kulambangrae* Rothschild & Hartert, *Nov. Zool.* viii. p. 180 (1901—Kulambangra, Central Solomon Islands).

Type : ♂ ad., Kulambangra, 13.iii.1901. A. S. Meek Coll. No. 2,875.

408. *Zosterops luteirostris* Hart. = *Zosterops luteirostris*.

*Zosterops luteirostris* Hartert, *Bull. B.O. Club*, xiv. p. 61 (1904—Gizo, Solomon Islands).

Type : ♂ ad., Gizo, 2.xi.1903. A. S. Meek Coll. A. 724.

409. *Zosterops aignani* Hart. = *Zosterops aignani*.

*Zosterops aignani* Hartert, *Nov. Zool.* vi. p. 210 (1899—St. Aignan Island, Louisiade group).

Type : ♂ ad., St. Aignan, 7.xii.1897. A. S. Meek Coll. No. 1,132.

410. *Zosterops floridana* R. & H. = *Zosterops floridana*.

*Zosterops floridana* Rothschild & Hartert, *Nov. Zool.* viii. p. 180 (1901—Florida Island, Solomon Islands).

Type : ♂ ad., Florida Island, 28.xii.1900. A. S. Meek Coll. No. 2,704.

411. *Zosterops whiteheadi* Hart. = *Zosterops whiteheadi whiteheadi*.

*Zosterops whiteheadi* Hartert, *Bull. B.O. Club*, xiv. p. 13 (1903—Lepanto district, N. Luzon).

Type : ♂ ad., Lepanto, N. Luzon, 5,000 feet, 14.xii.1894. John Whitehead leg. No. 819.

412. *Zosterops whiteheadi vulcani* Hart. = *Zosterops whiteheadi vulcani*.

*Zosterops whiteheadi vulcani* Hartert, *Bull. B.O. Club*, xiv. p. 14 (1903—Mt. Apo, South Mindanao).

Type : ♂ ad., Mt. Apo, 8,000 feet, iv. 1903. Walter Goodfellow leg.

413. *Zosterops japonica insularis* Ogawa = *Zosterops insularis*.

*Zosterops japonica insularis* Ogawa, *Annot. Zool. Japon.* v. p. 186 (1905—Islands of Tanega [Tanegashima] and Yaku, south of Japan).

Type : ♂ ad., Tanega, 12.xi.1904. Collected by Alan Owston's Japanese collectors. (No. 1,330.)

I cannot consider this very distinct form to be a subspecies of *japonica*. In the coloration of the sides it is somewhat intermediate between the latter and *erythropleura*.

414. *Zosterops alberti* R. & H. = *Zosterops alberti*.

*Zosterops alberti* Rothschild & Hartert, *Nov. Zool.* xv. p. 364 (1908—San Christoval, Solomon Islands).

Type : ♂ ad., San Christoval, 25.iv.1908. A. S. Meek Coll. No. 4,078.

415. *Oreozosterops javanica elongata* Stres. = *Oreozosterops javanica elongata*.

*Oreozosterops javanica elongata* Stresemann, *Nov. Zool.* xx. p. 366 (1913—Bali).

Type : ♂ ad., Gunong Bratan, Bali, 27.i.1911. Erwin Stresemann leg. No. 211.

(It is perhaps as well to recognize the genus *Oreozosterops*.)

416. *Zosterops goodfellowi* Hart. = *Oreozosterops goodfellowi*.

*Zosterops goodfellowi* Hartert, *Bull. B.O. Club*, xiv. p. 13 (1903—Apo Volcano, Mindanao).

Type : ♀ ad., Mt. Apo, 8,000 feet, iv.1903. Walter Goodfellow leg. No. 124 a.

417. *Zosterops superciliaris* Hart. = *Oreozosterops superciliaris*.

*Zosterops superciliaris* Hartert, *Nov. Zool.* iv. p. 172 (1897—South Flores).

Type : ♀ ad., South Flores, above 3,000 feet, October 1896. Alfred Everett leg.

418. *Oreozosterops pinaiae* Stres. = *Oreozosterops pinaiae*.

*Oreozosterops pinaiae* Stresemann, *Bull. B.O. Club*, xxxi. p. 5 (1912—"Central Mountains of Middle Ceram, above 4,000 feet").

Type : ♂ ad., Gunong Pinaia, Central Ceram, 7,500 feet, 17.viii.1911. Erwin Stresemann leg. No. 877.

419. *Zosterops crassirostris* Hart. = *Pseudozosterops crassirostris*.

*Zosterops crassirostris* Hartert, *Nov. Zool.* iv. p. 172 (1897—South Flores).

Type : ♂ ad., South Flores, 3,500 feet, 28.x.1896. Alfred Everett leg.

(I am adopting the genera *Oreozosterops*, *Pseudozosterops*, and *Lophozosterops* at least provisionally, as in the *Hand-list of B.* v. p. 20, and by Stresemann, *NOVITATES ZOOLOGICAE*, xxi. p. 138.)

420. *Chlorocharis squamiceps* Hart. = *Pseudozosterops squamiceps*.

*Chlorocharis squamiceps* Hartert, *Nov. Zool.* iii. p. 70 (1896—Bonthain Peak, South Flores).

Type : ♂ ad., Bonthain Peak, 6,000 feet, October 1895. Alfred Everett leg.

421. *Chlorocharis emiliae* Sharpe = *Chlorocharis emiliae*.

*Chlorocharis emiliae* Sharpe, *Ibis*, 1888. p. 392 (Mt. Kina Balu, N. Borneo).

Type : ♀ ad., Kina Balu, 8,000 feet, 27.ii.1888. John Whitehead leg. No. 2,077.

422. *Lophozosterops dohertyi* Hart. = *Lophozosterops dohertyi dohertyi*.

*Lophozosterops dohertyi* Hartert, *Nov. Zool.* iii. p. 168 (1896—Sumbawa).

Type: ♂ ad., Tambora, Sumbawa, 1,000 feet, April—May 1896. William Doherty leg.

423. *Lophozosterops subcristatus* Hart. = *Lophozosterops dohertyi subcristatus*.

*Lophozosterops subcristatus* Hartert, *Nov. Zool.* iv. p. 171 (1894—Hills of South Flores).

Type: ♂ ad., South Flores, above 3,000 feet, x. 1896. Alfred Everett leg.

424. *Tephras ruki* Hart. = *Tephras ruki*.

*Tephras ruki* Hartert, *Bull. B.O. Club*, vii. p. v. (1897—Ruk Island, Carolines).

Type: ♂ ad., Ruk (Truk), 25.xi.1895. Alan Owston's Japanese collectors. No. B 15.

425. *Hypocryptadius cinnamomeus* Hart. = *Hypocryptadius cinnamomeus*.

*Hypocryptadius cinnamomeus* Hartert, *Bull. B.O. Club*, xiv. p. 13 (1903—Mt. Apo, Mindanao).

Type: ♀ ad., Mt. Apo, 8,000 feet, April 1903. Walter Goodfellow leg. No. 121.

### CERTHIIDAE.

† 426. *Certhia familiaris pyrenaica* Ingram = *Certhia familiaris costae*.

*Certhia familiaris pyrenaica* Ingram, *Ibis*, 1913. p. 549 (near Canterets, Central Pyrenees).

Types: ♂♂, Reine Hortense, 1,400 m., close to Cauterets, 30.xii.1906, Pine woods of the Colde Riou, 1,600 m., above Cauterets, 6.ii.1907. (The supposed ♀ is the most typical male and is from the "Sapinière de Riou.")

(In his very interesting article in *Ibis*, 1913, Ingram has correctly shown that *costae*, the Alpine form, is separable from *macroductyla*. In my book I had united it with the latter for want of material. I cannot, however, agree that "*pyrenaica*" is again separable—it seems to me to be quite like the Alpine form.)

427. *Certhia familiaris japonica* Hart. = *Certhia familiaris japonica*.

*Certhia familiaris japonica* Hartert, *Nov. Zool.* 1897. p. 138 (Hondo, Japan).

Type: "♂" (?), Iwaki, Hondo, Japan. From Alan Owston.

428. *Certhia familiaris corsa* Hart. = *Certhia familiaris corsa*.

*Certhia familiaris corsa* Hartert, *Vög. pal. Fauna*, p. 320 (1905—Corsica).

Type: ♂ ad., Vivaria, Corsica, 6.i.1884. John Whitehead leg. No. 6,184.

(Reichenow is of opinion that this form is a subspecies of *C. brachyductyla*, but it is a *familiaris*. It inhabits only the elevated mountain forests, during the breeding season. Wharton and Baekhouse, however, saw Creepers in the chestnut groves; and if they should breed there, it is quite conceivable that those birds might be a form of *brachyductyla*, and that, as elsewhere, two species occurred in Corsica.)

429. *Certhia familiaris tianschanica* Hart. = *Certhia familiaris tianschanica*.

*Certhia familiaris tianschanica* Hartert, *Vög. pal. Fauna*, i. p. 321 (1905—"Tianschan").

Type : ♂, Aksu, 19.ii.1902. Kutzenko leg. No. 1,801.

430. *Certhia brachydactyla ultramontana* Hart. = *Certhia brachydactyla ultramontana*.

*Certhia brachydactyla ultramontana* Hartert, *Vög. pal. Fauna*, i. p. 324 (1905—"Südeuropa südlich der grossen Gebirgsketten: Italien, Spanien, Süddalmatien, Griechenland").

Type : ♂ ad., Panzano, near Chianti, 3.x.1902. Ex Squilloni. No. 656.  
Inhabits also southern France (Ingram, *Ibis*, 1913).

431. *Certhia brachydactyla mauritanica* With. = *Certhia brachydactyla mauritanica*.

*Certhia brachydactyla mauritanica* Witherby, *Bull. B.O. Club*, xv. p. 35 (1905—Tunisia, Algeria).

Type : ♂ ad., Ain-Draham, North Tunisia, 13.iv.1903. Paul Spatz leg.

432. *Certhia familiaris harterti* Hellm. = *Certhia brachydactyla harterti*.

*Certhia familiaris harterti* Hellmayr, *Journ. f. Orn.* 1901, p. 189 ("Kleinasien").

Type : ad., Alum-Dagh, Asia Minor, 28.xii.1868. T. Robson leg. (Ex Coll. J. Elwes.)

433. *Salpornis Emini* Hartl. = *Salpornis spilonota emini*.

*Salpornis Emini* Hartlaub, *Proc. Zool. Soc. London*, 1884, p. 415. pl. 37 (1884—Langomeri, Equatorial Province); *Salpornis Salvadorii orientalis*, id., *Journ. f. Orn.* 1889, p. 116 (New name for *S. emini*).

Type of both names : ♂ ad., Langomeri. Emin Pasha leg.

434. *Salpornis spilonota erlangeri* Neum. = *Salpornis spilonota erlangeri*.

*Salpornis spilonota erlangeri* Neumann, *Orn. Monatsber.* 1907, p.52 (Kaffa and Djamdjam, S. Ethiopia).

Type : ♂ ad., Anderatsha, Kaffa, 16.iii.1901. Oscar Neumann leg.

435. *Climacteris placens meridionalis* Hart. = *Climacteris placens meridionalis*.

*Climacteris placens meridionalis* Hartert, *Bull. B.O. Club*, xxi. p. 27 (1907—Mountains of British New Guinea).

Type : ♀ ad., Owgarra, Angabunga River, 6—8,000 feet, 29.i.1905. A. S. Meek leg. No. A 2,038.

## SITTIDAE.

436. *Sitta europaea britannica* Hart. = *Sitta europaea britannica*.

*Sitta europaea britannica* Hartert, *Nov. Zool.* vii. p. 526 (1900—England, type Tring).

Type : ♂ ad., Tring Park, 13.x.1898. Ernst Hartert leg.

437. *Sitta rupicola* Blanf. = *Sitta neumayer rupicola*.

*Sitta rupicola* Blanford, *Ibis*, 1873, p. 87 ("In montibus Persicis praesertim in Elburg saxa scopulosque frequentans").

Type: ♂ juv., Lura Valley, Elburg Mountains, N. Persia, 6,500 feet, 9.viii. 1872. W. T. Blanford leg. No. 572.

Blanford never noticed that his types were juvenile birds, and he mixed up his *rupicola* of North Persia with *S. neumayer tschitscherini* of Isfahán and Shiráz. The type specimen is marked on the label by Blanford: "type-figured specimen, *Ibis*, 1873, p. 87," and on the back of the label "specimen-figured Zoology of Persia."

I united formerly *tephronota* and *rupicola*, but corrected my error, p. xxxii. of my book. The type specimen has been in the Indian Museum, but was made a "duplicate" and thus came into our hands.

438. *Callisitta azurea expectata* Hart. = *Callisitta azurea expectata*.

*Callisitta azurea expectata* Hartert, *Bull. B.O. Club*, xxxv, p. 34 (December 1914—Malay Peninsula).

Type: ♂ ad., Bukit Frazer, above Semangko Pass, Pahang, Malay Peninsula, 4,000 feet, 10.x. 1909. Ex Coll. Selangor Museum.

439. *Dendrophila lilacea* Whiteh. = *Callisitta frontalis lilacea*.

*Dendrophila lilacea* Whitehead, *Bull. B.O. Club*, vi, p. 49 (1897—Samar).

Types: ♂♀ ad., Bonga, Samar, 21.vi. 1896. John Whitehead leg. Nos. B 653, 654.

440. *Sitta corallipes* Sharpe = *Callisitta frontalis corallipes*.

*Dendrophila corallipes* Sharpe, *Ibis*, 1888 (Kina Balu, N. Borneo).

Type: ♀ ad., Kina Balu, 3,000 feet, 26.ii. 1887. John Whitehead leg. No. 1,030.

441. *Sitta frontalis palawana* Hart. = *Callisitta frontalis palawana*.

*Sitta frontalis palawana* Hartert, *Bull. B.O. Club*, xvi, p. 11 (1905—Palawan).

Type: ♂ ad., Puerto Princessa, Palawan, i. 1898. William Doherty leg.

442. *Sitta frontalis saturator* Hart. = *Callisitta frontalis saturator*.

*Sitta frontalis saturator* Hartert, *Nov. Zool.* ix, p. 573 (1902—Gunong Tahan, E. Malay Peninsula).

Type: ♂ ad., Gunong Tahan, 4,000 feet, ix. 1901. John Waterstradt Coll.

This is a very distinct form, inhabiting the mountains of the Malay Peninsula. Gunong Tahan, Semangko Pass, etc.

443. *Neositta magnirostris* Ingram = *Neositta striata magnirostris*.

*Neositta striata magnirostris* Ingram, *Bull. B.O. Club*, xxi, p. 99 (1908—Inkerman, North Queensland).

Type: ♂, Inkerman Station, 14.iii. 1907. W. Stalker leg.



## PARIDAE.

444. *Regulus regulus anglorum* Hart. = *Regulus regulus anglorum*.

*Regulus regulus anglorum* Hartert, *Bull. B.O. Club*, xvi. p. 11 ("Great Britain, Isle of Wight, Scotland, and Ireland").

Type : ♂ ad., Tring Park, 31.x.1900. Ernst Hartert leg.

445. *Regulus regulus interni* Hart. = *Regulus regulus interni*.

*Regulus regulus interni* Hartert, xvi. p. 45 (1906—Corsica and Sardinia).

Type : ♂ ad., Sassari, Sardinia, 6.ii.1904. (Purchased from Squilloni.)

446. *Leptopoeile sophiae deserticola* Hart. = *Leptopoeile sophiae deserticola*.

*Leptopoeile sophiae deserticola* Hartert, *Vög. pal. Fauna*, i. p. 401 (1907—"Gebirge am Südrande des Tarim—Beckens und der Wüste Gobi").

Type : ♂, Kara-Sai, East Turkestan, xi.1889. Pewzow leg.

447. *Anthoscopus ansorgei* Hart. = *Anthoscopus ansorgei*.

*Anthoscopus ansorgei* Hartert, *Bull. B.O. Club*, xv. p. 74 (1905—Benguella).

Type : ♂ ad., Mangonga River, Benguella, 15.xii.1904. W. J. Ansorge leg. No. 912.

? 448. *Anthoscopus sharpei* Hart. = ? *Anthoscopus caroli sylviella* Rehw.

*Anthoscopus sharpei* Hartert, *Bull. B.O. Club*, xv. p. 75 (1905—Usámbiro).

Type : ♀, Usámbiro, south of Victoria Nyanza, 8.ix.1889. Emin Pasha leg. No. 336.

*A. sylviella* had been described a year before by Reichenow, *Orn. Monatsber.* xii. p. 27, 1904, from Usafua, north of Lake Nyassa. It is still doubtful if it is the same.

449. *Aegithalus musculus* Hartl. = *Anthoscopus musculus*.

*Aegithalus musculus* Hartlaub, *Orn. Centralblatt*, vii. p. 91 (1882—Ladó).

Type : Ladó, 8.iii.1881. Emin Pasha leg.

(I have here used the name *Anthoscopus* for the African Penduline Tits, which have a much longer first primary and comparatively shorter tail than the palaearctic forms, though I hardly consider the separation necessary. The oldest generic name is *Remiz* Jarocki, 1821, monotype *pendulinus*!)

450. *Anthoscopus pendulinus persimilis* Hart. = *Remiz pendulinus persimilis*.

*Anthoscopus pendulinus persimilis* Hartert, *Nov. Zool.* 1918. p. 308 (Eregli in S.E. Asia Minor to Lake Urmia and Lenkovan).

Type : ♂ ad., Eregli, south-eastern Asia Minor, 8.v.1908. P. Ürmös leg.

450 a. *Anthoscopus rothschildi* Neum. = *Anthoscopus rothschildi*.

*Anthoscopus rothschildi* Neumann, *Journ. f. Orn.* 1907. p. 597 (One specimen from Simba, British East Africa).

Type : ♀, Simba, 18.i.1906. Coll. Maurice de Rothschild. No. 55.

The collection made by Dr. van Someren seems to confirm the distinctness of this form, but the material of the genus is so far too insufficient to say which are subspecies and which species. Probably *rothschildi* will in the end be treated as a subspecies of another form.

451. *Aegithalos caudatus pyrenaicus* Hart. = *Aegithalos caudatus pyrenaicus*.

Description : *Nov. Zool.* xxv. p. 429 (1918—Central Pyrenees); name : *Bull. B.O. Club*, xxxix. p. 40 (1918).

Type : ♂ ad., Reine Hortense near Caunterets, Central Pyrenees, 1,400 m., 22.iii.1907. J. Mousquès leg.

452. *Aegithalos caudatus italiae* Jourdain = *Aegithalos caudatus italiae*.

*Aegithalos caudatus italiae* Jourdain, *Bull. B.O. Club*, xxvii. p. 39 (1910—Italy).

Type : ♂ ad., Cremona, ix.1907. Ferragni leg.

(Hilgert, in *Kat. Coll. Erlanger*, p. 177, 1908, first called attention to this form, saying that some specimens from Cremona were neither *A. c. roseus* nor *irbii*, while others he thought were *irbii*, of which, however, he had never seen a specimen.)

453. *Parus lugubris anatoliae* Hart. = *Parus lugubris anatoliae*.

*Parus lugubris anatoliae* Hartert, *Vög. pal. Fauna*, p. 368 (1905—"Kleinasien : bergbewohnend").

Type : "Ahoory," Asia Minor, 5,000 feet, 6.iv.1874. H. J. Elwes leg.

(A specimen of *Parus lugubris* which seemed to me to agree perfectly with *anatoliae* was purchased by Giglioli at Nice and introduced into the Italian Fauna by Giglioli. It was purchased from Messrs. Gal, who palmed off several foreign species to Giglioli, who accepted them without criticism; probably all were obtained elsewhere, as Gal frères were notoriously unreliable; nor does Nice belong to Italy, but our late friend considered all countries as Italian which he thought should be Italian, including Dalmatia, Nice, etc.)

454. *Parus caeruleus ogliastrae* Hart. = *Parus caeruleus ogliastrae*.

*Parus caeruleus ogliastrae* Hartert, *Vög. pal. Fauna*, p. 349 (1905—Sardinia and Corsica).

Type : ♂ ad., Lanusci, district of Ogliastro, eastern Sardinia, 2.ii.1902.

455. *Parus sarawacensis* Slater = *Parus major sarawacensis*.

*Parus cinerascens* (nec Vieillot) Slater, *Ibis*, 1885. pp. 121-123. pl. iv. (Bungal Mts., Sarawak, N. Borneo).

*Parus sarawacensis* Slater, t.c. p. 327 (New name for *cinerascens* Slat.).

Type : ad., Bungal Mts., Sarawak. W. A. Harvey leg.

456. *Parus major tibetanus* Hart. = *Parus major tibetanus*.

*Parus major tibetanus* Hartert, *Vög. pal. Fauna*, p. 346 (1905—Tsongpo Valley, in eastern Tibet).

Type : ♂ ad., Chaksam, Tsongpo Valley, 25.ix.1904. Colonel Waddell leg.  
(Received from H. E. Dresser.)

457. *Parus major caschmirensis* Hart. = *Parus major caschmirensis*.

*Parus major caschmirensis* Hartert, *Vög. pal. Fauna*, p. 345 (1905—Mts. of Kashmir).

Type : ad., Gilgit, 26.xi.1878. J. Scully leg. No 2,618.

458. *Parus major planorum* Hart. = *Parus major planorum*.

*Parus major planorum* Hartert, *Nov. Zool.* xii. p. 499 (1905—Southern Punjab).

Type : ad., South Punjab, Lieutenant Cleveland leg.

459. *Parus major mahrattarum* Hart. = *Parus major mahrattarum*.

*Parus major mahrattarum* Hartert, *Nov. Zool.* xii. p. 499 (1905—South India and Ceylon).

Type : ♂ ad., Ceylon, 1.x.1868. E. Holdsworth leg. No. 182.

460. *Parus major hainanus* Hart. = *Parus major hainanus*.

*Parus major hainanus* Hartert, *Nov. Zool.* xii. p. 499 (1905—Hainan).

Type : ♂ ad., Lei Mui Mon, Hainan, 18.xii.1902. Katsumata leg.

461. *Parus major okinawae* Hart. = *Parus major okinawae*.

*Parus major okinawae* Hartert, *Vög. pal. Fauna*, p. 346 (1905—Island of Okinawa, Riu Kiu group).

Type : ♂ ad., Okinawa, 14.iii.1902. N. C. Rothschild, F. Gayner and A. W. Waters leg. No. 61.

462. *Parus major terraesanctae* Hart. = *Parus major terraesanctae*.

*Parus major terraesanctae* Hartert, *Vög. pal. Fauna*, i. p. xxxii. (1910—Palestine).

Type : ♂ ad., Jerusalem, 2.ii.1899. ? Bacher leg. No. 179 (not 177).

463. *Parus montanus kleinschmidti* Hellm. = *Parus atricapillus kleinschmidti*.

*Parus montanus kleinschmidti* Hellmayr, *Orn. Jahrb.* 1900. p. 212 (England).

Type : ♀ ad., Coalfall Wood, Finchley, near London, N., 22.ix.1897.  
W. Burton leg.

464. *Parus palustris hellmayri* Bianchi = *Parus palustris hellmayri*.

*Parus palustris hellmayri* Bianchi, *Annuaire Mus. Zool. St. Pétersbourg*, vii. p. 236 (1902—Based on “*Parus* sp. nov.” Kleinschmidt, *Orn. Jahrb.* viii. p. 77, 1897, Peking).

Type : ♂ juv., Peking, v.1885.

Kleinschmidt and I wisely hesitated to name this form from the material available, though it appears to be quite distinct. (Cf. also Hartert, *Vög. pal. Fauna*, p. 375 ; Hellmayr, *Genera Avium*, part 18. pp. 12, 34.)

465. *Parus ater insularis* Hellm. = *Parus ater insularis*.

*Parus ater insularis* Hellmayr, *Orn. Jahrb.* xiii. p. 36 (1902—Japan).

Type : ♂ ad., Suruga, island of Hondo. From Alan Owston.

466. *Parus niger lacuum* Neum. = *Parus niger lacuum*.

*Parus niger lacuum* Neumann, *Journ. f. Orn.* 1906. p. 260 (Suksuki River, South Ethiopia).

Type : ♀ ad., Suksuki River, 27. xi. 1900. Oscar Newmann leg.

† 467. *Micropus Nehrhorni* Blas. = *Penthornis tessacourbe* Scop.

*Muscicapa Tessacourbe* Scopoli, *Del. Florae et Faunae Insubr.* ii. p. 95 (1786—Based on the “Gobemonche noir de l’isle de Luzon” of Sonnerat, *Vôg. Nouv. Guinée*, p. 59, pl. 27. fig. 2, which, however, must have come from Mindanao!).

*Muscicapa luzoniensis* Gmelin, *Syst. Nat.* i. 2. p. 942 (1789—Based on the same).

*Micropus Nehrhorni* Blasius, *Journ. f. Orn.* 1890. p. 147 (Mindanao).

Type : ♂ in very worn plumage, Davao, Mindanao, 8. viii. 1889. Dr. C. Platen leg. (Exchanged from Adolf Nehrhorn.)

## LANIIDAE.

468. *Pachycare flavogrisea subaurantia* R. & H. = *Pachycare flavogrisea subaurantia*.

*Pachycare flavogrisea subaurantia* Rothschild & Hartert, *Orn. Monatsber.* xix. p. 157 (1911—“Schneegebirge im mittleren Nenguinea”).

Type : ♂ ad., Snow Mountains, Dutch New Guinea, 22. x. 1910. A. S. Meek Coll. No. 4,873.

469. *Poecilodryas cinereiceps* Hart. = *Eopsaltria cinereiceps*.

*Poecilodryas cinereiceps* Hartert, *Nov. Zool.* xii. p. 231 (1905—West Australia : island near Hampton Harbour, Derby, N.W. Cape).

Type : ♂ ad., island near Hampton Harbour, W. Australia, 13. vii. 1901. J. T. Tunney leg. No. R 193.

(Mathews, in his latest list, makes *cinereiceps* a subspecies of *E. leucura* ; this may be correct, but I prefer to await his final judgment.)

470. *Pachycephala fortis trobriandi* Hart. = *Pachycephala fortis trobriandi*.

*Pachycephala fortis trobriandi* Hartert, *Nov. Zool.* 1896. p. 236 (Trobriand Islands).

Type : ♂ ad., Kiriwina, Trobriand Islands, east of British New Guinea, 16. iii. 1895. A. S. Meek Coll. No. 7.

471. *Pachycephala par* Hart. = *Pachycephala par par*.

*Pachycephala par* Hartert, *Nov. Zool.* 1904. p. 211 (Romah Island, N.E. of Timor).

Type : ♂ ad., Romah, 9. viii. 1902. Heinr. Kühn leg. No. 5,339.

472. **Pachycephala par compar** Hart. = *Pachycephala par compar*.*Pachycephala par compar* Hartert, *Nov. Zool.* xi. p. 212 (1904—Letti and Moa).

Type : ♂ ad., Letti Island, 4.xi.1902. Heinr. Kühn leg. No. 6,033.

473. **Pachycephala tenebrosa** Rothsch. = *Pachycephala tenebrosa*.*Pachycephala tenebrosa* Rothschild, *Bull. B.O. Club*, xxix. p. 20 (1911—Mt. Goliath, Central Eastern Dutch New Guinea.).

Type : ♂ ad., Mt. Goliath (eastern part of "Snow Mountains"), 15.ii.1911. A. S. Meek Coll. No. 5,394.

474. **Pachycephala nudigula** Hart. = *Pachycephala nudigula*.*Pachycephala nudigula* Hartert, *Nov. Zool.* iv. p. 171 (1897—"Flores meridionalis"); t.c. pl. iii. fig. 3.

Type : ♂ ad., South Flores, above 3,000 feet, October 1896. Alfred Everett leg.

(Homo furore generico : hic Rhodus, hic salta !)

475. **Pachycephala rufinucha** Sel. = *Pachycephala rufinucha rufinucha*.*Pachycephala rufinucha* Selater, *Proc. Zool. Soc. London*, 1873. p. 692 ("Atam apud montes Papuanos Arfak").Type or cotype : ♂ ad., Hatam, Arfak Peninsula, ix.1872. Luigi Maria d'Albertis leg. No. 469. (Specimen *a* of Salvadori's list in *Orn. Pap.* ii. p. 225, marked by Selater "*Pachycephala rufinucha* Sel. sp. nov." and by Salvadori "Tipo !")476. **Pachycephala gamblei** Rothsch. = *Pachycephala rufinucha gamblei*.*Pachycephala gamblei* Rothschild, *Bull. B.O. Club*, vii. p. xxii. (1897—Mt. Cameron, Owen Stanley Mts., British New Guinea).

Type : "♀" ad. (? ♂), Mt. Cameron, 5,000 feet. A. S. Anthony leg.

477. **Pachycephala meeki** Hart. = *Pachycephala leucogaster meeki*.*Pachycephala meeki* Hartert, *Bull. B.O. Club*, viii. p. xv. (1898—Rossel Island, Louisiade group).

Type : ♂ ad., Rossel Island, 27.i.1898. Albert S. Meek leg. No. 1,299.

478. **Pachycephala tianduana** Hart. = *Pachycephala leucogaster tianduana*.*Pachycephala tianduana* Hartert, *Bull. B.O. Club*, xi. p. 53 (1901—"Tiandu, west of the Key Islands").Type : ♂, Tiandu, 19.xii.1900. Heinr. Kühn leg. No. *a*.479. **Pachycephala johni** Hart. = *Pachycephala johni*.*Pachycephala johni* Hartert, *Nov. Zool.* 1903. p. 12 (Obi Major, Moluccas).Type : ♂ ad., Obi Major, 25.iii.1902. John Waterstradt leg. No. O 129,  
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480. *Pachycephala kuehni* Hart. = *Pachycephala griseonota kuehni*.

*Pachycephala kuehni* Hartert, *Bull. B.O. Club*, viii. p. xiv. (1898—Little Key Islands).

Type : ♂ Tual, Little Key, 11.xi.1897. Heinr. Kühn leg. No. 281.

481. *Pachycephala examinata* Hart. = *Pachycephala griseonota examinata*.

*Pachycephala examinata* Hartert, *Bull. B.O. Club*, viii. p. xiv. (1898—Buru).

Type : ♂ ad., Kayeli, Buru, iii.1897. William Doherty leg.

482. *Pachycephala moroka* R. & H. = *Pachycephala moroka*.

*Pachycephala moroka* Rothschild & Hartert, *Nov. Zool.* 1903. p. 106 (Moroka, S.E. New Guinea).

Type : ad., Moroka district, British New Guinea, 3—6,000 feet. (Purchased from Messrs. McIlwraith, McEacharn & Co., 1898.)

† 483. *Pachycephala peninsulae* Hart. = *Pachycephala griseiceps inornata*.

*Eopsaltria ? inornata* Ramsay, *Proc. Zool. Soc. London*, 1874. p. 604 (Rockingham Bay and Endeavour River, North Queensland).

*Pachycephala peninsulae* Hartert, *Bull. B.O. Club*, viii. p. xxxiii. (1899—Cape York, North Queensland).

Type : ♂, Cape York, 29.vii.1898. Eichhorn leg. No. 2,041 of the Meek collections.

There seems to me no doubt that my “*peninsulae*” is a synonym of Ramsay’s *inornata*, though Mathews, *List of B. Australia*, p. 181 (1913), keeps them distinct as two different subspecies. He there splits our *Pachycephala* up into about half a dozen genera.

484. *Pachycephala alberti* Hart. = *Pachycephala griseiceps alberti*.

*Pachycephala griseiceps alberti* Hartert, *Bull. B.O. Club*, viii. p. ix. (1898—Sudest Island, Louisiade group).

Type : ♂ ad., Sudest Island, 8.iv.1898. A. S. Meek Coll. No. 1,693.

485. *Pachycephala orpheus wetterensis* Hellm. = *Pachycephala orpheus wetterensis*.

*Pachycephala orpheus wetterensis* Hellmayr, *Zoologie von Timor*, i. p. 35 (1914—Wetter).

Type : ♀ ad., Wetter Island, 9.x.1902. Heinr. Kühn leg. No. 5,725.

† 486. *Hyloterpe whiteheadi* Sharpe = *Pachycephala (Hyloterpe) grisola plateni*.

*Hyloterpe Plateni* Blasius, *Braunschweig. Anz.* No. 52. p. 467 (1.iii.1888—Palawan); *Ornis*, 1888, p. 311.

*Hyloterpe whiteheadi* Sharpe, *Ibis*, 1888. p. 198 (April 1888—Palawan).

(About the dates of these names cf. under No. 378.)

Type : ♀ ad., Taguso, Palawan, 21.vii.1887. John Whitehead leg. No. 1,587.

487. **Hyloterpe hypoxantha** Sharpe = *Pachycephala (Hyloterpe) hypoxantha*.

*Hyloterpe hypoxantha* Sharpe, *Ibis*, 1887. p. 451 (Kina Balu, Borneo).

Type : ♂ ad., Kina Balu, 3,000 feet, 25.ii.1887. John Whitehead leg. No. 1,018.

488. **Pachycephala grisola secedens** Stres. = *Pachycephala (Hyloterpe) grisola secedens*.

*Pachycephala grisola secedens* Stresemann, *Nov. Zool.* xx. p. 355 (1913—Sirhassen Island).

Type : ♂ ad., Sirhassen Island, eastern Natuna group, 21.ix.1893. Alfred Everett leg.

The distribution of this form is curious. A specimen from Great Redang Island, east of Kelantan, Malay Peninsula, 1.ix.1910. C. Boden Kloss leg., belongs also clearly to *secedens*.

489. **Hyloterpe Homeyeri** Blas. = *Pachycephala (Hyloterpe) homeyeri*.

*Hyloterpe Homeyeri* Wilh. Blasius, *Journ. f. Orn.* 1890. p. 143 (Deser. from one female from Yoló Sulu).

Type : ♀, Yoló, Sulu Islands, 15.v.1887. Dr. Platen leg. (Exchanged from A. Nehrkorn.)

490. **Pachycephala schlegeli obscurior** Hart. = *Pachycephala schlegeli obscurior*.

*Pachycephala schlegeli obscurior* Hartert, *Nov. Zool.* iii. p. 15 (1896—Owen Stanley Mts., British New Guinea).

Type : ♂ ad., Eafo district, between Mts. Alexander and Bellamy, 5—6,000 feet, October 1895. A. S. Anthony leg.

(Synonym : *Pach. sororcula* de Vis 1897, p. 380, described from a ♀, supposed to be ♂, from spirits !)

491. **Pachycephala melanonota** Hart. = *Pachycephala melanonota*.

*Pachycephala melanonota* Hartert, *Bull. B.O. Club*, xxi. p. 106 (1908—Vella Lavella, Solomon Islands).

Type : ♂ ad., Vella Lavella, Central Solomon Islands, 23.ii.1908. A. S. Meek Coll. No. 3,834.

492. **Pachycephala hyperythra reichenowi** R. & H. = *Pachycephala hyperythra reichenowi*.

*Pachycephala hyperythra reichenowi* Rothschild & Hartert, *Orn. Monatsber.* xix. p. 178 (1911—"Sattelberg, in Kaiser Wilhelm's Land").

Type : ♂ ad., Sattelberg, 21.xi.1909. Wahnes leg. No. 62.

493. **Pachycephala salvadorii** Rothschild. = *Pachycephala hyperythra salvadorii*.

*Pachycephala salvadorii* Rothschild, *Bull. B.O. Club*, vii. p. xxii. (1897—New name for *P. sharpii* Salvad. 1896, nee Meyer 1884); *Nov. Zool.* 1903. p. 107.

Type : ♂ ad., Mt. Cameron, Owen Stanley Range, 13.viii.1896. A. S. Anthony leg.

494. ***Pachycephala contempta*** Hart. = *Pachycephala pectoralis contempta*.

*Pachycephala contempta* Hartert, *Bull. B.O. Club*, viii. p. xv. (1898—Lord Howe Island).

Type : ♂ ad., Lord Howe Island. (Purchased from H. H. Travers.)

495. ***Pachycephala pectoralis goodsoni*** R. & H. = *Pachycephala pectoralis goodsoni*.

*Pachycephala pectoralis goodsoni* Rothschild & Hartert, *Nov. Zool.* xxi. p. 296 (1914—Manus, Admiralty Islands).

Type : ♂ ad., Manus, Admiralty Islands, 5.ix.1913. Eichhorn leg. No. 5,970 of the A. S. Meek collections.

496. ***Pachycephala rosseliana*** Hart. = *Pachycephala pectoralis rosseliana*.

*Pachycephala rosseliana* Hartert, *Bull. B.O. Club*, viii. p. viii. (1898—Rossel Island); *Nov. Zool.* 1899. p. 76.

Type : ♂ ad., Rossel Island, Louisiade group, 8.ii.1898. A. S. Meek Coll. No. 1,405.

497. ***Pachycephala pectoralis misimae*** R. & H. = *Pachycephala pectoralis misimae*.

*Pachycephala pectoralis misimae* Rothschild & Hartert, *Nov. Zool.* xxv. p. 311 (1918—St. Aignan or Misima Island, Louisiade group).

Type : ♂ ad., St. Aignan Island, 29.xi.1897. A. S. Meek Coll. No. 1,044.

498. ***Pachycephala melanura buruensis*** Hart. = *Pachycephala pectoralis buruensis*.

*Pachycephala melanura buruensis* Hartert, *Bull. B.O. Club*, viii. p. xxxii. (1899—Buru).

Type : ♂ ad., "Mt. Mada" (Kapala Madang, Fogha Mts.), Buru, 3,000 feet, August—September 1898. J. Dumas leg.

499. ***Pachycephala melanura dammeriana*** Hart. = *Pachycephala pectoralis dammeriana*.

*Pachycephala melanura dammeriana* Hartert, *Nov. Zool.* vii. p. 17 (1900—Dammer Island).

Type : ♂ ad., Wulur, Dammer Island, 27.xi.1898. Heinr. Kühn leg. No. 1,092.

† 500. ***Pachycephala melanura tepa*** Hart. = *Pachycephala pectoralis sharpei*.

*Pachycephala Sharpei* A. B. Meyer, *Sitzungsber. & Abh. Ges. Isis Dresden* 1884, *Abh.* p. 36 (1885—Babber !).

*Pachycephala melanura tepa* Hartert, *Nov. Zool.* xiii. p. 299 (1906—Babber !).

Type : ♂ ad., Tepa, Babber, 15.ix.1905. Heinr. Kühn leg. No. 6,644 a.

501. ***Pachycephala melanura arthuri*** Hart. = *Pachycephala pectoralis arthuri*.

*Pachycephala melanura arthuri* Hartert, *Nov. Zool.* xiii. p. 299 (1906—Wetter Island).

Type : ♂ ad., Wetter, 14.ix.1902. Heinr. Kühn leg. No. 5,498.

502. *Pachycephala everetti* Hart. = *Pachycephala pectoralis everetti*.

*Pachycephala everetti* Hartert, *Nov. Zool.* iii. p. 170 (1896—Djampea Island, south of Celebes).

Type : ♂ ad., Djampea, xii. 1895. Alfr. Everett leg.

503. *Pachycephala fulviventris* Hart. = *Pachycephala pectoralis fulviventris*.

*Pachycephala fulviventris* Hartert, *Bull. B.O. Club*, v. p. xlvii. (1896—Sumba Island).

Type : ♂ ad., Sumba, ii. 1896. William Doherty leg.

504. *Pachycephala pectoralis alfurorum* Stres. = *Pachycephala pectoralis alfurorum*.

*Pachycephala pectoralis alfurorum* Stresemann, *Nov. Zool.* xxi. p. 132 (1914—Ceram).

Type : ♂ ad., Gunong Sofia, Ceram, 4,800 feet, 14. vi. 1911. Erwin Stresemann leg. No. 614.

505. *Nilaus afer erythrae* Neum. = *Nilaus afer erythrae*.

*Nilaus afer erythrae* Neumann, *Journ. f. Orn.* 1907, p. 361 ("Nord-Abyssinien").

Type : ♂ ad., Ailet, Erythraea, 5. iv. 1903. G. Schrader leg.

This form is very closely allied to *N. afer afer* (terra typica Senegal), but recognizable, and in my opinion chiefly by the darker chestnut lateral stripes.

506. *Nilaus afer hilgerti* Neum. = *Nilaus afer hilgerti*.

*Nilaus afer hilgerti* Neumann, *Journ. f. Orn.* 1907, p. 362 ("Hauaschgebiet von Schoa, nach Süden bis zum Zuai-See nachgewiesen").

Type : ♂ ad., Kassam River, Hawash region, 24. vi. 1903. Zaphiro leg.

[507. *Nilaus minor* Sharpe = *Nilaus afer minor*.

*Nilaus minor* Sharpe, *Proc. Zool. Soc. London*, 1895, p. 479 ("Somaliland," Milmil and other localities).

Type : according to Neumann, *Journ. f. Orn.* 1907, p. 362 : ♂ ad., Milmil, 2. vii. 1894. Dr. Donaldson Smith leg., but this can only be a paratype, as the ♂ ad. from Okoto, 8. ix. 1894, in the British Museum is there marked as the type by the author.]

(?) † 508. *Telophonus senegalus pallidus* Neum. = *Harpolestes* \* *senegalus senegalus*.

*Telophonus senegalus pallidus* Neumann, *Journ. f. Orn.* 1907, p. 375 ("Ober-Guinea von der Goldküste bis zum Niger").

Type : ♂ ad., Accra, 4. xi. 1897. C. W. Nartey leg.

I must confess that, after a renewed examination of the material in Tring

\* There has been a good deal of uncertainty and change of the generic name of the Tchagra-Shrikes. In the *Cat. B. Brit. Mus.* viii., Gadow called them *Telephonus*, and this name has been in general use before and after. In the *Vög. Afr.* ii. p. 542, Reichenow introduced the name *Pomatorhynchus* Boie 1826; to this I objected because Boie quoted "*Pomatorhynchus* Horsf."; Horsfield, however, never created such a name, but only *Pomatorhinus*, and it is evident that Boie merely amended his spelling, and erroneously placed under that name (which refers to a totally different group of birds) the Tchagra of Levaillant, of which he did not know that it was a Shrike. In the *Vög. pal. Fauna*, p. 452, I then pleaded for the restitution of *Telophonus*, the original spelling of

and London, it seems to me impossible to separate this race from *H. s. senegalus*. The coloration is too variable, and the smaller size not always constant. (See also NOVITATES ZOOLOGICAE, 1915, p. 259.) (This view is more or less confirmed by Dr. van Someren's wonderful series, who will soon give us fuller information about these very difficult forms, and their allies.)

509. *Telophonus senegalus rufofuscus* Neum. = *Harpolestes senegalus rufofuscus*.

*Telophonus senegalus rufofuscus* Neumann, *Journ. f. Orn.* 1907, p. 376 ("Nördliches und zentrales Angola, nach Norden bis ins Congo-Gobiet").

Type: ♀ ad., N'Gungo, Northern Bailundu, Angola, 12.viii.1901. C. Hubert Pemberton leg.

This form is very different from *T. senegalus senegalus* and cannot possibly be united with it.

510. *Harpolestes australis ansorgei* Neum. = *Harpolestes australis ansorgei*.

*Harpolestes australis ansorgei* Neumann, *Bull. B.O. Club*, xxiii, p. 53 (1909—"North Angola").

Type: ♂, Pungo Andongo, 3.vii.1903. W. J. Ansorge leg. No. 522.

Based on three more or less juvenile birds, but young *australis* differ in the same way as old ones. This form is certainly distinct, but it is nearest to *H. a. australis* and quite different from *souzae*.

? † 511. *Telophonus australis dohertyi* Neum. = *Harpolestes australis minor*?

*Telophonus australis dohertyi* Neumann, *Journ. f. Orn.* 1907, p. 370 (Escarpment, Kikuyu).

Type: ♂ ad., Escarpment, Kikuyu Mts., i.1901. W. Doherty leg.

The Escarpment birds are all more or less worn or soiled, but it certainly seems that those from Western Uganda (Bukoba, etc.) are more whitish underneath. They cannot, therefore, be united with *emini*, as Reichenow (*Journ. f. Orn.* 1918, p. 82) proposed. We have, however, no skins from the terra typica of *minor*. Even Dr. van Someren's series does not help us to decide this question.

512. *Pelicius cruentus hilgerti* Neum. = *Rhodophoneus cruentus hilgerti*.

*Pelicius cruentus hilgerti* Neumann, *Orn. Monatsber.* 1903, p. 182 ("Nord-und Südsomaliland").

Type: Sheikh Husein, W. Somaliland, 23.ix.1894. Dr. Donaldson Smith leg. No. 314.

513. *Laniarius funebris rothschildi* Neum. = *Laniarius funebris rothschildi*.

*Laniarius funebris rothschildi* Neumann, *Journ. f. Orn.* 1907, p. 595 ("Süd-Äthiopien vom Haasch bis zum Borana-Land und zum Rudolf-See").

Type: ♀, Sagan River, Borana, 25.v.1905. Maurice de Rothschild leg.

Swainson, instead of "*Telophonus*." Thereupon Reichenow, *Orn. Monatsber.* 1907, p. 99, pointed out that Swainson's *Telophonus* 1837 was obviously only an amended spelling of the same author's *Telophorus* of 1831, a name which had been overlooked. I quite agree that, therefore, *Telophonus* is no more acceptable than *Pomatorhynchus*, and use *Harpolestes* Cab. 1850 for this genus. Slater and Mackworth-Praed (*Ibis*, 1918, p. 636) use the generic "*Tschagra*," but *Tschagra* of Gray is obviously only another spelling of *Tchagra* Lesson, *Traité d'Orn.* p. 373, which I take to be a new name for *Laniarius* Vieillot, though Lesson included in the same subgenus Levaillant's *Tchagra* and a number of other species. }



514. *Pelicius zeylonus phanus* subsp. nov.

Type: ♂ ad., Farta Bay, 5 hours south of Benguella Town, 30.x.1905. W. J. Ansorge leg.

Seven specimens from Benguella and Mossamedes, collected by the late W. J. Ansorge and Albert Mocquerys, differ from about a dozen from South Africa in having the back a little paler green, and the whole yellow portion of the underside much lighter, more sulphureous yellow, which is specially striking on the throat, abdomen, and under tail-coverts. There is no appreciable difference in size. I therefore name the Benguella-Mossamedes form *Pelicius zeylonus phanus*, type as above.

Probably a third form inhabits Namaqualand, as a male and female collected by C. B. Grant in May and July 1903, at an elevation of 3,104 feet, appear to have the flanks and sides of breast much more widely ashy grey, and are a little smaller. More material will probably lead to the establishment of a third form.

(I am using reluctantly the generic name *Pelicius*, while I separate *cruentus* and its subspecies as *Rhodophoneus*. In this I am following Sharpe's *Hand-list*, iv. pp. 292, 293, without wishing to discuss the genera of these shrikes, of which perhaps too many are now being used.)

515. *Laniarius rubiginosus rudolfi* Hart. = *Chlorophoneus rubiginosus rudolfi*.

*Laniarius rubiginosus rudolfi* Hartert, *Bull. B.O. Club*, xxiii. p. 10 (1908—forest west of Lake Albert Edward).

Type: ♀ ad., Primeval forest 90 kilometres west of Lake Albert Edward, 7.ii.1908. Rudolf Grauer leg. No. 1,979.

516. *Laniarius dohertyi* Rothsch. = *Chlorophoneus dohertyi*.

*Laniarius dohertyi* Rothschild, *Bull. B.O. Club*, xi. p. 52 (1901—Escarpment, Kikuyu Mts., B. E. Africa).

Type: ♂ ad., Escarpment, Kikuyu Mts., 8,000 feet, xii.1900. William Doherty leg.

† 517. *Laniarius graueri* Hart. = *Chlorophoneus melamprosopus reichenowi*.

*Laniarius graueri* Hartert, *Bull. B.O. Club*, xxiii. p. 9 (1908—Forest west of Lake Albert Edward).

Type: ♂ ad., Primeval forest, 90 km. west of Lake Edward, 1,600 m., 14.ii.1908. Rudolf Grauer leg. No. 2,039.

I am now convinced that my *L. graueri* is the same as *L. m. reichenowi*—if indeed the latter is separable from true *melamprosopus*!

518. *Lanius gubernator* Hartl. = *Lanius gubernator*.

*Lanius gubernator* Hartlaub, *Orn. Centralbl.* 1882, p. 91 (No exact locality, diagnosis of ♂ !); *Journ. f. Orn.* 1882, p. 323, pl. i. fig. 2 (Langomeri).

Type: ♂ ad., Langomeri, Emin Pasha leg.

There is no doubt that the adult male must be looked upon as the real type of *L. gubernator*, but the notes in *Journ. f. Orn.* 1882, pp. 323, 324, are somewhat confused. The first diagnosis in the *Ornithologische Centralblatt* is that of the adult male only. Curiously enough, in the *Journ. f. Orn.* also the male only is

described, though at the end of the description, p. 324, stands "♀ ad." On the plate the male only is figured, and this agrees with the lettering of the plate, but on p. 323 it is erroneously said that the figure is that of the female! On p. 324 Hartlaub wrote that four specimens were obtained at Langomeri, an adult male and female, and two young birds. We have all these four in the Tring Museum, and the sexes are correctly stated on the labels. The female, which has no black frontal line, was not described by Hartlaub at all, though he says, "Zunächst erhielten wir nur das ausgefärbte Weibchen"! I suppose he meant to say "Männchen" instead of "Weibchen," and that the "♀ ad." at the end of the description of the male means that it was the author's intention to describe the ♀ as well, which, however, he did not do.

† 519. *Lanius excubitorius intercedens* Neum. = *Lanius excubitorius excubitorius*.

*Lanius excubitorius intercedens* Neumann, *Journ. f. Orn.* 1905. p. 228 ("Hanasch-Gebiet, südöthiopische Seen, Omo-Gebiet, nach Süden bis zur Nord-und Ostküste des Victoria-Nyansa").

Type: ♂ ad., Hauash, south of the Sekwala, 19.xi.1900. Oscar Neumann leg. No. 250.

Neumann compared his bird with *L. excubitorius princeps*, which he thought were *L. excubitorius excubitorius*, and his *intercedens* are typical *excubitorius*.

520. *Lanius antinorii mauritii* Neum. = *Lanius antinorii mauritii*.

*Lanius antinorii mauritii* Neumann, *Journ. f. Orn.* 1907. p. 595 (Koroli Mountains, West Somaliland).

Type and unique specimen: ♂ ad., Kovoli Mts., 18.iv.1905. Maurice de Rothschild leg.

It was daring to describe this form from one specimen, and it is desirable to have a series to confirm its validity, but the differences pointed out by Neumann are very obvious, so that the new subspecies appears to be very distinct.

521. *Malaconotus interpositus* Hart. = *Malaconotus poliocephalus interpositus*.

*Malaconotus interpositus* Hartert, *Bull. B.O. Club*, xxix. p. 36 (1911—North-west of Lake Tanganyika).

Type: ♂ ad., 40 km. west of Baraka, 5.i.1909. Rudolf Grauer leg. No. 4,019.

This form is very closely allied to *M. poliocephalus poliocephalus* from Senegambia to Nigeria, and must be confirmed by further research.

522. *Sigmodus caniceps harterti* Neum. = *Sigmodus caniceps harterti*.

*Sigmodus caniceps harterti* Neumann, xxi. p. 70 (1908—Southern Nigeria).

Type: ♂ ad., Degama, Southern Nigeria, 15.iii.1902. W. J. Ansorge leg. No. 220.

(?) 523. *Prionops cristata omoensis* Neum. = (?) *Prionops cristata cristata*.

*Prionops cristata omoensis* Neumann, *Journ. f. Orn.* 1905. p. 216 ("Hussgebiet des Omo").

Type: ♂ Omo, between Malo and Kosha, 23.ii.1901. Oscar Neumann leg. No. 929.

The nape is much darker in one specimen, and a specimen from Salamona (G. Schrader leg.), as well as another from Mulu (Saphiro leg.), have it quite as dark as the one of Neumann's two specimens. The wing of one is shorter, that of the other not. In no case were two specimens sufficient to establish such a closely allied subspecies, and we must await further material from the Omo, whenever that may come, to establish Neumann's "*omoensis*." (A series collected by Dr. van Someren seems to confirm *omoensis*, but we shall hear more about this from him before long.)

524. *Pinarolestes megarhyncha despectus* R. & H. = *Pinarolestes megarhynchus despectus*.

*Pinarolestes megarhynchus despectus* Rothschild & Hartert, *Nov. Zool.* 1903. p. 100 (British New Guinea).

Type: ♂, Milne Bay, South-Eastern British New Guinea, 14.ii.1899. A. S. Meek Coll. No. 2,323.

525. *Colluricincla brunnea tachycrypta* R. & H. = *Colluricincla brunnea tachycrypta*.

*Colluricincla brunnea tachycrypta* Rothschild & Hartert, *Nov. Zool.* xxii. p. 60 (1915—Milne Bay, South-Eastern Papua).

Type: ♂ ad., Milne Bay, 19.iv.1899. A. S. Meek Coll. No. 2,484.

526. *Colluricincla woodwardi* Hart. = *Colluricincla woodwardi*.

*Colluricincla woodwardi* Hartert, *Nov. Zool.* xii. p. 228 (1905—Granite hills near South Alligator River, Northern Territory).

Type: ♂ ad., ten miles east of South Alligator River, 15.viii.1903. J. T. Tunney leg. No. 1,545.

527. *Pitohui meeki* R. & H. = *Pitohui meeki*.

*Pitohui meeki* Rothschild & Hartert, *Nov. Zool.* xx. p. 507 (1913—Mount Goliath, eastern portion of "Snow Mountains," in Dutch New Guinea).

Type: ♀, Mt. Goliath, 7.ii.1911. A. S. Meek Coll. No. 5,321.

This species—possibly a subspecies of *nigrescens*—was described from a single female. The male has been described by Ogilvie-Grant, Jubilee Suppl. II. of *Ibis*, 1915, p. 105.

528. *Rhectes ferrugineus brevipennis* Hart. = *Pitohui ferrugineus brevipennis*.

*Rhectes ferrugineus brevipennis* Hartert, *Nov. Zool.* 1896. p. 354 (Aru Islands).

Type: ad., Wannambai, Aru Islands, 25.vi.1896. Cayley Webster leg. No. 217.

529. *Pitohui meyeri* R. & H. = *Pitohui meyeri*.

*Pitohui meyeri* Rothschild & Hartert, *Nov. Zool.* x. p. 96 (1903—"Hab. In Nova Guinea septentr. prope Takar, Tana Mera").

Type: ♂. Takar, October 1896. William Doherty leg. No. 1,011.

530. *Pitohui dohertyi* R. & H. = *Pitohui dohertyi*.

*Pitohui dohertyi* Rothschild & Hartert, *Nov. Zool.* x. p. 95 (1903—Ron Island, in Geelvink Bay).

Type: ♂ ad., Ron Island, vi. 1897. William Doherty leg. No. 969.

531. *Pitohui dichrous monticola* Rothschild. = *Pitohui dichrous monticola*.

*Pitohui dichrous monticola* Rothschild, *Bull. B.O. Club*, xiv. p. 79 (1904—Upper Aroa River).

Type: ♂ ad., Upper Aroa River, British New Guinea, 27.i.1903. A. S. Meek Coll. No. A 124.

Mr. W. R. Ogilvie-Grant (*Ibis*, Jubilee Suppl. II., 1915, pp. 99, 100) mentions three specimens from the Utakwa River, 2,900 feet, which agree with specimens from the Aroa River and other places in British New Guinea. From this he concludes that *monticola* "must be added to the synonymy" of *P. dichrous*, because these specimens "must be typical examples of *P. dichrous*, the type of which was procured by S. Müller at Lobo, Triton Bay." This conclusion is rash, and I do not agree with it. We have in the Tring Museum 22 skins from Arfak, Humboldt Bay, Simbang, and Sattelberg, which are perfectly alike, and which we took to be typical *dichrous*, while 16 specimens from the mountains of British New Guinea are at a glance distinguished by their paler colour. Therefore, Lord Rothschild very logically separated the latter as *P. dichrous monticola*. We had of course not seen specimens from the Snow Mountains, and it does not follow that they "must be" typical examples of *dichrous*, as they came from the mountains and Salomon Müller's were collected near the coast, in the low country; moreover, in many cases, forms from the Utakwa River agree more with those from South-Eastern Papua, while many Lobo-Bay ones are exactly like those from Arfak. Until, therefore, the type from Lobo in the Leyden Museum is carefully compared with specimens from Arfak and the mountains of British New Guinea, we have not to alter the present state, and must admit *monticola*. Should, against all expectations, the Lobo type be like our *monticola*, then the darker northern form from Arfak, Humboldt Bay, and Simbang must receive a new name!

532. *Abbotornis schistocercus* Neum. = *Abbotornis schistocercus*.

*Abbotornis schistocercus* Neumann, *Bull. B.O. Club*, xxiii. p. 11 (1908—"West Central Madagascar").

Type: ♂ ad., "C. O. Madagascar," which, I am now convinced, must mean West Coast (not West Central) Madagascar. (Bought with others from a Paris dealer in 1893.)

533. *Gymnorhina tibicen longirostris* Hart. = *Gymnorhina tibicen longirostris* Milligan.

*Gymnorhina tibicen longirostris* Hartert, *Nov. Zool.* xii. p. 230 (1905—Nullagine, N.W. Australia).

Type: ♂ ad., Nullagine, 16.iv.1901. J. T. Tunney leg. No. R 92.

This distinct form retains its fitting name *longirostris*, though it had been described two years before by Milligan (*Gymnorhina longirostris* Milligan, *Emu*, iii. p. 96, 1903).

† 534. *Cracticus quoyi tunneyi* Hart. = *Cracticus quoyi spaldingi*.

*Cracticus spaldingi* Masters, *Proc. Linn. Soc. N.S. Wales*, ii. p. 271 (1877—Port Darwin, Northern Territory).

*Cracticus quoyi tunneyi* Hartert, *Nov. Zool.* xii. p. 228 (1905—Alligator River, Northern Territory).

Type : ♂ ad., Alligator River, Northern Territory, 25.ix.1903. J. T. Tunney leg. No. 1,603.

**ARTAMIDAE.**† 535. *Artamus leucorhynchus parvirostris* Hart. = *Artamus leucorhynchus leucopygialis*.

*Artamus leucorhynchus parvirostris* Hartert, *Nov. Zool.* vi. p. 424 (1899—Cape York, North Queensland).

(*Artamus leucopygialis* Gould, *Proc. Zool. Soc. London*, 1842. p. 17 [New South Wales].)

Type : ♂ ad., Cape York, 5.vii.1898. Eichhorn leg. A. S. Meek coll. No. 1,876.

(Other synonyms are *harterti* Math. and *melvillensis* Math.)

536. *Artamus leucorhynchus humei* Stres. = *Artamus leucorhynchus humei*.

*Artamus leucorhynchus humei* Stresemann, *Nov. Zool.* xx. p. 291 (1913—"Andamanen, einschliesslich der Grossen und Kleinen Kokos-Insel").

Type : ♀ ad., Go-bang, South Andamans, October 1897. A. L. Butler leg.

† 537. *Artamus phoeus* Ingram = *Artamus superciliosus*.

*Artamus phoeus* Ingram, *Bull. B.O. Club*, xvi. p. 115 (1906—Alexandria station, Northern Territory).

Type : ♂ ad., Alexandria, 28.v.1905. W. Stalker leg. No. 626.

† 538. *Artamus gracilis* Ingram = *Artamus personatus*.

*Artamus gracilis* Ingram, *Bull. B.O. Club*, xvi. p. 115 (1906—Alexandria station, Northern Territory).

Type : ♂ ad., Alexandria, 16.i.1906. W. Stalker leg.

Mathews, *List B. Austr.* pp. 234, 235, separated the three supposed species of Ingram as subspecies, but he now agrees with me (March 1919, *in litt.*) that "all three are undoubtedly synonyms."

† 539. *Artamus florenciae* Ingram = *Artamus cinereus venustus*.

*Artamus florenciae* Ingram, *Bull. B.O. Club*, xvi. p. 115 (1906—Alexandria station, Northern Territory).

Type : ♂ (apparently not adult), Upper Playford, Northern Territory, 20.iii.1906. W. Stalker leg.

(Cf. Hellmayr, *NOVITATES ZOOLOGICAE*, 1916, pp. 100, 101.)

**VIREONIDAE.**540. *Vireo josephae mirandae* Hart. = *Vireo josephae mirandae*.

*Vireo josephae mirandae* Hartert, *Bull. B.O. Club*, xxxvii. p. 32 (February 1917—Cerro del Avila, north of Caracas, 2,000 m.).

Type : ♂ ad., Galiparo, Cerro del Avila, 2,000 m., 15.xii.1913. Samuel M. Klages leg. No. 1,178.



541. *Hylophilus thoracicus griseiventris* Berl. & Hart. = *Hylophilus thoracicus griseiventris*.

*Hylophilus thoracicus griseiventris* Berlepsch & Hartert, *Nov. Zool.* ix. p. 11 (1902—Orinoco).

Type: ♂ ad., Suapure, Orinoco, 11.ii.1899. Samuel M. Klages leg.

(In contradiction to the International Rules of Nomenclature, *Hylophilus* has been replaced by "*Pachysylvia*," because of an earlier *Hylophila* of Hübner. Such unnecessary and unauthorized changes do more harm to uniform nomenclature than anything else, and it is a great pity that they have been adopted by the A.O.U.)

542. *Pachysylvia aurantiifrons saturata* Hellm. = *Hylophilus aurantiifrons saturatus*.

*Pachysylvia aurantiifrons saturata* Hellmayr, *Nov. Zool.* xiii. p. 12 (1906—Cumana, North Venezuela).

Type: ♀ ad., Rincon of San Antonio, 18.iii.1898. Caracciolo leg. No. 978.

543. *Hylophilus bulunensis* Hart. = *Hylophilus ochraceiceps bulunensis*.

*Hylophilus bulunensis* Hartert, *Nov. Zool.* ix. p. 617 (1902—Bulún, N.W. Ecuador).

Type: ♂ ad., Bulún, N.W. Ecuador, 160 feet, 6.xii.1900. G. Flenning leg. No. 253.

544. *Vireolanius mikettae* Hart. = *Vireolanius mikettae* (? Subsp. of *leucotis*).

*Vireolanius mikettae* Hartert, *Bull. B.O. Club*, xi. p. 38 (1900—Paramba, N. Ecuador).

Type: ♂ ad., Paramba, 3,500 feet, 28.vii.1899. R. Miketta leg. No. 483.

545. *Cyclorhis coibae* Hart. = *Cyclarhis flaviventris coibae*.

*Cyclorhis coibae* Hartert, *Bull. B.O. Club*, xii. p. 33 (1901—Coiba Island, off Panama).

Type: ♂ ad., Coiba Island, 20.iv.1901. J. H. Batty leg.

#### MUSCICAPIDAE.

(Including "*Sylviidae*," "*Timeliidae*," "*Turdidae*." Cf. *Vög. pal. F.* p. 469.)

546. *Amytornis woodwardi* Hart. = *Amytornis woodwardi*.

*Amytornis woodwardi* Hartert, *Bull. B.O. Club*, xvi. p. 30 (1905—South Alligator River, Northern Territory).

Type: ♂ ad., ten miles east of South Alligator River, about 85 miles from coast, 4.vii.1903. J. T. Tunney leg. No. 1,305.

(Mathews accepts the name *Diaphorillas* Oberh. 1899, because he considers *Amytornis* Stejn. 1885 a nomen nudum. I fail to see how this can be supposed, as *A. textilis* is the monotype, and therefore *Amytornis* must be accepted. I do not follow the splitting of these closely allied little birds into four genera.)

547. **Clytomyias insignis oorti** R. & H. = *Clytomyias insignis oorti*.

*Clytomyias insignis oorti* Rothschild & Hartert, *Nov. Zool.* xiv. p. 460 (1907—head of Aroa River, British Papua).

Type : “♂” ad., head of Aroa River, 4.v.1905. A. S. Meek Coll. No. A 2,171.

548. **Todopsis cyanocephalus dohertyi** R. & H. = *Todopsis cyanocephala dohertyi*.

*Todopsis cyanocephalus dohertyi* Rothschild & Hartert, *Nov. Zool.* x. p. 477 (Takar, northern coast of Dutch New Guinea).

Type : ♀ ad., Takar, November 1896. William Doherty leg.

(Ogilvie-Grant, *Ibis*, Jubilee Suppl. II. p. 160, 1915, says that our *dohertyi* is “almost certainly identical” with *cyanocephala*. As all the four females from Takar have the upperside conspicuously darker chestnut, there is no reason to think that they are “almost certainly identical,” though a large series might possibly prove this to be the case. Many birds from the northern coast [Takar, etc.] differ from those of the more western parts of Dutch New Guinea.)

549. **Malurus dulcis** Math. = *Malurus amabilis dulcis* (teste Mathews).

*Malurus dulcis* Mathews, *Bull. B.O. Club*, xxi. p. 100 (1908—South Alligator River, Northern Territory).

Types : ♂ ad., ten miles east of South Alligator River, 9.viii.1903 ; ♀, 4.vii.1903. J. T. Tunney leg. Nos. 1,564, 1,286.

550. **Burnesia reichenowi** Hartl. = *Prinia leucopogon reichenowi*.

*Burnesia reichenowi* Hartlaub, *Journ. f. Orn.* 1890. p. 151 (Njangalo, Equatorial Africa).

Type : ♀ ad., Njangalo, 28.iv.1889. Emin Pasha leg. No. 199.

551. **Burnesia bairdi obscura** Neum. = *Prinia bairdi obscura*.

*Burnesia bairdi obscura* Neumann, *Bull. B.O. Club*, xxiii. p. 13 (1908—west of Albert Edward and Kivu Lake).

Type : ♂ ad., forest 90 kilometres west of Lake Albert Edward, 14.ii.1908. Rudolf Grauer leg. No. 2,043.

552. **Prinia gracilis yemenensis** Hart. = *Prinia gracilis yemenensis*.

*Prinia gracilis yemenensis* Hartert, *Vög. Pal. Fauna*, i. p. 609 (1909—South Arabia).

Type : ♂ ad., Sheik Othman (Osman), near Aden, 20.xi.1898. W. R. Ogilvie-Grant leg. No. 8.

552 *b.* **Prinia mistacea graueri** subsp. nov.

Type : ♂ ad., North-western shores of Lake Tanganyika, near Baraka, 14.viii.1908. Rudolf Grauer leg. No. 3,233.

This distinct new form differs from all known ones. From the South African *P. mistacea affinis* (Smith) by having a larger and stronger bill, much longer wing

and shorter tail! The edges of the quills are darker cinnamon, thighs and sides of abdomen brighter and darker cinnamonous. Moreover, while the South African form has a distinct breeding and off-plumage, these do not seem to differ at all in *P. m. graueri*. From *P. m. tenella* of the coastal belt of British East Africa (terra typica Mombasa), which has a similarly strong bill, in longer wing and deeper rufous-cinnamon flanks and thighs. From the inland East African form, which is *not* the same as *tenella*, it differs in its stronger bill, generally shorter tail, and brighter flanks and thighs. Both *tenella* and the inland East African form have only one plumage. *P. mistacea mistacea* (Abyssinia) has finer bill, darker brown upperside even in the "winter" plumage, less rufous wing-edges and sides of abdomen. The two plumages are distinct in *P. m. mistacea*. Wings of *P. m. graueri*: ♂, 54.5-56; ♀, 51-53 mm.

*Hab.* Near Baraka, north-western shores of Lake Tanganyika, Usumbura, and Kissenyi on Lake Kivu. Sixteen specimens, all collected by Rudolf Grauer.

553. *Suya waterstradti* Hart. = *Suya waterstradti*.\*

*Suya waterstradti* Hartert, *Nov. Zool.* ix. p. 568 (1902—Gunong Tahan, Eastern Malay Peninsula).

Type: ♂, Gunong Tahan, 5—9,000 feet, October 1901. John Waterstradt leg.

554. *Cettia oreophila* Sharpe = *Horeites (montanus) oreophilus*.

*Cettia oreophila* Sharpe, *Ibis*, 1888, p. 387 (Kina Balu, Borneo).

Cotype: ♀ ad., Kina Balu, 8,000 feet, 20.ii.1888. John Whitehead leg. No. 2,027.

(I am not sure if this should be considered a subspecies of *Horeites montanus*, as Hellmayr does, but the latter view is not without foundation.)

555. *Cettia everetti* Hart. = *Horeites montanus everetti*.

*Cettia everetti* Hartert, *Nov. Zool.* v. p. 113 (1898—Atapupu, Timor).

Type: ♂ ad., Atapupu, Timor, vii.1897. Alfr. Everett leg.

556. *Horeites pallidipes osmastoni* Hart. = *Horeites pallidipes osmastoni*.

*Horeites pallidipes osmastoni* Hartert, *Bull. B.O. Club*, xxi. p. 107 (June 1908—Andaman Islands).

Type: ♂ ad., Port Blair, 11.xii.1906. R. B. Osmaston leg.

557. *Horeites flavolivacea intricatus* Hart. = *Horeites flavolivaceus intricatus*.

*Horeites flavolivacea intricatus* Hartert, *Fög. pal. Fauna*, i. p. 533 (1909—Tsin-ling Mts., Shensi, China).

Type: ♂ ad., Sitaipaishan, Tsin-ling Mts., half-way up, 1.x.1905. Coll. by Alan Owston's Japanese hunters. No. 11,050.

\* Though I follow the Hand-list of Sharpe, on the whole, because a list according to my system does not exist, I deviated here and in some other cases. *Phyllergates* is a close ally of *Orthotomus* and will be placed near the latter.

558. *Camaroptera griseoviridis harterti* Zedl. = *Camaroptera brevicaudata harterti*.

*Camaroptera griseoviridis harterti* Zedlitz, *Journ. f. Orn.* 1911. p. 342 (Angola).

Type : ♂ ad., Canhoca, N. Angola, 20.xi.1903. W. J. Ansorge leg. No. 1,198.

Zedlitz's Revision of the genus *Camaroptera*, in *Journ. f. Orn.* 1911, pp. 328-345, advances our knowledge of this difficult little genus very much and is an excellent piece of work. Unfortunately, however, it contains a fundamental nomenclatorial error, because the author, following Reichenow, misunderstood Cretzschmar's *brevicaudata*. Neither the figure nor the description can possibly warrant the assumption that *brevicaudata* is a form of what is correctly called *superciliaris*, with its bright yellowish-green upperside and golden-yellow forehead, cheeks, and superciliary lines. Zedlitz says that the figures in the *Atlas* can be trusted, but it is impossible to stick to them in detail, as a comparison with actual specimens of other plates will prove. Moreover, Cretzschmar does not talk of a "schön grüne Oberseite," but clearly describes the upperside as *olivaceous, merging into pale brown on the head and nape, and with a fine green tinge on back and wing-coverts* ! Evidently the latter has been overdone by the artist, and the types are the two specimens now in the Senckenbergian Museum, as carefully described by Zedlitz. Cretzschmar's description is that of the younger bird, which *has* some green on the back. To make Zedlitz's and Reichenow's grouping of the forms acceptable, they had to resort to the somewhat wild theory that Cretzschmar's *brevicaudata* is a form of what is rightly called *superciliaris*, a group only known from the West African faunal region, the type of which they assumed to be lost, and which had defied all efforts of future collectors to re-discover it ! As, however, Rüppell's collections were made in Eastern Kordofan, and Butler and others found there the bird called by Zedlitz *C. griseoviridis griseoviridis*, this form must be the true *C. brevicaudata brevicaudata*.

559. *Camaroptera brevicaudata rothschildi* Zedl. = *Camaroptera superciliaris rothschildi*.

*Camaroptera brevicaudata rothschildi* Zedlitz, *Journ. f. Orn.* 1911. p. 331 (Gabun, north to the Gold Coast).

Type : ♂ ad., Abanga River, Ogowe River, Gabun, 6.xi.1907. W. J. Ansorge leg. No. 937.

560. *Canmaroptera brevicaudata pulchra* Zedl. = *Camaroptera superciliaris pulchra*.

*Camaroptera brevicaudata pulchra* Zedlitz, *Journ. f. Orn.* 1911. p. 331 (North Angola, east to Lake Tanganyika).

Type : ♀ ad., Canhoca, Angola, 15.xi.1903. W. J. Ansorge leg. No. 1,134 (not 1,143).

It seems to me that *pulchra* and *rothschildi* are recognizable subspecies ; should the two not be separable, *rothschildi* would be a synonym, as *pulchra* stands first on the page. In any case, more material is desired to confirm these forms. A female named *flavicularis* by Zedlitz, from the Ogowe River, is, I have no doubt at all, the young of *rothschildi*. Could all *flavicularis* be young birds ? Then *rothschildi* would be a synonym of *flavicularis* 1894 !

561. *Sylvietta brachyura nilotica* Neum. = *Sylvietta brachyura nilotica*.*Sylvietta brachyura nilotica* Neumann, *Journ. f. Orn.* 1906. p. 279 (Akobo, White Nile, Athara).

Type : ♀ ad., Shabeisha, White Nile, 23.iv.1900. Harry F. Witherby leg. No. 122.

(Cf. *Ibis*, 1918, p. 670.)562. *Sylvietta ansorgei* Hart. = *Sylvietta ansorgei*.*Sylvietta ansorgei* Hartert, *Bull. B.O. Club*, xix. p. 97 (1907—Benguella).Type : ♂ ad., Huxe, Benguella, 28.vi.1904. W. J. Ansorge leg. No. 152. (*S. lowei* Ogilvie-Grant, 1911, is a synonym. Cf. *Ibis*, 1918, p. 671.)562 a. *Sylvietta leucophrys chloronota* subsp. nov.Differs from *S. leucophrys leucophrys* in having the whole back yellowish green, only the uppermost back being slightly tinged with olivaceous, and the crown and ear-coverts brighter chestnut. Dimensions the same.

Type : ♂ ad., primeval forest north-west of Baraka, N.W. of Lake Tanganyika, 1,900 m., 19.xi.1908. Rudolf Grauer leg. No. 3,852.

*Hab.* Near Baraka and Kivu region, at elevations of 1,600 to 2,400 m., in forest.

Compared nine specimens, all collected by Grauer, with six topotypical ones, collected by Dr. van Someren's hunter and Colonel Meinertzhagen's collector, Allen Turner.

563. *Sylvietta neumanni* Rothschild. = *Sylvietta neumanni*.*Sylvietta neumanni* Rothschild, *Bull. B.O. Club*, xxiii. p. 42 (1908—West of Lake Tanganyika).

Type : ♂ ad., primeval forest west of Lake Tanganyika, 2,000 m., 28.vii.1908. Rudolf Grauer leg. No. 3,137.

(?) 564. *Apalis flavida malensis* Neum. = *Apalis (Euprinodes) flavida malensis*?*Apalis flavida malensis* Neumann, *Orn. Monatsber.* 1905, p. 78 ("Gebiet nördlich des Rudolf-und Stefanie-Sees").

Type : ♂, "Schambala-Fluss, Male-Land," 21.i.1901. Oscar Neumann leg. No. 631.

Zedlitz (*Journ. f. Orn.* 1916, p. 90), who has seen 5 males and 2 females, recognizes this form, but I am doubtful if it should not be united with *flavocincta*! Zedlitz's description is not convincing, moreover he compares *malensis* with "*malensis*," but I suppose he meant to say *flavocincta*.565. *Apalis nigriceps collaris* van Som. = *Apalis nigriceps collaris*.*Apalis nigriceps collaris* van Someren, *Bull. B.O. Club*, xxxv. p. 107 (1915—Uganda).

Types : ♂ ♀, Bugoma Forest, Uganda, 16.x.1913. Dr. V. G. L. van Someren leg.



† 566. *Apalis ansorgei* Hart. = *Eremomela atricollis* Boc.

*Eremomela atricollis* Bocage, *Journ. Lisboa* (2), xi. p. 153 (1893—Galanga, Benguella),  
*Apalis ansorgei* Hartert, *Bull. B.O. Club*, xv. p. 95 (1895—Bihé, Benguella).

(Of *Urolais mariae* Alexander we have a paratype, ♂, obtained on Mt. St. Isabel, Fernando Po, 26.xi.1902. This appears to be one of the only two specimens collected by the author, whose magnificent collection is now in the British Museum.)

567. *Sericornis meeki* R. & H. = *Sericornis meeki*.

*Sericornis meeki* Rothschild & Hartert, *Nov. Zool.* xx. p. 503 (Mt. Goliath, eastern Central Dutch New Guinea).

Type : “♀,” Mt. Goliath, 8.ii.1911. A. S. Meek Coll. No. 5,338.

† 568. *Sericornis pusilla* R. & H. = *Sericornis olivacea* Salvad.

*Sericornis olivacea* Salvadori, *Ann. Mus. Genova*, xxxvi. p. 100 (1896—Moroka, British New Guinea Mts.).

*Sericornis pusilla* Rothschild & Hartert, *Nov. Zool.* x. p. 228 (1903—Richardson Range, British New Guinea).

Type : Mt. Gayata, Richardson Range, British New Guinea, 2—4,000 feet. (According to preparation collected by Weiske ?)

569. *Sericornis arfakiana* Salvad. = *Sericornis arfakiana arfakiana*.

*Sericornis arfakiana* Salvadori, *Ann. Mus. Civ. Genova*, vii. p. 962 (1875—Arfak Mountains).

Cotype : Mori, Arfak Mts., 3,500 feet, 3.v.1875. Odvardo Beccari leg. (ex David). Specimen C of the list of six specimens in Salvadori's *Orn. Pap.* ii. p. 408. Marked “Typus !” by the author.

570. *Sericornis arfakiana oorti* R. & H. = *Sericornis arfakiana oorti*.

*Sericornis arfakiana oorti* Rothschild & Hartert, *Nov. Zool.* 1913. p. 503 (S.E. New Guinea).

Type : ♂ ad., Bihagi, head of Mambare River, 19.ii.1906. A. S. Meek Coll. No. A 2,464.

571. *Acanthiza nana mathewsi* Hart. = *Acanthiza nana mathewsi*.

*Acanthiza nana mathewsi* Hartert, *Bull. B.O. Club*, xxv. p. 82 (1910—Victoria : Box Hill, Castlemaine, Mulgrave River, Springvale, Saddleworth. Type Springvale).

Type : ♂ ad., Springvale, Victoria, 23.x.1897. A. C. Campbell leg. No. 76 a.

572. *Acanthopneuste everetti* Hart. = *Phylloscopus giulianettii everetti*.

*Acanthopneuste everetti* Hartert, *Bull. B.O. Club*, viii. p. 31 (1899—Buru) ; cf. *Nov. Zool.* 1900. p. 239, 1914. p. 389 ; *Vög. pal. Fauna*, pp. 496, 500.

Type : ad., Mt. Mada (Madang, Gunong Fogha), Buru, 3,000 feet, viii.—ix. 1898. J. Dumas leg.

573. *Cryptolopha everetti waterstradti* Hart. = *Phylloscopus giulianettii waterstradti*.

*Cryptolopha everetti waterstradti* Hartert, *Nov. Zool.* 1903. p. 9 (Batjan and Obi Major).

Type : ♀, Batjan, vii. 1902, 5-7,000 feet. John Waterstradt leg.

574. *Phylloscopus trivirgatus parvirostris* Stres. = *Phylloscopus trivirgatus parvirostris*.

*Phylloscopus trivirgatus parvirostris* Stresemann, *Nov. Zool.* xix. p. 322 (1911—Mountains of Malay Peninsula).

Type : ♂, Gunong Tahan, Pahang, Eastern Malay Peninsula, 5,200 feet, 13.vii.1911. Ex Mus. Kwala Lumpur, exchanged.

(This form is very closely allied to *P. trivirgatus trivirgatus* from Java, Bali, Lombok, and Sumbawa, but the bill is a little shorter and blackish underneath, while in *P. t. trivirgatus* it is chiefly light brown or flesh colour. Four Sumatran specimens, collected by Robinson and Kloss, belong also to *P. t. parvirostris*, as suggested by Stresemann. The wing of the latter is *not* shorter.)

575. *Acanthopneuste floris* Hart. = *Phylloscopus floris*.

*Acanthopneuste floris* Hartert, *Nov. Zool.* v. p. 114 (1898—Flores).

Type : ♂, South Flores, 3,500 feet, October 1896. Alfred Everett leg.

576. *Phylloscopus trochiloides fokiensis* Hart. = *Phylloscopus trochiloides fokiensis*

*Phylloscopus trochiloides fokiensis* Hartert, *Bull. B.O. Club*, xxxvii. p. 43 (1917—Fokien, China).

Type : ♂ ad., Kuatun, N.W. Fokien, 15.iv.1897. J. De La Touche Coll.

577. *Acanthopneuste trochiloides harterti* Bak. = *Phylloscopus trochiloides harterti*.

*Acanthopneuste trochiloides harterti* Baker, *Bull. B.O. Club*, xxxi. p. 36 (1913—Assam Hills, 4,000—6,000 feet).

Type : ♂, said to have been caught on nest by native, on the peak near Shillong, 6,000 feet, 13.vi.1908. E. C. Stuart Baker leg.

In the description, in the eighth line, it should of course be *inner* webs, instead of "outer" webs.

578. *Phylloscopus goodsoni* Hart. = *Phylloscopus goodsoni*.

*Phylloscopus goodsoni* Hartert, *Nov. Zool.* xvii. p. 240 (1910—Hainan).

Type : ♂ ad., Lei Mui Mon, Hainan, 12.i.1903. Katsumata leg.

This might perhaps be a subspecies of *P. ricketti* ?

(? †) 579. *Phylloscopus sibilatrix erlangeri* Hart. = *Phylloscopus sibilatrix erlangeri* (or *flavescens*).

*Phylloscopus sibilatrix flavescens* Erlanger, *Journ. f. Orn.* 1899. p. 254. pl. v. (Tunisia).

*Phylloscopus sibilatrix erlangeri* Hartert, *Vög. pal. Fauna*, i. p. 516 (1909—"Scheint die Mittelmeerlande zu bewohnen, und zwar Süd-Frankreich, Spanien, Sardinien, Dalmatien bis Serbien, und vermutlich Marokko, Tunis und Algier").

Type: ♂ ad., Orange Wood in the Mehuila, on the Dum-er-Rebia, east of Mazagan, West Morocco, 8.iv.1901. Ernst Hartert leg.

It is doubtful if this name is valid. I named these paler, more yellowish birds *erlangeri*, because there was already a *Sylvia flavescens* and *Phyllopneuste flavescens* of Gray, but there is no *Phylloscopus flavescens*. I am afraid, therefore, that I wrongly interpreted the Rules of Nomenclature, and that the name *flavescens* may be used. Moreover, I do not any longer believe that any *sibilatrix* breeds in Africa, but consider *flavescens* (or *erlangeri*) a South European form, merely differing *very slightly* by being more yellowish from *P. sibilatrix sibilatrix*. Cf. NOVITATES ZOOLOGICAE, xx. p. 49 (1913).

580. *Phylloscopus borealis examinandus* Stres. = *Phylloscopus borealis examinandus*.

*Phylloscopus borealis examinandus* Stresemann, *Nov. Zool.* xx. p. 353 (1913—Bali, Sumbawa, Flores, Alor, and Sumba, in winter!).

Type: ♂ ad., Bali, iii. 1896. William Doherty leg.

This apparent subspecies is so far only known in winter quarters, on the Lesser Sunda Islands to Alor, east of Bali. Observations in the breeding places will have to confirm this form before it can be said to be finally established, but it seems to be different.

581. *Phylloscopus collybita exsul* Hart. = *Phylloscopus collybita exsul*.

*Phylloscopus collybita exsul* Hartert, *Vög. pal. Fauna*, i. p. 505 (1907—Lanzarote).

Type: ♂ ad., Lanzarote, 22.xii.1903. Polatzek leg. No. 2,223.

582. *Sylvia deserticola maroccana* Hart. = *Sylvia deserticola maroccana*.

*Sylvia deserticola maroccana* Hartert, *Bull. B.O. Club*, xxxviii. p. 6 (1917—Western Atlas, in Morocco).

Type: ♂ ad., Seksawa, Western Atlas, Morocco, 27.iii.1906. F. W. Riegenbach leg. No. 1,730.

This is one of the most interesting discoveries of Mr. Riegenbach in Morocco. The "typical" *S. deserticola deserticola*, as we now well know, nests in the southern or Saharan Atlas Ranges and mountains of the Haux Plateaux (near Batna, Djelfa, etc.), in Algeria and Tunisia. Of *S. d. maroccana* Riegenbach only sent one male, but its differences are beautifully confirmed by a specimen collected by Mr. Meade-Waldo near Tsauritz Entsagauz, where it was common.

583. *Sylvia undata toni* Hart. = *Sylvia undata toni*.

*Sylvia undata toni* Hartert, *Vög. pal. Fauna*, i. p. 602.

Type: ♂ ad., south of Biskra, S. Algeria, 14.i.1903. Ernst Flückiger leg. No. 327.

584. *Tatare familiaris* Rothsch. = *Acrocephalus familiaris*.

*Tatare familiaris* Rothschild, *Ann. & Mag. Nat. Hist.* (6), x. p. 109 (1892—Laysan Island).

Type: ♂ ad., Laysan Island, 18.vi.1891. H. C. Palmer leg. No. 1,092.

585. *Acrocephalus arundinaceus zarudnyi* Hart. = *Acrocephalus arundinaceus zarudnyi*.

*Acrocephalus arundinaceus zarudnyi* Hartert, *Bull. B.O. Club*, xxi. p. 26 (1907—Turkestan, terra typica Djarkent); *Vög. pal. Fauna*, p. 558.

Type: ♂ ad., Djarkent, Turkestan, 21.iv.1900 (Russian date). N. Zarudny leg. No. 1,566.

(?) 586. *Calamoherpe griseldis* Hartl. = *Acrocephalus arundinaceus griseldis*.

*Calamoherpe griseldis* Hartlaub, *Abh. Nat. Ver. Bremen*, xii. p. 7 (1891—Nguru).

Type: Nguru, Emin Pasha leg. Received from Hartlaub.

Sharpe (*Hand-list*, iv. p. 206) places this bird in the genus *Calamocichla*, but it is nothing than a very small *Acrocephalus arundinaceus*! It might be a dwarf of the latter. The wing measures only 85 mm. Or it might be a small subspecies of the Great Reed-Warbler, either breeding in tropical Africa or wintering there as a visitor from somewhere in the palaearctic fauna.

587. *Calamocichla cunenensis* Hart. = *Calamocichla cunenensis*.

*Calamocichla cunenensis* Hartert, *Bull. B.O. Club*, xiii. p. 62 (1903—Cunene River, S.W. Africa).

Type: Cunene River (probably south of), 3.iv.1880. A. W. Ariksson leg.

The species of *Calamocichla* are Reed-Warblers closely allied to *Acrocephalus*, but with a more rounded wing, the first primary being much longer, the second shorter, and resident, non-migratory, in Tropical Africa. Neumann gave an excellent review of the genus in *NOVITATES ZOOLOGICAE*, 1908, pp. 244–252. In the *Hand-list* Sharpe has at last placed *Calamocichla* and *Acrocephalus* in the same family, while in the *Cat. B.* they were in different volumes!

588. *Calamocichla zuluensis* Neum. = *Calamocichla leptorhyncha zuluensis*.

*Calamocichla zuluensis* Neumann, *Bull. B.O. Club*, xxi. (not xx.!) p. 96 (1908—Zululand and South Mozambique); *Nov. Zool.* 1908. p. 248.

Type: Ad. Eschowe, Zululand. Woodward Bros. leg.

This form requires further confirmation and can only be a subspecies of *leptorhyncha*. Neumann was certainly wrong in uniting the Upper Shire specimen with *leptorhyncha*, as it agrees perfectly with the type of *zuluensis*. *C. gracilirostris* is a much larger bird.

589. *Calamocichla ansorgei* Hart. = *Calamocichla ansorgei ansorgei*.

*Calamocichla ansorgei* Hartert, *Bull. B.O. Club*, xvi. p. 52 (1906—Duque de Braganza, N. Angola).

Type: ♂ ad., Duque de Braganza, 2.viii.1903. W. J. Ansorge leg. No. 850.

590. *Calamonastes fasciolatus pallidior* Hart. = *Calamonastes fasciolatus pallidior*.

*Calamonastes fasciolatus pallidior* Hartert, *Bull. B.O. Club*, xix. p. 97 (1907—Huxé, "Sandpits," and Makonjo in Benguella).

Type: ♂ ad., "Sandpits," Benguella, 8.vii.1904. W. J. Ansorge leg. No. 259.

† 591. *Cisticola floweri* Hart. = *Cisticola ruficeps*.

*Cisticola floweri* Hartert, *Bull. B.O. Club*, xxvii. p. 12 (Sennaar, Blue Nile); fig. *Ibis*, 1918. pl. x. fig. 8.

Type: Sennaar, Blue Nile, 28.vii.1909. S. S. Flower leg. No. 870.

Messrs. Selater and Mackworth-Praed, *Ibis*, 1918, p. 651, say that the series in the British Museum prove that *C. ruficeps* has a very distinct seasonal change of plumage, the winter birds having the back boldly striped with black and yellowish, while the summer birds (described by me as *C. floweri*) have the back plain greyish brown, with very faint traces of darker stripes to the centres of the feathers. Though it has been known for some time that the winter and summer plumages of many *Cisticolae* differ (for example, the head being either uniform rufous or boldly streaked in *C. exilis*), this was not known in the case of *C. ruficeps*.

Messrs. Selater and Mackworth-Praed separate the Kordofan form *Cisticola ruficeps ruficeps* and the Upper Nile and Sennaar one as *E. ruficeps scotoptera*. This, however, requires confirmation, for on two specimens collected by A. L. Butler at Gedaref (east of Sennaar), in April 1901 (boldly streaked but much worn, evidently shortly before the moult), Oscar Neumann made a note on the labels saying that he compared them with the types of *ruficeps* in the Frankfurt and Berlin Museums from Kordofan and found them completely alike in plumage.

(?) 592. *Cisticola neumanni* Hart. = *Cisticola prinioides neumanni* (or *Cisticola prinioides prinioides*?).

*Cisticola neumanni* Hartert, *Bull. B.O. Club*, xii. p. 13 (1901—Mt. Kenya).

Type: Western slope of Mt. Kenya, 10,000 feet, 7.viii.1899. J. Mackinder leg. No. 46.

This form requires confirmation by a series. Are not *C. prinioides* and *C. hunteri* perhaps seasonal forms of the same species?

593. *Cisticola cisticola arabica* Hart. = *Cisticola cisticola arabica*.

*Cisticola cisticola arabica* Hartert, *Nov. Zool.* 1917. p. 458 (South Arabia—Yemen and Lahej).

Type: Hajeilah, Yemen, 2,080 feet, 1.iv.1913. G. W. Bury leg. No. 583.

594. *Cisticola natalensis inexpectata* Neum. = *Cisticola natalensis inexpectata*.

*Cisticola natalensis inexpectata* Neumann, *Journ. f. Orn.* 1906. p. 268 (Shoa and Lake Abassi).

Type: ♂, Lake Abassi, 5.xii.1900 (not 4.xii.1900). Oscar Neumann leg. No. 352.



595. *Cisticola erythrogenys djamdjamensis* Neum. = *Cisticola lugubris djamdjamensis*.

*Cisticola erythrogenys djamdjamensis* Neumann, *Journ. f. Orn.* 1904. p. 163 (Djamdjam); id., *op. cit.* 1906. p. 269.

Type: ♀, Abera in Djamdjam, 16.xii.1900. Oscar Neumann leg. No. 429.

After studying these *Cisticolae* with Dr. van Someren I have come to the conclusion that *erythrogenys* is the non-breeding plumage of *lugubris*! Therefore *erythrogenys* becomes a synonym of *lugubris* and *djamdjamensis* a subspecies of *lugubris*.

596. *Cisticola robusta schraderi* Neum. = *Cisticola robusta schraderi*.

*Cisticola robusta schraderi* Neumann, *Journ. f. Orn.* 1906. p. 265 ("Nord-Abyssinien").

Type: Senafé, N. Abyssinia, 7,500 feet, 10.i.1903 (not 1902!). Gustav Schrader leg.

† 597. *Cisticola blanfordi sobatensis* Neum. = *Cisticola lugubris marginata*.

*Cisticola blanfordi sobatensis* Neumann, *Orn. Monatsber.* 1904. p. 164 (Sobat).

Type: ♂, Diek, on the Akobo River, one of the source rivers of the Sobat, 28.v.1901. Oscar Neumann leg. No. 1,255.

Neumann (*Journ. f. Orn.* 1906, p. 270) declares, after comparing the type of *blanfordi*, that his *sobatensis* is the same as *blanfordi*. Selater and Mackworth-Praed (*Ibis*, 1918, p. 647) adopt the name *marginata* Heugl. for this form, treating it, as Neumann did in 1906, as a subspecies of *C. lugubris*. I am convinced that Neumann as well as Selater and Praed were right in their conclusions, and that therefore *C. b. sobatensis* is a synonym of *C. l. marginata*, described by Heuglin, *Ibis*, 1869, p. 94, pl. i. fig. 1, from the White Nile between Fashoda and Lado.

This form is closely allied to *haematocephala*, and it would be a great help if the differences, in the various plumages, between *marginata* and *haematocephala* (1868) were clearly described.

598. *Cisticola ansorgei* Neum. = *Cisticola subruficapilla ansorgei*.

*Cisticola ansorgei* Neumann, *Bull. B.O. Club*, xvi. p. 114 (1906—"Benguella").

Type: ♂ ad., Caconda, Benguella, 7.ix.1904 (not "2.ix.1904"). W. J. Ansorge leg. No. 893.

598 a. *Cisticola tinniens perpalla* subsp. nov.

Type: ♂ ad., Bailundu country, Benguella, 18.viii.1901. C. Hubert Pemberton leg.

Differs from *C. tinniens tinniens* in being darker. The crown is of a less bright, darker brown, and the blackish streaks are, as a rule, less obvious; the edges to the feathers of the back are narrower, darker, and more brownish, so that the whole upperside looks much darker; the margins of the tail-feathers are of a less bright and darker brown, the tips of the lateral pairs have less sharply defined black anteapical cross-bars. Underside of a duller, more greyish, less buffy-yellowish coloration. Wings: 2 ♂, 60 and 61.5; 2 ♀, 54 and 55 mm.

"Iris neutral orange. Feet light brown, brown-ochre, brown flesh-colour. Bill black, lower pale" (Ansorge).

*Hab.* Benguella : Quando River, 20.xii.1904 (W. J. Ansorge) ; Cuanhangamma River, 17.ix.1904 (W. J. Ansorge) ; Bulu-Bulu, in Bihé, 4.x.1904 ; Bailundu, 18.viii.1901. C. H. Pemberton. All these localities are inland (east) of the town of Benguella.

† 599. *Cisticola simplicissima* Neum. = *Cisticola angusticauda* Rehw.

*Cisticola angusticauda* Reichenow, *Journ. f. Orn.* 1891. pp. 69, 163 (Gonda, Tabora).

*Cisticola simplicissima* Neumann, *Bull. B.O. Club*, xxiii. p. 47 (1908—"Benguella").

Type : ♂, Kukema River, Bihé, Benguella, 8.xii.1904. W. J. Ansorge leg. No. 870.

The type is not fully adult. There can be no doubt that it is the same species as *angusticauda*, which extends westwards to Benguella. I do not understand why Neumann did not allude to *angusticauda*, while comparing his supposed new species with *C. rufa*. *C. muelleri* Alex. (1899) appears to be also *angusticauda* !

† 600. *Cisticola hypoxantha* Hartl. = *Cisticola rufa* (? a subsp.).

*Drymoica rufa* Fraser, *Proc. Zool. Soc. London*, 1843. p. 17 ("River Quorra, opposite Iddah").

*Cisticola hypoxantha* Hartlaub, *Proc. Zool. Soc. London*, 1880. p. 624 ("Magungo, December 11"

Error: The specimen is labelled "Magungo, 19.11.1879," and the eleventh month is November).

Type : ♂ juv., Magungo, 19.xi.1879. Emin Pasha leg. No. 122.

There is no doubt that Hartlaub's *hypoxantha* is the young bird of *C. rufa*, which has, like so many *Cisticolae*, a yellow underside. It is, however, possible that *C. rufa* can be subdivided into several subspecies, but even if the East African form is separated I believe "*hypoxantha*" would remain a synonym of *rufa*.

† 601. *Phyllergates* \* *cinereicollis* Sharpe = *Phyllergates cucullatus cucullatus*.

*Orthotomus cucullatus* Temminck, *Pl. Col.* 599. fig. 2 (1836—Java, Sumatra).

*Phyllergates cinereicollis* Sharpe, *Ibis*, 1888, p. 479 (Kina Balu, N.E. Borneo).

Type : ♂ ad., Kina Balu, 4,000 feet, 10.ii.1888. John Whitehead leg. No. 2,101.

In NOVITATES ZOOLOGICAE, iv. pp. 517, 518, I said that most likely *cinereicollis* would not be separable from *cucullatus*. This is indeed the case—Bornean and Javan, as well as Sumatran specimens (*sumatranus* Salvad.), are absolutely inseparable, and so are those from the Malay Peninsula. Stresemann (NOVITATES ZOOLOGICAE, xix. 1912, pp. 341, 342) has also come to this conclusion. Stresemann also points out that my statement, that the outer rectrices in Javan, Malaccan, and Bornean specimens had no white at all, was not quite correct ; this is true, at the same time a (more or less narrow) white outer edge to the lateral rectrices is very rare and only seen in our series in a few skins from the Malay Peninsula, and one from Java, so that the absence or diminished extent

\* Though, for the sake of convenience, I follow Sharpe's *Hand-list* in this List, in reversed order, I cannot do so in all cases. In this case, for example, I have to deviate : *Phyllergates* is closely allied to *Orthotomus*, while Sharpe placed 56 genera between them.

of white markings in *P. cucullatus cucullatus* is still a very good character to distinguish it from *P. cucullatus coronatus* from India and Burma. Stresemann also unites *P. c. philippinus* with *cucullatus cucullatus*, but I do not agree to this. It is true that the character by which I distinguished *philippinus*, i.e. a narrow white mark on the two outer rectrices, is not constant, but the crown and back of Philippine specimens are slightly lighter, so that I shall, for the present, keep *philippinus* separate. (Of *P. heterolaemus* Mearns from Mindanao I have not been able to examine specimens. It seems to be quite different.)

602. **Phyllergates cucullatus philippinus** Hart. = *Phyllergates cucullatus philippinus*.

*Phyllergates cucullatus philippinus* Hartert, *Nov. Zool.* iv. p. 517 (1897—North Luzon).

Type: ♂ ad., Benguet, North Luzon, 2.iii.1894. John Whitehead leg. No. 276.

See remarks under 601. More material desired!

603. **Phyllergates everetti** Hart. = *Phyllergates cucullatus everetti*.

*Phyllergates everetti* Hartert, *Nov. Zool.* iv. p. 517 (1897—S. Flores).

Type: ♂ ad., South Flores, above 3,500 feet, November 1896. Alfred Everett leg.

604. **Phyllergates everetti dumasi** Hart. = *Phyllergates cucullatus dumasi*.

*Phyllergates everetti dumasi* Hartert, *Bull. B.O. Club*, viii. p. 31 (1899—Mt. Mada, Buru); *Nov. Zool.* 1900. p. 238. 1914. p. 390.

Type: ♂ ad., Mt. Mada (Madang), 3,000 feet, September 1898. J. Dumas leg.

605. **Phyllergates cucullatus batjanensis** Hart. = *Phyllergates cucullatus batjanensis*.

*Phyllergates cucullatus batjanensis* Hartert, *Bull. B.O. Club*, xxxi. p. 2 (1912—"Batjan, Northern Moluccas").

Type: ♂ ad., Batjan, 5,000—7,000 feet, July 1902. J. Waterstradt leg.

606. **Orthotomus chloronotus** Grant = *Orthotomus chloronotus*.

*Orthotomus chloronotus* Grant, *Bull. B.O. Club*, v. p. ii. (1895—"Cap Engano, N.E. Luzon"); *Ibis*, 1896. p. 117. pl. iii. fig. 1.

Type and single specimen: ♂ ad., Cap Engaño, N.E. Luzon, 22.iv.1895. John Whitehead leg. No. A 279.

607. **Bradypterus alfredi** Hartl. = *Bradypterus alfredi alfredi*.

*Bradypterus alfredi* Hartlaub, *Journ. f. Orn.* 1890. p. 152 ("Njangalo," err.: should be Njangabo).

Type: ♀ ad., Njangabo, 3.v.1889. Emin Pasha leg. No. 212.

(?) 608. *Bradypterus cinnamomeus pallidior* Neum. = *Bradypterus cinnamomeus pallidior*.

*Bradypterus cinnamomeus pallidior* Neumann, *Orn. Monatsber.* 1914. p. 10 ("Gebirge westlich des Tanganyka").

Type : ♀ ad. (not "♂"), primeval forest west of Baraka, 1,900 m., 1. xii. 1908. Rud. Grauer leg. No. 3,819.

This form requires confirmation. The type is very pale, but in the same region we find quite dark birds like *cinnamomeus*.

609. *Stasiasticus montis* Hart. = *Bradypterus montis*.

*Stasiasticus montis* Hartert, *Nov. Zool.* iii. p. 540 (1896—Mt. Arjuno, Eastern Java).

Type : ♂, Mt. Arjuno, 9—10,000 feet, January 1896. William Doherty leg.

It is, in my opinion, absolutely certain that my genus "*Stasiasticus*" was founded on wrong premises. I compared it with *Androphilus* and *Pseudotharraleus*, but it is really congeneric with the birds generally called *Luscinola*—i.e. *thoracica*, *luteiventris*, *seebohmi*, etc. These latter are, however, inseparable from the African *Bradypterus*, in every way. They must, therefore, all be called *Bradypterus*. The only further question is, whether they can really be united with *Luscinola* (type *melanopogon*), as I did in *Vög. pal. Fauna*, p. 540, or whether they should be separated as has been done by Oates and Sharpe. I think it will be better to separate them, because *Luscinola melanopogon* has the tail less graduated, the wings comparatively longer, the plumage not quite so copious. We would then have :

*Luscinola* with *melanopogon* and subsp. alone, *Bradypterus* with *brachypterus* (genotype), and about 14 other African forms, and *pryeri*, *taczanowskia*, *luteoventris*, *major*, *thoracica*, *seebohmi*, *montis*, *russula*.

610. *Luscinola seebohmi* Grant = *Bradypterus seebohmi*.

*Luscinola seebohmi* Grant, *Bull. B.O. Club*, iv. p. xl. (1895—North Luzon).

Type : ♀, Province of Lepanto, North Luzon, 28. xii. 1894. John Whitehead leg. No. 931.

611. *Bradypterus brachypterus centralis* Neum. = *Bradypterus brachypterus centralis*.

*Bradypterus brachypterus centralis* Neumann, *Bull. B.O. Club*, xxi. p. 55 (1908—"East and East Central Africa, from Kikuyu to Lake Kivu").

Type : ♀, River bank between Mkingo and Mubera (on the route from Kagera to Kiva), 6. viii. 1907. Rud. Grauer leg. No. 950.

More information about this form is greatly desired. Besides the type there is in the Tring Museum a ♂ collected by William Doherty at the Escarpment, Kikuyu Mountains, October 1900, which probably belongs to *centralis*, with the type locality Kivu region !

612. *Bradypterus graueri* Neum. = *Bradypterus graueri*.

*Bradypterus graueri* Neumann, *Bull. B.O. Club*, xxi. p. 56 (1908—"Western Kivu Volcanoes").

Type and unique specimen : ♂, edge of swamp, Western Kivu Volcanoes, 2,200 m., 17. viii. 1907. Rud. Grauer leg. No. 991.



This form badly requires confirmation ! It is in good fresh plumage, while the type of *centralis* is in very much worn garb. This is peculiar, as both were shot in August ; the latter may be juvenile, but it does not look so ! Another question is, if both could not be the same bird ? *B. graueri*, however, is much larger, and we do not know that the sexes differ appreciably in size in the genus.

613. *Bessonornis* (? *Cossypha*) *gambagae* Hart. = *Oenanthe familiaris gambagae*.

*Bessonornis* (*Cossypha*) *gambagae* Hartert, *Bull. B.O. Club*, x. p. v. (1899—Gambaga, Gold Coast Hinterland).

Type : "♀," Gambaga, 27.viii.1898. Capt. W. Giffard leg.

I must confess that I am still somewhat in doubt about the genus in which this bird should be placed. I admit that I, following Sharpe's arrangement in the British Museum, was wrong in placing this form in "*Bessonornis*," which is, apparently, not separable from *Cossypha*. Reichenow certainly came near the truth when he placed *familiaris*, *galtoni*, and *falkensteini* in *Phoenicurus*. I would gladly agree to this, if I did not consider that they are still better placed in *Oenanthe*. Will anyone point out a generic difference between *Oenanthe chrysopygia* and the disputed *familiaris*, *galtoni*, *falkensteini*, *gambagae*, *omoensis* ? This, of course, raises the question of what the differences are between *Oenanthe* (formerly *Saxicola*) and *Phoenicurus* ? That they are very unsatisfactory may be gathered from comparing the generic characters described in vol. v. of the *Cat. B. Brit. Mus.*, Reichenow's *Vög. Afr.* iii. (where they are most wrongly placed in two different subfamilies !), and my *Vög. pal. Fauna*, i. I still believe, however, that they can be kept separate, though they are *closely* allied, by the following characters :

In *Oenanthe* the bill is comparatively larger, tail comparatively shorter. In *Phoenicurus* the beak is weaker, tail comparatively longer. The artificial distinction of the proportion of the tail and bill used by Seebohm holds good, though it is not a nice one. If the above distinction is accepted, the *familiaris* group goes into *Oenanthe* by its bill, while the tail is not really shorter, except by comparison with the bill ! I am certainly of opinion that *galtoni*, *falkensteini*, *gambagae*, and *omoensis* are subspecies, and that *gambagae* is not identical with *falkensteini*, having the under tail-coverts reddish.

614. *Saxicola galtoni omoensis* Neum. = *Oenanthe familiaris omoensis*.

*Saxicola galtoni omoensis* Neumann, *Orn. Monatsber.* 1904. p. 163 ("Omo-Gebiet").

Type : ♂ ad., Baka in Konta, 28.ii.1901. Oscar Neumann leg. No. 949.

It must be said that the two specimens collected by Neumann are in very badly worn plumage, evidently shortly after the breeding season, and that a series of fresh specimens are desirable to better explain the differences of this undoubtedly recognizable form.

615. *Oenanthe leucopyga aegra* Hart. = *Oenanthe leucopyga aegra*.

*Oenanthe leucopyga aegra* Hartert, *Nov. Zool.* xx. p. 55 (1913—Algerian Sahara).

Type : ♂ ad., Jara Krime, near Ouargla, 10.iii.1914. E. Hartert and C. Hilgert leg. No. 206.



616. *Saxicola leucurus riggenbachi* Hart. = *Oenanthe leucurus riggenbachi*.

*Saxicola leucurus riggenbachi* Hartert, *Falco*, 1909. p. 36 (Rio de Oro).

Type : ♂ ad., Rio de Oro, west coast of Sahara, nearly under the tropic of the cancer, 4.vii.1902. F. W. Riggenbach leg. No. 21.

617. *Saxicola seebohmi* Dixon = *Oenanthe oenanthe seebohmi*.

*Saxicola seebohmi* Dixon, *Ibis*, 1882. p. 563. pl. xiv. (Djebel Mahmel, S.E. Algeria).

Type : (♂ ad.), Djebel Mahmel (on the label " Djebel Aures, 5,500 feet "), 2.v.1882. H. J. Elwes and C. Dixon leg. Labelled " Type," apparently by Dixon. (Ex coll. H. J. Elwes.)

The collectors only shot two males, not knowing that they had found a new form. Cotype (a paratype) in the British Museum.

618. *Cercomela melanura erlangeri* Zedl. = *Cercomela melanura erlangeri*.

*Cercomela melanura erlangeri* Zedlitz, *Journ. f. Orn.* 1912. pp. 497, 556 (South Arabia).

Type : ♂, Khareba, South Arabia, 12.x. G. W. Bury leg. No. 404.

619. *Oreicola ferrea haringtoni* Hart. = *Oreicola ferrea haringtoni*.

*Oreicola ferrea haringtoni* Hartert, *Vög. pal. Fauna*, i. p. 711 (1910—" Mupin und andere Teile von Szetschwan bis Fokien und Südost-China, ausserdem Birmah und die Bergländer südlich des Brahmaputra."

Type : ♂ ad., Lieng-kiang, near Foochow, China, 18.i.1887. No. 1,445.

620. *Pinarochroa sordida schoana* Neum. = *Pinarochroa sordida schoana*.

*Pinarochroa sordida schoana* Neumann, *Journ. f. Orn.* 1906. p. 290 (" Gebirge des eigentlichen Schoa zwischen dem Abai, oberen Blauen Nil, und dem Hauasch ").

Type : ♂, Abuje, Schoa, 29.ix.1900. Oscar Neumann leg. No. 110.

621. *Pinarochroa sordida djamdjamensis* Neum. = *Pinarochroa sordida djamdjamensis*.

*Pinarochroa sordida djamdjamensis* Neumann, *Journ. f. Orn.* 1906. p. 291 (Abera, in Djamdjam).

Type : ♂, Abera, in Djamdjam, 19.xii.1900. Oscar Neumann leg. No. 443.

622. *Pratincola caprata albonotata* Stres. = *Saxicola caprata albonotata*.

*Pratincola caprata albonotata* Stresemann, *Nov. Zool.* xix. p. 321 (1912—Celebes, Buton, Saleyer).

Type : ♀, Indrulaman, S. Celebes, 3.x.1895. Alfred Everett leg.

623. *Pratincola caprata rossorum* Hart. = *Saxicola caprata rossorum*.

*Pratincola caprata rossorum* Hartert, *Journ. f. Orn.* 1910. p. 180 (" Transkaspien, Teile von Persien, Afghanistan, Peschawar, Kohat und Kaschmir, überwintert in den Ebenen des nordwestlichen Indiens ").

Type : ♂, Merw, Transkaspien, 22.vii.1889, Russ. date (= 4.viii.1889). N. Zarudny leg. No. 338.

624. *Pratincola torquata hibernans* Hart. = *Saxicola torquata hibernans*.*Pratincola torquata hibernans* Hartert, *Journ. f. Orn.* 1910. p. 173 (Great Britain and Ireland).

Type : ♂ ad., Tring, 14.xi.1898. Ernst Hartert leg.

† 625. *Pratincola emmae* Hartl. = *Saxicola torquata axillaris*.*Pratincola axillaris* Shelley, *Proc. Zool. Soc. London*, 1884. p. 556.*Pratincola emmae* Hartlaub, *Journ. f. Orn.* 1890. p. 152 (Ruganda).

Type : ♂ ad., Ruganda (Nkole), 15.vii.1889. Emin Pasha leg. No. 263.

† 626. *Pentholaea baucis* Hartl. = *Pentholaea clericalis*.*Pentholaea clericalis* Hartlaub, *Orn. Centralbl.* 1882. p. 91.*Pentholaea baucis* n. sp. ? Hartlaub, *Zool. Jahrb.* ii. p. 318 (1884—Babira, Rimo).

Type : “♂,” Babira, Upper White Nile, 16.xi.1882. Emin Pasha leg. No. 301. (Evidently a bird of the year.)

627. *Pentholaea albifrons pachyrhyncha* Neum. = *Pentholaea albifrons pachyrhyncha*.*Pentholaea albifrons pachyrhyncha* Neumann, *Journ. f. Orn.* 1906. p. 289 (“Omo-Gebiet”).

Type : ♂ ad., “Uba, Westabhang,” Omo region, 27.i.1901. Oscar Neumann leg. No. 678.

Neumann also mentions a second specimen which was originally sexed “♂.” In his article, *l.c.*, he doubts this and says that he believes it to be a female. The dull remiges seem to me clearly to indicate that it is a bird of the year 1900, and on the forehead white feathers are clearly replacing the black ones. Therefore, the bird appears to be a male changing into the adult plumage. Females of the allied species and of *P. albifrons albifrons* have, as a rule, no white on the forehead.

628. *Erythropygia hartlaubi* Rehw. = *Erythropygia hartlaubi*.*Erythropygia hartlaubi* Reichenow, *Journ. f. Orn.* 1891. p. 63 (“Mutjara”); Hartlaub, *Abh. naturw. Ver. Bremen*, xii. 1. p. 9. 1891 (Mutjara).

Type : ♂ ad., Mutjara, 13.vi.1889. Emin Pasha leg. No. 253.

629. *Erythropygia paena damarensis* Hart. = *Erythropygia paena damariensis*.*Erythropygia paena damarensis* Hartert, *Bull. B.O. Club*, xix. p. 96 (1907—Damaraland).

Type : Omaruru, Damaraland, 4.xii.1879. A. W. Eriksson leg.

630. *Erythropygia paena benguellensis* Hart. = *Erythropygia paena benguellensis*.*Erythropygia paena benguellensis* Hartert, *Bull. B.O. Club*, xix. p. 96 (1907—Benguella).

Type : ♂ ad., Huxe, Benguella, 21.vi.1904. W. J. Ansorge leg. No. 83.

631. *Erythropygia reichenowi* Hart. = *Erythropygia reichenowi*.*Erythropygia reichenowi* Hartert, *Bull. B.O. Club*, xix. p. 95 (1907—Angola).

Type : ♂ ad., Canhoca, Angola, 27.xi.1903. W. J. Ansorge leg. No. 1,291.

This species is nearly allied to *E. quadrivirgata* (wrongly placed in *Cossypha* by Sharpe) from East Africa.

632. *Neocossyphus rufus gabunensis* Neum. = *Neocossyphus rufus gabunensis*.

*Neocossyphus rufus gabunensis* Neumann, *Bull. B.O. Club*, xxi. p. 77 (1908—"South Cameroon to the Ogowé River").

Type: ♂ ad., Ohumbe, Lake Onange, Ogové River, Gabun, 18.vii.1907. W. J. Ansorge leg. No. 528.

633. *Cossypha giffardi* Hart. = *Cossypha albicapilla giffardi*.

*Cossypha giffardi* Hartert, *Bull. B.O. Club*, x. p. 5 (1899—Gambaga).

Type: ♂ ad., Gambaga, 29.viii.1898. Capt. W. Giffard leg.

634. *Cossypha somereni* Hart. = *Cossypha polioptera somereni*.

*Cossypha somereni* Hartert, *Bull. B.O. Club*, xxxi. p. 3 (1912—Kyetume).

Type: Kyetume, near Kampala, Uganda, 14.xii.1911. Dr. V. G. L. van Someren leg. No. 11.

635. *Cossypha semirufa saturator* Neum. = *Cossypha semirufa saturator*.

*Cossypha semirufa saturator* Neumann, *Orn. Monatsber.* 1906. p. 7 ("Gebiet der südäthiopischen Seen und Omo-Gebiet").

Type: ♀ ad., Bola Goschana, in Doko, 12.ii.1901. Oscar Neumann leg. No. 786.

636. *Cossypha roberti rufescentior* Hart. = *Cossypha roberti rufescentior*.

*Cossypha roberti rufescentior* Hartert, *Bull. B.O. Club*, xxiii. p. 9 (1908—West of Lake Albert Edward).

Type: ♂ ad., Forest, 90 kilometres west of Lake Albert Edward, 1,600 m., 12.ii.1908. Rudolf Grauer leg. No. 2,019.

637a. *Kittacincla macrurus omissa* Hart. = *Kittacincla macrurus omissa*.

*Kittacincla macrurus omissa* Hartert, *Nov. Zool.* ix. p. 572 (1902—Java).

Type: ♂ ad., Lawang, East Java, 1.xi.1886. John Whitehead leg. No. 893.

(Of *Cittacincla nigrorum* Grant, a synonym of *C. superciliaris* (*Ibis*, 1896, p. 547), we have the "type of the female," but not that of the male.)

638. *Xenocopsychus ansorgei* Hart. = *Xenocopsychus ansorgei*.

*Xenocopsychus ansorgei* Hartert, *Bull. B.O. Club*, xix. p. 87 (Lobango, Mossamedes).

Type: ♂ ad., Lobango, Mossamedes, Angola, 18.ii.1906. Dr. W. J. Ansorge leg. No. 287.

639. *Tarsiger indica formosanus* Hart. = *Tarsiger indicus formosanus*.

*Tarsiger indica formosanus* Hartert, *Bull. B.O. Club*, xxv. p. 32 (1909—Formosa).

Type: ♂ ad., Mt. Arizan, Formosa, 4.xii.1906. Collected by Alan Owston's Japanese collectors.

640. *Larvivora ruficeps* Hart. = *Luscinia (Larvivora) ruficeps*.

*Larvivora ruficeps* Hartert, *Bull. B.O. Club*, xix. p. 50 (1907—Tsin-ling Mts.); *Ibis*, 1907. pl. xiii.

Type : ♂ ad., Ta-pai-shan, Tsin-ling Mts., 13.vii.1905. Collected by Alan Owston's Japanese collectors.

641. *Larvivora wickhami* Baker = *Luscinia (Larvivora) wickhami*.

*Larvivora wickhami* Baker, *Nov. Zool.* xxiii. p. 298 (1916—Chin Hills).

Type : Adult, Chin Hills, 5,000 feet, April 1916. P. Wickham leg.

642. *Luscinia pectoralis confusa* Hart. = *Luscinia (Calliope) pectoralis confusa*.

*Luscinia pectoralis confusa* Hartert, *Vög. pal. Fauna*, i. p. 740 (1910—"Im östlichen Himalaya").

Type : ♂ ad., Sikkim, i.1876. H. J. Elwes leg.

643. *Erithacus rubecula melophilus* Hart. = *Erithacus rubecula melophilus*.

*Erithacus rubecula melophilus* Hartert, *Nov. Zool.* 1901. p. 317 (*Aus den Wanderj. e. Naturf.* p. 98) ("Meines Wissens nur die britischen Inseln").

Type : Barnet, near London, 14.xii.1896. W. Burton leg.

644. *Erithacus rubecula witherbyi* Hart. = *Erithacus rubecula witherbyi*.

*Erithacus rubecula witherbyi* Hartert, *Vög. pal. Fauna*, i. p. 753 (1910—"Brut-und augenscheinlich Standvogel im nördlichen Atlas").

Type : ♂ ad., Hammam R'hira, Northern Algeria, 27.iv.1904. Harry F. Witherby leg. No. 100.

645. *Phoenicurus frontalis sinæ* Hart. = *Phoenicurus frontalis sinæ*.

*Phoenicurus frontalis sinæ* Hartert, *Bull. B.O. Club*, xxxviii. p. 78 (1918—"Mountains of China : Mupin and Setchuan to Kansu and Ala-schan mountains, and to the Tsinling range").

Type : ♂ ad., Kansu, March 1884, Przewalski leg.

646. *Microcichla scouleri fortis* Hart. = *Microcichla scouleri fortis*.

*Microcichla scouleri fortis* Hartert, *Vög. pal. Fauna*, i. p. 761 (1910—Formosa).

Type : ♂ ad., Tapposha, Formosa, 19.i.1907. Collected by Alan Owston's Japanese collectors.

647. *Henicurus borneensis* Sharpe = *Enicurus leschenaulti borneensis*.

*Henicurus borneensis* Sharpe, *Ibis*, 1889. p. 277 (Kina Balu, Northern Borneo).

Types (marked as such by the author) : ♂♀ ad., Kina Balu, 3,000 feet, 29.iii. and 13.iv.1888. John Whitehead leg. Nos. 2,338 and 2,433.

648. *Enicurus leschenaulti indicus* Hart. = *Enicurus leschenaulti indicus*.

*Enicurus leschenaulti indicus* Hartert, *Vög. pal. Fauna*, i. p. 760 (1910—"Sikkim, Bhutan, Bergländer südlich des Brahmaputra bis zum mittleren Tenasserim").

Type : ♂ ad., Margherita, Upper Assam, 19.i.1902. H. N. Coltart leg.

649. **Monticola rufocinerea sclateri** Hart. = *Monticola rufocinerea sclateri*.

*Monticola rufocinerea sclateri* Hartert, *Nov. Zool.* 1917. p. 459 (Yemen and South Arabia).

Type : ♂ ad., Wasil, Yemen, 4,000 feet, 4.iii.1913. G. W. Bury leg.

650. **Monticola cyanus transcaspicus** Hart. = *Monticola solitarius transcaspicus*.

*Monticola cyanus transcaspicus* Hartert, *Bull. B.O. Club*, xxiii. p. 43 (1909—Tedjen, Sirax, Ashabad in Transcaspia).

Type : ♂ ad., Sirax, 120 versts south of Tedjen, Transcaspia, 21.iii.1905 (probably Russian date). Bought from Schlüter.

Distribution and characters require further study. The genus *Monticola* (whether the Rock-Thrush and the Blue Rock-Thrush are united or separated generically) stands distinctly between the Chats (*Oenanthe*) and Thrushes (*Turdus*), but nearer the former.

651. **Turdus colombianus** Hart. & Hellm. = *Turdus (obsoletus?) colombianus*.

*Turdus colombianus* Hartert & Hellmayr, *Nov. Zool.* viii. p. 492 (1901—Cali, Western Colombia).

Type : ♂, Cali, 18.ix.1894. W. H. F. Rosenberg leg. No. 1.

I am by no means sure that this is a subspecies of *obsoletus*, though Chapman (*Distr. Bird-life, Colombia*, p. 536) says it must be.

652. **Turdus obsoletus parambanus** subsp. nov.

Type : ♀ ad., Paramba, N.W. Ecuador, 3,500 feet, 23.vii.1899. R. Miketta leg. No. 477.

We have one male and two females from Paramba, collected in January, July, and August ; also a male form from near Jimenez, W. Colombia, 2,900 feet, collected by Merwyn G. Palmer, seems to belong to this form, and not to *colombianus* !

These birds are closely allied to *T. o. obsoletus* from Costa Rica and Panama, but the upperside is of a still deeper brown, the outer edges of the primaries are darker, and the undersurface darker brown. Wings : ♂, 120, 122 ; ♀ (worn), about 118 mm.

I am inclined to think that *obsoletus*, *parambanus*, perhaps also *colombianus*, *nigrirostris*, and *hauxwelli* are subspecies of *fumigatus*.

653. **Turdus fumigatus caparo** subsp. nov.

Type : ♂, Caparo, Trinidad, 12.iv.1902. E. André leg.

As already noticed by Hellmayr, *NOVITATES ZOOLOGICAE*, 1906, p. 4, Trinidad specimens (one dozen compared with an equal number of Amazonian examples) are much lighter and paler above and below than Brazilian ones, and there is therefore no reason not to separate them ; many less recognizable subspecies have been named recently from South America. Especially noticeable is the paler, less rufescent upperside, and the lighter breast and sides. The skin from Duaca mentioned by Hellmayr and two from the Orinoco are much nearer to *caparo*, but seem to me to be intermediate.



654. **Turdus ignobilis goodfellowi** Hart. & Hellm. = *Turdus ignobilis goodfellowii*.

*Turdus ignobilis goodfellowi* Hartert & Hellmayr, *Nov. Zool.* viii. p. 492 (1901—"Cauca Valley, Colombia").

Type: ♂ ad., Castilla, Cauca Valley, Colombia, vi. 1898. J. H. Batty leg.

655. **Turdus crotopezus contemptus** Hellm. = *Turdus crotopezus contemptus*.

*Turdus crotopezus contemptus* Hellmayr, *Journ. f. Orn.* 1902. p. 61 (Bolivia, Peru).

Cotype: ♀ ad., Bueyes (St. Cruz), Bolivia, 21.iv.1890. Garlepp leg. Ex Coll. Nehrkorn.

656. **Turdus graueri** Neum. = *Turdus graueri*.

*Turdus graueri* Neumann, *Bull. B.O. Club*, xxi. p. 56 (1908—"Countries between the Kagera River and Lake Kivu").

Type: "♀" ad., Nsasa, 11.vii.1907. Rud. Grauer leg. No. 732.

This bird is certainly not *T. bocagei*, which I consider a subspecies of *pelios*.

657. **Turdus olivaceus bambusicola** Neum. = *Turdus olivaceus bambusicola*.

*Turdus olivaceus bambusicola* Neumann, *Bull. B.O. Club*, xxi. p. 56 (February 1908—"Western Kivu Volcanoes").

Type: ♀ ad., Bamboo Forest, Western Kivu Volcanoes, 2,300 m., 23.viii.1907. Rud. Grauer leg. No. 1,076.

658. **Turdus citrinus aurimacula** Hart. = *Turdus citrinus aurimacula*.

*Turdus citrinus aurimacula* Hartert, *Nov. Zool.* xvii. p. 236 (1910—Hainan).

Type: ♂ ad., Hoihow, Hainan, 13.iii.1902. Katsumata leg.

659. **Geocichla audacis** Hart. = *Turdus peronii audacis*.

*Geocichla audacis* Hartert, *Bull. B.O. Club*, viii. p. xliii. (1899—Dammar or Dammer Island).

Type: ♂ ad., Wulur, Dammer, 4.xi.1898. Heinrich Kühn leg. No. 983.

660. **Geocichla dohertyi** Hart. = *Turdus dohertyi*.

*Geocichla dohertyi* Hartert, *Nov. Zool.* iii. p. 555. pl. xi. fig. 3 ("In insulis Lombok—typus—et Sambawa dictis").

Type: ♂ ad., Lombok, 5,000 feet, vi. 1896. William Doherty leg.

661. **Geocichla dumasi** Rothschild. = *Turdus dumasi*.

*Geocichla dumasi* Rothschild, *Bull. B.O. Club*, viii. p. 30 (1899—Buru).

Type: ♂ ad., Mt. Mada (Kapala Madang), Buru, viii. 1898. J. Dumas leg.

662. **Merula celanops yakushimensis** Ogawa = *Turdus celanops jakushimensis*.

*Merula celanops yakushimensis* Ogawa, *Annot. Zool. Japon.* v. p. 180 (1905—Yakushima, south of Kiushiu).

Type: ♂ ad., Yakushima, 21.x.1904. Collected by Owston's Japanese collectors.

663. *Turdus deningeri* Stres. = *Turdus deningeri*.

*Turdus deningeri* Stresemann, *Bull. B.O. Club*, xxxi. p. 4 (1912—Ceram); *Nov. Zool.* xxi. 1914. p. 133.

Type : ♂ ad., Gunong Pinaia, Ceram, 7,500 feet, 16.viii.1911. Erwin Stresemann leg. No. 903.

*L.c.* the author has discussed the affinities of this interesting Thrush, which may one day be regarded as a subspecies of *J. fuliginosus (poliocephalus auct.)* and *pritzbuerei*, though both differ considerably. *T. canescens*, supposed to have come from Goodenough Island, we have never received; possibly the locality is incorrectly stated, as we have had two good collections from Goodenough Island.

664. *Turdus fuscater ockendeni* Hellm. = *Turdus fuscater ockendeni*.

*Turdus fuscater ockendeni* Hellmayr, *Bull. B.O. Club*, xvi. p. 91 (1906—"S.E. Peru").

Type : ♂ ad., Limbani, Carabaya, Peru, 9,500 feet, 21.iii.1904. G. O. Ockenden leg. No. 675 a.

665. *Turdus merula cabreræ* Hart. = *Turdus merula cabreræ* Hart.

*Turdus merula cabreræ* Hartert, *Nov. Zool.* viii. p. 313 (1901—Canary Islands).

Type : ♂ ad., Mercedes, Tenerife, 21.ii.1901. Curt Floericke leg. No. 1,250.

666. *Turdus merula mauritanicus* Hart. = *Turdus merula mauritanicus*.

*Turdus merula mauritanicus* Hartert, *Nov. Zool.* ix. p. 323 (Marocco).

Type : ♂ ad., Mehuila ("Mhwiwla"), Marocco, 3.ii.1902. F. W. Riggenbach leg.

667. *Turdus philomelos clarkei* Hart. = *Turdus philomelos clarkei*.

*Turdus philomelos clarkei* Hartert, *Vög. pal. Fauna*, i. p. 651 (1910—British Isles).

Type : ♂ ad., Tring, 16.v.1902. Ernst Hartert leg.

668. *Phaeornis palmeri* Rothsch. = *Phaeornis palmeri*.

*Phaeornis palmeri* Rothschild, *Avifauna of Laysan*, I. part ii. p. 67 (1893—Kauai).

Type : ♀, Kauai, Sandwich Islands, 24.iii.1891. H. C. Palmer leg. No. 926.

669. *Mimus gilvus tobagensis* Dalmas = *Mimus gilvus tobagensis*.

*Mimus gilvus tobagensis* Dalmas, *Mém. Soc. Zool. France*, xiii. p. 134 (1900—Tobago).

Type : Tobago, 25.xi.1898. Count Dalmas leg. No. 45.

670. *Mimus gilvus antillarum* Hellm. & Seil. = *Mimus gilvus antillarum*.

*Mimus gilvus antillarum* Hellmayr & Seilern, *Verh. Orn. Ges. Bayern*, XII. part iii. p. 201 (1915—"Kleine Antillen").

Type : ♂ ad., Grenada, November 1897. P. Gellinau leg. Ex Coll. Dalmas.  
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671. *Nesomimus bindloei* Ridgw. = *Mimus melanotis bindloei*.

*Nesomimus bindloei* Ridgway, *Proc. U.S. Nat. Mus.* xvii. p. 358 (1894—Bindloe Island, Galápagos Is.).

Type: ♂ ad., Bindloe Island, 5.ix.1891. G. A. Baur leg. No. 690.

672. *Nesomimus bauri* Ridgw. = *Mimus melanotis bauri*.

*Nesomimus bauri* Ridgway, *Proc. U.S. Nat. Mus.* xvii. p. 357 (1894—Tower Island, Galápagos).

Type: Ad., Tower Island, 2.ix.1891. G. A. Baur leg. No. 695. (From spirits!)

673. *Nesomimus carringtoni* Rothsch. = *Mimus melanotis carringtoni*.

*Nesomimus carringtoni* Rothschild, *Bull. B.O. Club*, viii. p. vii. (1898—Barrington Island).

Type: ♂ ad., Barrington Island, 7.x.1897. R. H. Beck leg. Webster-Harris Expedition. No. 1,540.

(The name "*carringtoni*" was a misprint for *barringtoni*, but to avoid confusion was never altered.)

674. *Nesomimus hulli* Rothsch. = *Mimus melanotis hulli*.

*Nesomimus hulli* Rothschild, *Bull. B.O. Club*, vii. p. liii. (1898—Culpepper Island, Galápagos).

Type: ♂ ad., Culpepper Island, 27.vii.1897. R. H. Beck leg. Webster-Harris Expedition. No. 166.

675. *Nesomimus affinis* Rothsch. = *Mimus parvulus affinis*.

*Nesomimus affinis* Rothschild, *Bull. B.O. Club*, vii. p. liii. (1898—Narborough Island).

Type: ♂ ad., Narborough Island, 6.xii.1897. R. H. Beck leg. Webster-Harris Expedition. No. 2,852.

676. *Nesomimus adamsi* Ridgw. = *Mimus adamsi*.

*Nesomimus adamsi* Ridgway, *Proc. U.S. Nat. Mus.* xvii. p. 358 (1894—Chatham Island).

Type: ♂ ad., Chatham Island, 13.vi.1891. G. A. Baur leg. No. 694.

677. *Pteruthius tahanensis* Hart. = *Pteruthius melanotis tahanensis*.\*

*Pteruthius tahanensis* Hartert, *Nov. Zool.* ix. p. 576 (1902—Gunong Tahan, Eastern Malay Peninsula, Pahang).

Type: ♂ ad., Gunong Tahan, x.1901. J. Waterstradt leg.

678. *Herpornis xantholeuca interposita* Hart. = *Herpornis xantholeuca interposita*.

*Herpornis xantholeuca interposita* Hartert, *Bull. B.O. Club*, xxxviii. p. 20 (1917—Malay Peninsula).

Type: Temangoh, Upper Perak, 24.vii.1909. C. Boden Kloss leg.

679. *Ixulus flavicollis harterti* Har. = *Ixulus flavicollis harterti*? †

*Ixulus flavicollis harterti* Harington, *Bull. B.O. Club*, xxxiii. p. 62 (1913—"The Bhamo Hills and Trans-Salween Shan States, Burma").

Type: ♀ ad., Sinlum, near Bhamo, 25.iv.1908. H. H. Harington leg. No. 232.

\* The systematic position of *Pteruthius* is not clear. Probably it is here quite out of place.

† Perhaps the same as *I. flavicollis rouxi* (*I. rouxi*) Oustalet, *Bull. Mus. Paris*, 1896, p. 186, from Yunnan, with which Harington did not compare it.

680. **Siva strigula malayana** Hart. = *Siva strigula malayana*.

*Siva strigula malayana* Hartert, *Nov. Zool.* ix. p. 567 (1902—Mts. of Malay Peninsula).

Type : ♂ ad., Gunong Tahan, x. 1901. J. Waterstradt leg.

681. **Staphidia everetti** Sharpe = *Staphidia everetti*.

*Staphidia everetti* Sharpe, *Ibis*, 1887. p. 447 (Kina Balu, Borneo).

Type : ♀ ad., Kina Balu, 3,000 feet, 1.iii.1887. John Whitehead leg.  
No. 1,044.

682. **Brachypteryx poliogyna mindorensis** Hart. = *Brachypteryx poliogyna mindorensis*.

*Brachypteryx poliogyna mindorensis* Hartert, *Bull. B.O. Club*, xxxvi. p. 87 (1916—Mindoro, Philippine Is.).

Type : ♀ ad., Mt. Dulungan, Mindoro, 4,500 feet, 25.i.1896. John Whitehead leg. No. B 93.

683. **Brachypteryx brunneiceps** Grant = *Brachypteryx poliogyna brunneiceps*.

*Brachypteryx brunneiceps* Grant, *Ibis*, 1896. p. 547 (Negros).

Type of ♂, Canloon Volcano, Negros, 27.iv.1896. John Whitehead leg.  
No. B 471. (Marked by the author "Type of ♂.")

684. **Brachypteryx erythropyga** Sharpe = *Brachypteryx erythropyga*.

*Brachypteryx erythropyga* Sharpe, *Ibis*, 1888. p. 389 (Kina Balu).

Type : ♂ ad., Kina Balu, N.E. Borneo, 8,000 feet, 27.ii.1888. John Whitehead leg. No. 2,084.

685. **Brachypteryx floris** Hart. = *Brachypteryx floris*.

*Brachypteryx floris* Hartert, *Nov. Zool.* iv. p. 170 (1897—Flores).

Types : ♂ ♀, ad., Flores, about 3,500 feet, October and November 1896.  
Alfred Everett leg.

686. **Myiophoneus borneensis** Slat. = *Myiophoneus borneensis*.

*Myiophoneus borneensis* Slater, *Ibis*, 1885. p. 124 (described from one juvenile specimen from the Bungal Hills, Borneo).

Type : Juv., Bungal Hills, near Sarawak, Borneo. Harvey leg. (Ex Coll. H. H. Slater.)

687. **Macronus kettlewelli** Guill. = *Macronus kettlewelli*.

*Macronus kettlewelli* Guillemard, *Proc. Zool. Soc. London*, 1885. p. 262. pl. xviii. fig. 2 (Sulu Islands, south of Philippine Islands).

Type : ♂, Lukatlapas, Sulu Island, 18.v.1883. H. Guillemard leg.

688. **Macronus ptilosus reclusus** Hart. = *Macronus ptilosus reclusus*.  
*Macronus ptilosus reclusus* Hartert, *Bull. B.O. Club*, xxxvi. p. 36 (1915—Borneo).  
 Type : ♂ ad., Kina Balu, Borneo, 1,000 feet, 17.i.1888. John Whitehead leg. No. 1,881.
689. **Mixornis cagayanensis** Guill. = *Mixornis montana cagayanensis*.  
*Mixornis cagayanensis* Guillemard, *Proc. Zool. Soc. London*, 1885. p. 419 (Cagayan, Sulu Islands).  
 Type : ♂, Cagayan Sulu, 1.iv.1883. H. Guillemard leg.
690. **Mixornis montana** Sharpe = *Mixornis montana montana*.  
*Mixornis montana* Sharpe, *Ibis*, 1887. p. 448 (Kina Balu).  
 Type : Ad., Kina Balu. John Whitehead leg. No. 1,347.
691. **Mixornis prillwitzii** Hart. = *Mixornis prillwitzii* (or *M. gularis prillwitzii*).  
*Mixornis prillwitzii* Hartert, *Bull. B.O. Club*, xii. p. 32 (1901—Kangean Island, N.E. of Java).  
 Type : ♂ ad., Kangean, September 1901. Ernst Prillwitz leg. No. 163.
692. **Mixornis everetti** Hart. = *Mixornis everetti*.  
*Mixornis everetti* Hartert, *Nov. Zool.* i. p. 472 (1894—Bunguran, Natuna Island); fig. *Nov. Zool.* ix.  
 Type : ♂ ad., Bunguran, 14.x.1893. Alfred Everett leg.
693. **Cyanoderma melanothorax baliensis** Hart. = *Cyanoderma melanothorax baliensis*.  
*Cyanoderma melanothorax baliensis* Hartert, *Bull. B.O. Club*, xxxvi. p. 2 (1915—Bali).  
 Type : ♂ ad., Bali, low country, March 1896. William Doherty leg.
694. **Stachyridopsis ruficeps goodsoni** Rothsch. = *Stachyridopsis ruficeps goodsoni*.  
*Stachyridopsis ruficeps goodsoni* Rothschild, *Bull. B.O. Club*, xiv. p. 8 (October 1903—Hainan).  
 Type : ♂ ad., Mt. Wuchi, Hainan, 24.iii.1903. Katsumata leg.
695. **Stachyridopsis rufifrons ambigua** Har. = *Stachyridopsis rufifrons ambigua*.  
*Stachyridopsis rufifrons ambigua* Harington, *Journ. Bombay Nat. Hist. Soc.* xxiii. p. 631 (1915—Assam, Naga Hills, Manipur, probably to Butan Duars and Sikkim).  
 Type : ♂ ad., Gunjong, North Cachar Hills, 26.xii.1895. E. C. Stuart Baker leg.
696. **Stachyris leucotis goodsoni** Hart. = *Stachyris leucotis goodsoni*.  
*Stachyris leucotis goodsoni* Hartert, *Bull. B.O. Club*, xxxvi. p. 7 (1915—Borneo).  
 Type : Ad., Gunong Mulu, Sarawak, iii.1898. John Waterstradt leg.
697. **Stachyris guttata swinhoei** Rothsch. = *Stachyris guttata swinhoei*.  
*Stachyris guttata swinhoei* Rothschild, *Bull. B.O. Club*, xiv. p. 8 (October 1903—"Mt. Wuchi, Hainan").  
 Type : ♂ ad., Mt. Wuchi, Hainan, 28.iii.1903. Katsumata leg.



698. **Stachyris nigriceps coltarti** Har. = *Stachyris nigriceps coltarti*.

*Stachyris nigriceps coltarti* Harington, *Bull. B.O. Club*, xxxiii. p. 61 (November 1913—"Dibrugarh in Assam; Naga and Chin Hills, and the Bhamo Hills").

Type: ♀ ad., Margherita, Upper Assam, 4.xii.1901. H. N. Coltart leg.

699. **Stachyris natunensis** Hart. = *Stachyris nigriceps natunensis*.

*Stachyris natunensis* Hartert, *Nov. Zool.* i. p. 470 (1894—Natuna Islands, Bunguran).

Type: ♂ ad., Bunguran, 5.x.1893. Alfred Everett leg.

This form is very near *S. n. davisoni*, but differs by the less rufescent, somewhat more olivaceous upperside.

700. **Stachyris borneensis** Sharpe = *Stachyris nigriceps borneensis*.

*Stachyris borneensis* Sharpe, *Ibis*, 1887. p. 449 (Mt. Kina Balu, Borneo).

Type: ♂ ad., Kina Balu, 25.iii.1887. John Whitehead leg.

701. **Proparus brunnea argutus** Hart. = *Proparus brunneus argutus*.

*Proparus brunnea argutus* Hartert, *Nov. Zool.* xvii. p. 231 (1910—Hainan).

Type: ♂ ad., Mt. Wuchi, Hainan, 25.iii.1903. Katsumata leg.

702. **Alcippe collaris** Walden = *Proparus rufogularis*.

*Alcippe collaris* Walden, *Ann. & Mag. Nat. Hist.* xiv. 1874. p. 156 (1874—One single ♂, Sadya, Assam. Day leg.).

Type: ♂ ad., Sadya, Upper Assam, 12.i.1874. Day leg. (Bought with the Elwes Collection.)

703. **Proparus nipalensis rufescentior** Hart. = *Proparus nipalensis rufescentior*.

*Proparus nipalensis rufescentior* Hartert, *Nov. Zool.* xvii. p. 231 (1910—Hainan).

Type: ♂ ad., Mt. Wuchi, Hainan, 28.iii.1903. Katsumata leg.

704. **Alcippe haringtoniae** Hart. = *Proparus poecephalus haringtoniae*.

*Alcippe haringtoniae* Hartert, *Bull. B.O. Club*, xxv. p. 10 (October 1909—Bhamo, Upper Burma).

Type: ♂ ad., Bhamo, 29.iii.1909. Colonel H. H. Harington leg.

705. **Corythocichla crassa** Sharpe = *Turdinulus crassus*.

*Corythocichla crassa* Sharpe, *Ibis*, 1889. p. 391 (Kina Balu).

Type: ♀ ad., Kina Balu, N. Borneo, 8,000 feet, 15.ii.1888. John Whitehead leg.

This is a typical *Turdinulus*.

† 706. **Turdinulus humei** Hartert = *Turdinulus epilepidotus granti*.

*Turdinulus granti* Richmond, *Proc. U.S. Nat. Mus.* xxii. p. 320 (1900—Lower Siam).

*Turdinulus humei* Hartert, *Nov. Zool.* ix. p. 564 (1902—Gunong Tahan, Eastern Malay Peninsula).

Type: ♂ ad., Gunong Tahan, 1,500 feet, September 1901. John Waterstradt leg.

707. **Turdinulus exsul** Sharpe = *Turdinulus epilepidotus exsul*.

*Turdinulus exsul* Sharpe, *Ibis*, 1888. p. 479 (Kina Balu).

Type: ♂ ad., Kina Balu, North Borneo, 4,000 feet, May 10th, 1888. John Whitehead leg.

708. **Turdinulus roberti hainanus** Hart. = *Turdinulus roberti hainanus*.

*Turdinulus roberti hainanus* Hartert, *Nov. Zool.* xvii. p. 230 (1910—Hainan).

Type: ♂ ad., Mt. Wuchi, Hainan, 25.iv.1903. Katsumata leg.

(?) † 709. **Crateroscelis rufobrunnea** R. & H. = *Crateroscelis murina* ?

*Crateroscelis rufobrunnea* Rothschild & Hartert, *Bull. B.O. Club*, xi. p. 25 (1900—"Mt. Maori, a little west of Humboldt Bay, in Dutch New Guinea").

Type: Juv., Mt. Maori, west of Humboldt Bay, January 1899. J. Dumas leg.

This is apparently the young of *Crateroscelis murina*, but our juveniles from Southern Papua are not quite so dark, and the determination of subspecies of this species is still in doubt.

710. **Crateroscelis pectoralis** Rothschild & Hart. = *Crateroscelis pectoralis*.

*Crateroscelis pectoralis* Rothschild & Hartert, *Bull. B.O. Club*, xi. p. 25 (1900—Owen Stanley Range, Mt. Cameron, etc.) (figured in *Nov. Zool.* 1901).

Type: ♂ ad., Mt. Cameron, Owen Stanley Range, S.E. New Guinea, 21.viii.1896. A. G. Anthony leg.

711. **Ptilopyga mindanensis** Blas. = *Ptilocichla mindanensis*.

*Ptilopyga mindanensis* Blasius, *Braunschweigische Anzeigen*, No. 94, April 15, 1889, *Journ. f. Orn.* 1890. p. 146 (Mindanao); *Ptilocichla* (?) *Mindanensis* nov. spec. Steere, *List B. Mamm. Exped. Philippines*, p. 18 (1889).

Type: ♂ ad., Davao, Mindanao, 9.viii.1889. Dr. C. Platen leg. (Exchanged from the late Mr. Nehr Korn.)

712. **Malacopteron cinereum bungurense** Hart. = *Setaria cinerea bungurenensis*.

*Malacopteron cinereum bungurense* Hartert, *Nov. Zool.* i. p. 470 (1894—Bunguran Island, Natuna group).

Type: ♂ ad., Bunguran Island, 13.x.1893. Alfred Everett leg.

[*Setaria kalulongae* (Sharpe): "Cotype" and topotype, Mount Kalulong, Borneo, February. Charles Hose leg. Marked "cotype" by the author—we now call it paratype.]

713. **Erythrocichla bicolor whiteheadi** Hart. = *Erythrocichla bicolor whiteheadi*.

*Erythrocichla bicolor whiteheadi* Hartert, *Bull. B.O. Club*, xxxvi. p. 36 (December 1915—North Borneo).

Type: ♂ ad., Benkoker, North Borneo, 11.x.1885. John Whitehead leg.

† 714. *Ifrita coronata* Rothsch. = *Ifrita kowaldi*.

*Todopsis kowaldi* De Vis, *Report on B. from Brit. New Guinea*, p. 3 (1889—Mts. Brit. New Guinea).

*Ifrita coronata* Rothschild, *Bull. B.O. Club*, vii. p. liv. (1898—"Low country east of Port Moresby"?)

Probably wrong, inhabits only fairly high elevations in the mountains!) Figured: *Nov. Zool.* 1899. pl. iii. fig. 1.

Type: "Low country east of Port Moresby"—*errore!* Must be Owen Stanley Mts. Bought, apparently collected by some prospector or native.

Professor Oscar Neumann called my attention to the fact that *Todopsis kowaldi* is an earlier name for *Ifrita coronata*. There is no doubt about it, but it is inconceivable why, and a bad misjudgment to even compare *Ifrita* with the genus *Todopsis*! It makes study very difficult and causes loss of time and errors if birds are described in entirely wrong genera.

715. *Bathmocercus vulpinus* Rehw. = *Bathmocercus rufus vulpinus* ♂.

*Bathmocercus vulpinus* Reichenow, *Nov. Zool.* ii. p. 160 (1895—Aruwimi River).

Type: ♂ ad., Aruwimi River, Eastern Congo basin. W. Bonny leg., member of Stanley's Emin Pasha Relief Expedition (Rear Column).

† 716. *Bathmocercus murinus* Rehw. = *Bathmocercus rufus vulpinus* ♀.

*Bathmocercus murinus* Reichenow, *Nov. Zool.* ii. p. 160 (1895—Aruwimi River).

Type: ♀ ad., Aruwimi River. W. Bonny leg.

It is now well known that the greyish specimens are the females, the rufous ones the males. Reichenow was in error when (*Vög. Afr.* iii. p. 742) he placed *B. jacksoni* as a synonym of *B. rufus rufus*. *B. jacksoni* is, however, probably a synonym of *B. rufus vulpinus*, but more Aruwimi specimens are desirable for comparison. Specimens from west of Lakes Albert Edward and Tanganyika, Toro, and North Kavirondo (Grauer, van Someren, and Meinertzhagen coll.) agree *inter se*, and, I think, with the Aruwimi specimens, which, however, are bad skins.

717. *Ptyrticus turdinus* Hartl. = *Ptyrticus turdinus*.

*Ptyrticus turdinus* Hartlaub, *Zoolog. Jahrb.* ii. p. 315 (1887—Tomajá, Mombuttu).

Type: ♀ ad., Tomajá. Emin Pasha leg.

This very interesting bird remained unique, until it was rediscovered by the late Boyd Alexander.

718. *Lioptilus rufocinctus* Rothsch. = *Lioptilus rufocinctus*.

*Lioptilus rufocinctus* Rothschild, *Bull. B.O. Club*, xxiii. p. 6 (October 1908—Rugege forest, S.E. of Lake Kivu).

Type: "♀" ad., Rugege forest, S.E. of Lake Kivu, 16.xii.1907. Rudolf Grauer leg.

† 719. *Turdinus pyrrhopterus kivuensis* Neum. = *Malacocincla pyrrhoptera*.

*Turdinus pyrrhopterus kivuensis* Neumann, *Bull. B.O. Club*, xxi. p. 55 (1908—Kivu Volcanoes).

Type: "♀" ad., Mt. Sabjingo, Kivu Volcanoes, 2,700 m., 30.viii.1907. Rudolf Grauer leg. No. 1,128.

It is quite clear that Neumann, when describing his *kivuensis*, compared it with immature specimens, which have the head less grey, more or less brown. This is clearly shown by Dr. van Someren's splendid series.

**720. *Turdinus moloneyanus iboensis* Hart. = *Turdinus moloneyanus iboensis*.**

*Turdinus moloneyanus iboensis* Hartert, *Bull. B.O. Club*, xix. p. 84 (May 1907—Oguta, in the Ibo country, Southern Nigeria).

Type: ♂ ad., Oguta, 19.xi.1901. W. J. Ansorge leg. No. 400.

*Turdinus phoebei* Kemp, *Bull. B.O. Club*, xxi. p. 111 (June 1908), from the same country, is a synonym of *iboensis*!

**721. *Turdinus ugandae* van Someren = *Turdinus fulvescens ugandae*.**

*Turdinus ugandae* van Someren, *Bull. B.O. Club*, xxxv. p. 125 (1915—"Uganda forests").

Type: ♂ ad., Sezibwa River, Chagwe province, Uganda, 16.xi.1914. Dr. V. G. L. van Someren leg. No. 169.

(We have probably an undescribed form, another subspecies of *fulvescens*, a female from Canhoa, Angola, but it would perhaps be rash to describe it without further material.)

**722. *Turdinus canicapillus* Sharpe = *Malacocincla pyrrhogenys canicapilla*.**

*Turdinus canicapillus* Sharpe, *Ibis*, 1887. p. 450 (Kina Balu, Borneo).

Type: ♂ ad., Kina Balu, 3,000 feet, 25.iii.1887. John Whitehead leg. No. 1,354.

**723. *Malacocincla sepiaria tardinata* Hart. = *Malacocincla sepiaria tardinata*.**

*Malacocincla sepiaria tardinata* Hartert, *Bull. B.O. Club*, xxxvi. p. 35 (1915—"Eastern Malay Peninsula").

Type: ♂ ad., Gunong Tahan, Eastern Malay Peninsula, 1,000 feet, November 1901. John Waterstradt leg.

**724. *Graueria vittata* Hart. = *Graueria vittata*.**

*Graueria vittata* Hartert, *Bull. B.O. Club*, xxiii. p. 8 (1908—"High forest west of Lake Albert Edward and Rugege Forest, S.E. of Lake Kivu").

Type: ♂, primeval forest, 90 kilometres west of Lake Albert Edward, 1,600 m., 8.ii.1908. Rudolf Grauer leg. No. 1,987.

**725. *Macrosphenus flavicans ugandae* van Someren = *Macrosphenus flavicans ugandae*.**

*Macrosphenus flavicans ugandae* van Someren, *Bull. B.O. Club*, xxxv. p. 126 (1915—"Uganda forests").

Type: ♂ ad., Mabira Forest, 14.i.1914. V. G. L. van Someren leg.

**726. *Pseudotharrhaleus caudatus* Grant = *Pseudotharrhaleus caudatus*.**

*Pseudotharrhaleus caudatus* Grant, *Bull. B.O. Club*, iv. p. xl. (1895—North Luzon).

Type: ♀ ad., Mt. Data, North Luzon, 7,500 feet, 25.i.1895. John Whitehead leg. No. A 48. (Specimen marked "Type of ♀.—J. W.")

727. *Pseudotharrhaleus unicolor* Hart. = *Pseudotharrhaleus unicolor*.

*Pseudotharrhaleus unicolor* Hartert, *Bull. B.O. Club*, xiv. p. 74 (April 1904—Mt. Apo, Mindanao).

Type : ♀, Mt. Apo, 3,000 feet, November 1908. John Waterstradt leg. No. 114.

(Mearns, *Proc. Biol. Soc. Washington*, xviii. p. 2, 1905, and *Proc. U.S. Nat. Mus.* xxxvi. p. 441, 1909—has described two other *Pseudotharrhaleus* from Mindanao. Future research must show if this is correct. I am now convinced that my *unicolor* might perhaps be a young bird, though fully grown. The wing-measure is not 92·5, which was a typographical error for 62·5, and I now measure it 63 mm. We know so far nothing of the changes of plumage in these rare birds, but if my *unicolor* is in its juvenile garb, then Mearns's *griseipectus* may be expected to be the adult of it, and thus a synonym. Cf. *Ibis*, 1906, p. 479. Possibly *Ps. malindangensis* Mearns is its northern representative on the island. The greater size is not worth much as a distinguishing character. I measure the wing of the male of *P. caudatus* as 65, that of the female as 63 mm., showing that the sexes differ slightly in size.)

728. *Androphilus accentor* Sharpe = *Androphilus accentor*.

*Androphilus accentor* Sharpe, *Ibis*, 1888. p. 390 (Kina Balu, N. Borneo).

Type : ♂ ad., Kina Balu, 8,000 feet, 3.ii.1888. John Whitehead leg. No. 1,939.

† 729. *Androphilus everetti* Hart. = *Androphilus castaneus castaneus*.

*Androphilus everetti* Hartert, *Nov. Zool.* iii. p. 69 (1896—Indrulaman, Bonthain Peak, S. Celebes). [*Turdinus castaneus* Büttikofer, *Notes Leyden Mus.* xv. 1893. p. 261 (N. Celebes).]

Type : ♀ ad., Indrulaman, October 1895. Alfred Everett leg.

730. *Androphilus disturbans* Hart. = *Androphilus castaneus disturbans*.

*Androphilus disturbans* Hartert, *Nov. Zool.* vii. p. 238 (1900—Mt. Mada, Buru).

Type : ♂ juv., Mt. Madang, 3,000 feet, September 1898. J. Dumas leg.

The young bird was not fit to show the real affinities, but Stresemann obtained an adult female from Mt. Fogha, 4,500 feet high, on Buru, which proves to my mind that *disturbans* is a subspecies of *A. castaneus*.

731. *Androphilus disturbans musculus* Stres. = *Androphilus castaneus musculus*.

*Androphilus disturbans musculus* Stresemann, *Nov. Zool.* xxi. p. 136 (1914—Middle and West Ceram).

Type : ♀ ad., Goonoong Pinaia, Middle Ceram, 7,500 feet, 18.viii.1911. Erwin Stresemann leg. No. 875.

732. *Androphilus viridis* Rothschild & Hart. = *Androphilus viridis*.

*Androphilus viridis* Rothschild & Hartert, *Bull. B.O. Club*, xxix. p. 33 (1911—Mt. Goliath).

Type : ♂ ad., Mt. Goliath, eastern part of Snow Mountains Range in Central Dutch New Guinea, 9.ii.1911. A. S. Meek leg. No. 5,346.

So far only this one specimen of this striking species is known.



(?) 733. *Argya sharpii* Ogilvie-Grant & Reid = *Crateropus rubiginosus sharpii* ?.  
*Argya sharpii* Ogilvie-Grant & Reid, *Ibis*, 1901. p. 662 (Shebelli).

Type : ♂ ad., Shebelli, 27. viii. 1894. Dr. A. Donaldson Smith leg. No. 201.

Though much larger, this specimen agrees in other ways perfectly with *Crateropus (Argya) rubiginosus rubiginosus*, and it was rash to describe it as "new species" from this one specimen. Without further material it cannot be ascertained whether this is a distinct subspecies or an exceptionally large specimen.

734. *Crateropus caudatus altirostris* Hart. = *Crateropus (Argya) altirostris*.

*Crateropus caudatus altirostris* Hartert, "Vög. pal. Fauna, p. 623 (1909—"An der Nordspitze des Persischen Golfs, au der Mündung des vereinigten Euphrat und Tigris").

Type : Fao, 1893. W. D. Cumming leg.

Though very much like *C. (Argya) caudatus huttoni*, this form must be regarded as a separate species, because a form of *C. caudatus* occurs together with it, in the same region.

735. *Crateropus plebeius kikuyuensis* Neum. = *Crateropus plebeius kikuyuensis*.

*Crateropus plebeius kikuyuensis* Neumann, *Orn. Monatsber.* 1906. p. 7 ("Kikuyu").

Type : ♀ ad., Escarpment station, Kikuyu Mts., February 1901, 6,500 feet. William Doherty leg.

This form is very closely allied to *C. p. emini* Neum. from "Uniamwesi, Länder am Tanganyika, Tabora, Usagara," but is slightly darker. It is also close to *C. p. hypostictus* from Angola, but the latter is distinctly lighter in colour.

736. *Crateropus smithi lacuum* Neum. = *Crateropus leucopygius lacuum*.

*Crateropus smithi lacuum* Neumann, *Bull. B.O. Club*, xiv. p. 15 (1903—"The Lake Valley south of Shoa, from Lake Zuai to Lake Gandjule, and the mountain-slopes east of that valley").

Type : ♂ ad., Alelu, north of Lake Abassi, 9. xii. 1900. Oscar Neumann leg. No. 331.

737. *Crateropus smithi omoensis* Neum. = *Crateropus leucopygius omoensis*.

*Crateropus smithi omoensis* Neumann, *Bull. B.O. Club*, xiv. p. 15 (1903—"The countries of the Omo System—Uba, Gofa, Doko, Malo, and Kaffa, and also the head-waters of the Gelo River, Binescho and Schecho").

Type : ♂ ad., Senti River between Uba and Gofa, 30. i. 1901. Oscar Neumann leg. No. 713.

(Cf. also *Journ. f. Orn.* 1904, p. 553, 1906, pp. 261, 262.)

*C. l. lacuum* is nearest to *C. l. smithi* and stands between the latter and *omoensis*, but is constant and well distinguishable from both. Only one specimen of *C. l. lacuum*, No. 391, approaches *C. l. omoensis*.

738. *Crateropus tenebrosus* Hartl. = *Crateropus tenebrosus*.

*Crateropus tenebrosus* Hartlaub, *Journ. f. Orn.* 1883. p. 425 (Kudurma); id. *Zool. Jahrb.* 1887. p. 313.

Type : ♂ ad., Kudurma, S.E. Bahr-el-Ghazal, 10. xi. 1882. Emin Pasha leg. No. 260.

Neumann, *Journ. f. Orn.* 1904, p. 552, says: "Diese Art ist sicher der geographische Vertreter des *C. melanops*." I am not so sure about this, and should like to leave the question open. *C. tenebrosus* is still extremely rare. All specimens known in collections are four in number: the type in Tring; 2 specimens collected by Donaldson Smith at Fort Berkeley; 1 Mt. Baginzi, Bahr-el-Ghazal, Christy leg. Mr. Butler (cf. *Ibis*, 1918, p. 695) says that it is "quite a common bird in the vicinity of Kajo Kaji, in the Lado Enclave," but he does not seem to have collected a single specimen.

739. **Cataponera turdoides** Hart. = *Cataponera turdoides*.

*Cataponera turdoides* Hartert, *Nov. Zool.* iii. p. 70 (1896—Bonthain Park, South Celebes).

Type: ♀ ad., Bonthain Peak, 6,000 feet, October 1895. Alfred Everett leg.

740. **Garrulax schistochlamys** Sharpe = *Garrulax schistochlamys*.

*Garrulax schistochlamys* Sharpe, *Ibis*, 1888. p. 479 (Kina Balu, North Borneo).

Type: ♂ ad., Kina Balu, 15.v.1888. John Whitehead leg. No. 2,538.

741. **Allocotops calvus** Sharpe = *Allocotops calvus*.

*Allocotops calvus* Sharpe, *Ibis*, 1888. p. 389 (Kina Balu).

Type: ♂ ad., Kina Balu, North Borneo, 4,000 feet, 27.iii.1888. John Whitehead leg. No. 2,321.

742. **Trochalopteron canorum owstoni** Rothsch. = *Ianthocincla (Trochalopteron) canorum owstoni*.

*Trochalopteron canorum owstoni* Rothschild, *Bull. B.O. Club*, xiv. p. 8 (1903—Hainan).

Type: ♀ ad., Mt. Wuchi, Hainan, 29.iii.1903. Katsumata leg.

743. **Ianthocincla lineatum grisescentior** Hart. = *Ianthocincla (Trochalopteron) lineatum grisescentior*.

*Ianthocincla lineatum grisescentior* Hartert, *Vög. pal. Fauna*, i. p. 636 (1909—"Westlicher Himalaya: Kamaon, Simla, bis Kaschmir in Höhen von 5,000—8,000 engl. Fuss").

Type: Ad., Simla, 15.xi.1880. H. J. Elwes leg. No. 1,548.

744. **Ianthocincla lineatum gilgit** Hart. = *Ianthocincla (Trochalopteron) lineatum gilgit*.

*Ianthocincla lineatum gilgit* Hartert, *Vög. pal. Fauna*, i. p. 636 (1909—"Hohe Berge des nord-östlicheren Kaschmir." This is a misprint or penslip for "nordwestlichen," as Gilgit is in north-west Kashmir!).

Type: ♀ ad., Gilgit, 3.ii.1880. J. Scully leg.

745. **Trochalopteron phoeniceum bakeri** Hart. = *Ianthocincla (Trochalopteron) phoeniceum bakeri*.

*Trochalopteron phoeniceum bakeri* Hartert, *Bull. B.O. Club*, xxiii. p. 10 (1908—"Mountain Ranges south of the Brahmaputra").

Type: ♂ ad., Laisung, North Cachar Hills, 23.ii.1896. E. C. Stuart Baker leg. No. 32,960.

746. *Ianthocincla affinis oustaleti* Hart. = *Ianthocincla (Trochalopteron) affinis oustaleti*.

*Ianthocincla affinis oustaleti* Hartert, *Vög. pal. Fauna*, i. p. 633 (1909—Yunnan).

Type : Ad., Tsékou, Yunnan. Father Soulié leg. No. 349.

Confirmed by a series from the Likiang Range. Cap more blackish, back less rufescent, underside more greyish, less rufescent.

748. *Ianthocincla rufogularis assamensis* Hart. = *Ianthocincla rufogularis assamensis*.

*Ianthocincla rufogularis assamensis* Hartert, *Vög. pal. Fauna*, i. p. 635 (1909—"Assam : Patkai-Khasia- und Garo-Berge").

Type : ♂ ad., Margherita, 12.i.1902. Dr. H. N. Coltart leg. No. 12,102.

749. *Ianthocincla rufogularis occidentalis* Hart. = *Ianthocincla rufogularis occidentalis*.

*Ianthocincla rufogularis occidentalis* Hartert, *Vög. pal. Fauna*, i. p. 635 (1909—"Nordwestlicher Himalaya von Kumaon bis Kaschmir").

Type : Ad., Dehra Dun, Kashmir, ex Coll. Marshall. No. 11,109.

750. *Pomatorhinus tickelli hainanus* Roths. = *Pomatorhinus tickelli hainanus*.

*Pomatorhinus tickelli hainanus* Rothschild, *Bull. B.O. Club*, xiv. p. 9 (1903—Hainan).

Type : ♂ ad., No-tai, Hainan, 30.ix.1902. Katsumata leg. No. 90 a.

751. *Pomatorhinus schisticeps fastidiosus* Hart. = *Pomatorhinus schisticeps fastidiosus*.

*Pomatorhinus schisticeps fastidiosus* Hartert, *Bull. B.O. Club*, xxxvi. p. 81 (1916—Trang and Kao Nong, Bandon, Northern Malay Peninsula).

Type : ♂ ad., Trang, 8.i.1910. Ex Mus. Selangor.

752. *Pomatorhinus schisticeps cryptanthus* Hart. = *Pomatorhinus schisticeps, cryptanthus*.

*Pomatorhinus schisticeps cryptanthus* Hartert, *Bull. B.O. Club*, xxxvi. p. 35 (1915—"Hills south of Brahmaputra, Cachar to Patkoi Hills").

Type : ♂ ad., Margherita, Upper Assam, 22.ii.1902. H. N. Coltart leg.

753. *Eupetes castanonotus saturatus* R. & H. = *Eupetes castanonotus saturatus*.

*Eupetes castanonotus saturatus* Rothschild & Hartert, *Orn. Monatsber.* xix. p. 157 (1911—Snow Mountains, New Guinea).

Type : ♂, Snow Mountains of New Guinea, 2,000 feet, 24.viii.1910. Albert S. Meek Coll. No. 4,624.

754. *Cinclosoma alisteri* Math. = *Cinclosoma alisteri*.

*Cinclosoma alisteri* Mathews, *Bull. B.O. Club*, xxvii. p. 16 (1910—West Australia).

Type : ♂ ad., Waddilinia, W. Australia, 22.ix. No. 9,929.

† 755. **Bradyornis muscipapinus** Hartl. = *Muscicapa striata striata*.

*Bradyornis muscipapinus* Hartlaub, *Abhandl. nat. Ver. Bremen*, xii. p. 9 (1891—Bagamoyo, E. Africa).

Type : ♀ ad., Bagamoyo. Emin Pasha leg.

(Cf. *Bull. B.O. Club*, xxxiii. p. 65.)

† 756. **Hemichelidon cinereiceps** Sharpe = *Muscicapa (Hemichelidon) ferruginea*.

*Hemichelidon cinereiceps* Sharpe, *Ibis*, 1887. p. 441 (Kina Balu, Borneo).

Type : Kina Balu, 26.ii.1887. John Whitehead leg. No. 1,032.

757. **Alseonax murinus djamdjamensis** Neum. = *Muscicapa (Alseonax) murina djamdjamensis*.

*Alseonax murinus djamdjamensis* Neumann, *Journ. f. Orn.* 1905. p. 206 (Djamdjam).

Type : ♀, Gerbitscho, Djamdjam, about 2,800 m., 14.xii.1900. Oscar Neumann leg. No. 411.

758. **Muscicapa ansorgei** Hart. = *Muscicapa (Alseonax) ansorgei*.

(Perhaps subspecies of *griseogularis*.)

*Muscicapa ansorgei* Hartert, *Bull. B.O. Club*, xxv. p. 95 (May 1910—Ogowé River, Gaboon).

Type : ♀, Ugowo, Ogowé River, Gaboon, 27.viii.1907. W. J. Ansorge leg. No. 722.

759. **Muscicapa reichenowi** Neum. = *Muscicapa (Dioptrornis) chocolatinus reichenowi*.

*Muscicapa reichenowi* Neumann, *Orn. Monatsber.* 1902. p. 10 (one specimen near Budda, in Gimirra, west of Kaffa).

Type : ♂ ad., Budda, Gimirra, 17.iv.1901. Oscar Neumann leg. No. 1,129.

This form requires confirmation. The type specimen is in badly worn plumage, but it seems indeed to be much darker than *M. (D.) ch. chocolatinus*. It can, however, not be more than a subspecies of the latter.

760. **Dioptrornis semicinctus** Hart. = *Muscicapa (Dioptrornis) semicinctus*.

*Dioptrornis semicinctus* Hartert, *Bull. B.O. Club*, xxxvii. p. 4 (1916—Kabakaba, Eastern Congo Free State).

Type : ♀ ad., Kabakaba, North-Eastern Congo Free State, 5.ix.1906. C. F. Camburn leg. No. 408.

This is also known, so far, from a single specimen only, but it appears to be a perfectly distinct species.

761. **Muscicapa toruensis** Hart. = *Muscicapa (Dioptrornis) toruensis*.

*Muscicapa toruensis* Hartert, *Nov. Zool.* 1900. p. 37 (Toru, Uganda Protectorate).

Type : ♀ ad., Fort Gerry, Toru, 9.iv.1899. W. J. Ansorge leg. No. 351.

Besides the type from Toru we have now 16 skins, all collected by Grauer in the Kivu region, Rugege forest, west and north-west of Lake Tanganyika, Kwidjwi Island, near Lake Albert Edward and Baraka. The young is darker

on the back and spotted with white, while the feathers of the underside have blackish edges.

762. *Microeca flavigaster laetissima* Rothsch. = *Microeca flavigaster laetissima*.

*Microeca flavigaster laetissima* Rothschild, *Bull. B.O. Club*, xxxvii. p. 4 (1916—Queensland).

Type : ♀ ad., Cardwell, Queensland.

763. *Microeca oscillans* Hart. = *Microeca oscillans*.

*Microeca oscillans* Hartert, *Nov. Zool.* 1897. pp. 170. 524 (South Flores).

Type : ♂ ad., South Flores, about 3,500 feet. Alfred Everett leg.

764. *Microeca addita* Hart. = *Microeca addita*.

*Microeca addita* Hartert, *Nov. Zool.* 1900. p. 234 ("Mount Mada, 3,000 feet high").

Type : ♂ ad., Mount Madang, Buru, August—September 1898. J. Dumas leg.

765. *Microeca griseiceps occidentalis* R. & H. = *Microeca griseiceps occidentalis*.

*Microeca griseiceps occidentalis* Rothschild & Hartert, *Nov. Zool.* 1903. p. 471 ("Warmendi," Arfak).

Type : "Warmendi," Arfak, 24.i.1876, "♂." From Bruijn's hunters. No. B 124.

This bird is undoubtedly different from *M. g. griseiceps*, but so far we know only this one specimen.

† 766. *Microeca viridiflava* Rothsch. & Hart. = *Microeca papuana*.

*Microeca papuana* Meyer, *Sitzungsber. Ges. Isis*, 1875, p. 74 (Arfak).

*Microeca viridiflava* Rothschild & Hartert, *Bull. B.O. Club*, xi. pp. 26. 44 (1900—Mt. Cameron).

Type : ♀ ad., Mt. Cameron, 6,500 feet, 1.viii.1896. A. S. Anthony leg. (Fig. *Nov. Zool.* 1901.)

(This is probably a subspecies of *Microeca hypoxantha* Scl. from Tenimber [Timorlaut], of which we have one of the typical specimens collected by H. O. Forbes.)

767. *Muscicapa narcissina jakuschima* Hart. = *Muscicapa (Zanthopygia) narcissina jakuschima*.

*Muscicapa narcissina jakuschima* Hartert, *Vög. d. pal. Fauna*, p. 491 (1907—Yaku Island, south of Kiu-shiu).

Type : ♂ ad., Yaku-shima (Yaku I.), 18.x.1904. No. 1,064. Collected by Alan Owston's Japanese birdskinners.

768. *Stoparola panayensis nigriloris* Hart. = *Eumyias panayensis nigriloris*.

*Stoparola panayensis nigriloris* Hartert, *Bull. B.O. Club*, xiv. p. 80 (1904—Mt. Apo, Mindanao).

Type : ♂ ad., Mt. Apo, 3,000 feet, October 1908. John Waterstradt leg.

(We have also paratypes of Grant's *Stoparola nigrimentalis*, rectius *S. panayensis nigrimentalis*, from North Luzon.)



769. *Stoparola panayensis obiensis* Hart. = *Eumyias panayensis obiensis*.

*Stoparola panayensis obiensis* Hartert, *Bull. B.O. Club*, xxxi. p. 2 (1912—Obi Major).

Type : ♂ ad., Obi Major, 2,000 feet, 26.iv.1902. John Waterstradt leg.

770. *Stoparola cerviniventris* Sharpe = *Eumyias indigo cerviniventris*.

*Stoparola cerviniventris* Sharpe, *Ibis*, 1887. p. 444 (Borneo).

Type : ♂ ad., Kina Balu, Borneo, 3,000 feet, 11.iii.1887. John Whitehead leg. No. 1,094.

771. *Siphia omissa* Hart. = *Cyornis banyumas omissa*.

*Siphia omissa* Hartert, *Nov. Zool.* iii. p. 171 (1896—Bonthain Peak, S. Celebes).

Type : ♂ ad., Indrulaman, Bonthain Peak, September 1895. Alfred Everett leg.

772. *Cyornis banyumas peromissa* subsp. nov.

Differs from *C. r. omissa* by its paler upperside and shorter wings. Wings : ♂, 72, 72, 73 ; ♀, 69 mm. (Against ♂, 75, 76.5, 79 ; and ♀ 72 and 73.5 in *C. r. omissa* ! ) The blue patch on the sides of the chest is also less developed than in *omissa* ; and in the ♀ the bright-blue superciliary line is obsolete, while the small feathers above and below the eye are more rufous.

Type : ♂ ad., Selayar, south of Celebes, November 1895. Alfred Everett leg.

773. *Siphia djampeana* Hart. = *Cyornis banyumas djampeana*.

*Siphia djampeana* Hartert, *Nov. Zool.* iii. p. 172 (1896—Djampea Island).

Type : ♂ ad., Djampea, December 1895. Alfred Everett leg.

774. *Siphia kalaoensis* Hart. = *Cyornis banyumas kalaoensis*.

*Siphia kalaoensis* Hartert, *Nov. Zool.* iii. p. 172 (1896—Kalao Island).

Type : ♂ ad., Kalao, December 1895. Alfred Everett leg.

One is tempted to distinguish two species, one with the female brown, another with blue upperside, but considering the very great similarity of the males of some forms I treat all these birds as subspecies of *banyumas*, which is the oldest name of the group.

I would thus recognize the following forms known to me :

*Cyornis banyumas banyumas* (Horsf.), Java.

„ „ *rufigastra* (Raffl.), Sumatra.

This bird has apparently not been found again and the type is not in the British Museum ! It was supposed to be the same as *banyumas*, but, considering that every other island has different forms, it is much more probable that the Sumatran form is also different ! Recent collectors have not procured this species at all. It is also possible that *rufigastra* was *caeruleata*, which is apparently the older name of *nigrigularis* ; we have received a skin of this latter species said to have been shot in Palembang, S.E. Sumatra, by a Mr. Völeker.

*Cyornis banyumas dialilaema* (Salvad.). Apparently Malay Peninsula and Burmese provinces.

*Cyornis banyumas rufifrons* Wall., Borneo.

„ „ *omissa* (Hart.), S. Celebes.

„ „ *peromissa* Hart., Saleyer.

„ „ *djampeana* (Hart.), Djampea.

„ „ *kalaoensis* (Hart.), Kalao.

„ „ *philippinensis* Sharpe, Philippines.

According to Finsch (1901) *simplex* would be the older name for “*philippinensis*,” but as the type had no locality, this requires further confirmation !

*C. b. omissa* is of course not the same as *C. banyumas banyumas*, as Finsch said. Not only can the males be distinguished, but the female of *banyumas* has a brown upperside, that of *omissa* a blue one.

775. *Cyornis hyacinthina kühni* Hart. = *Cyornis hyacinthina kühni*.

*Cyornis hyacinthina kühni* Hartert, *Nov. Zool.* 1904. p. 204 (Wetter Island).

Type : ♂ ad., Wetter, 24.ix.1902. Heinr. Kühn leg. No. 5,467.

776. *Siphia erithacus* Sharpe = *Cyornis erithacus*.

*Siphia erithacus* Sharpe, *Ibis*, 1888. p. 199 (Palawan).

Type : ♂ ad., Taguso, Palawan, 26.vi.1887. John Whitehead leg. No. 1,438.

777. *Siphia bonthaina* Hart. = *Cyornis bonthaina*.

*Siphia bonthaina* Hartert, *Nov. Zool.* 1896. p. 157 (Bonthain Peak, South Celebes).

Type : ♂ ad., Tasoso, Bonthain Peak, 4,000 feet, October 1895. Alfred Everett leg.

778. *Siphia innexa* Swinh. = *Muscicapa (Dendrobiastes) hyperythra innexa*.

*Siphia innexa* Swinhoe, *Ibis*, 1886. p. 394 (a unique specimen, Formosa).

Type : ♂ ad., Formosa, 7.i.1866. Swinhoe Coll.

779. *Muscicapula hyperythra audacis* Hart. = *Muscicapa (Dendrobiastes) hyperythra audacis*.

*Muscicapula hyperythra audacis* Hartert, *Nov. Zool.* 1906. p. 296 (Babber, S.W. Islands).

Type : ♂ ad., Tepa, Babber, 6.ix.1905. H. Kühn leg. No. 6,864.

780. *Muscicapula hyperythra pallidipectus* Hart. = *Muscicapa (Dendrobiastes) hyperythra pallidipectus*.

*Muscicapula hyperythra pallidipectus* Hartert, *Nov. Zool.* 1903. p. 52 (Batjan).

Type : ♂ ad., Batjan, 5—7,000 feet, vii.1902. John Waterstradt leg.

781. *Dendrobiastes hyperythra negroides* Stres. = *Musc. (Dendrob.) hyperythra negroides*.

*Dendrobiastes hyperythra negroides* Stresemann, *Nov. Zool.* 1914. p. 125 (Seran).

Type of ♀ : Gunong Hoale, Ceram, 4.vii.1911. Erwin Stresemann leg. No. 692.

(Stresemann, *l.c.*, said : Typen ♂ G. Pinaia, No. 880, ♀ G. Hoale, No. 692, but the male cannot be found now and has unaccountably been lost ; there are, however, four other adult males in the collection.)

782. **Dendrobiastes hyperythra alifurus** Stres. = *Musc. (Dendr.) hyperythra alifura*.

*Dendrobiastes hyperythra alifurus* Stresemann, *Nov. Zool.* xix. p. 330 (1912—Buru).

Type, as stated by the author : ♀, Gunong Fogha, Buru, 5,000 feet, 26.ii.1912. Erwin Stresemann. No. 1,076.

783. **Muscicapula nigrorum** Whiteh. = *Musc. (Dendr.) luzoniensis nigrorum*.

*Muscicapula nigrorum* Whitehead, *Bull. B.O. Club*, vi. p. xliii. (1897—Negros, in the Philippines).

Type : ♂ ad., Negros, Canloan Volcano, 6,700 feet, 23.iv.1896. John Whitehead leg. No. B 457.

784. **Dammeria henrici** Hart. = *Muscicapa (Dendrobiastes) henrici*.

*Dammeria henrici* Hartert, *Bull. B.O. Club*, viii. p. lviii. (1899—Dammer Island, in the Banda Sea).

Type : ♂ ad., Kumar, Dammer, 13.xi.1898. Heinr. Kühn leg. No. 1,038.

785. **Erythromyias buruensis** Hart. = *Erythromyias buruensis buruensis*.

*Erythromyias buruensis* Hartert, *Bull. B.O. Club*, viii. p. 31 (1899—Buru).

Type : ♂ ad., "Mt. Mada," Buru, 3,000 feet, September 1898. J. Dumas leg.

† 786. **Cryptolopha waigiensis** Hart. = *Gerygone neglecta neglecta*.

*Gerygone neglecta* Wallace, *Proc. Zool. Soc. London*, 1865. p. 475 ("Waigiou ; Mysol." Waigiou restricted terra typica, Mysol not correct).

*Cryptolopha waigiensis* Hartert, *Bull. B.O. Club*, xiii. p. 70 (1903—Waigiou).

Type : ♀, Waigiou, 15.xii.1902. John Waterstradt leg.

This, though really Wallace's *neglecta*, is by no means a typical *Gerygone*. (See footnote, *Nov. Zool.*, 1903, p. 473 !)

† 787. **Gerygone neglecta dohertyi** R. & H. = *G. neglecta virescens*.

"*Sylvia virescens* S. Müll." Blyth, *Ibis*, 1870. p. 169 footnote ("New Guinea").

*Pseudogerygone virescens* Finsch, *Notes Leyden Museum*, xx. p. 135 (1898—Lobo Bay, Salomon Müller Coll.).

*Gerygone neglecta dohertyi* Rothschild & Hartert, *Nov. Zool.* x. p. 473 (1903—Kapaur, 8 specimens).

Type : Kapaur, New Guinea, January 1897. William Doherty leg.

788. **Gerygone rosseliana** Hart. = *Gerygone rosseliana rosseliana*.

*Gerygone rosseliana* Hartert, *Nov. Zool.* 1899. p. 79 (Rossel Island, Louisiade group).

Type : ♂, Rossel Island, 5.ii.1898. A. S. Meek leg. No. 1,382.

789. *Gerygone rosseliana onerosa* Hart. = *Gerygone rosseliana onerosa*.

*Gerygone rosseliana onerosa* Hartert, *Nov. Zool.* vi. p. 209 (1899—St. Aignan, Louisiade group).

Type : ♂, St. Aignan Island, 5.ix.1897. A. S. Meek leg. No. 964.

790. *Gerygone magnirostris tagulana* R. & H. = *Gerygone magnirostris tagulana*.

*Gerygone magnirostris tagulana* Rothschild & Hartert, *Nov. Zool.* xxv. p. 318 (1918—Sudest Island, or Tugula, Louisiada group).

Type : ♂ ad., Mt. Riu or Rattlesnake, Sudest Island, 20.iv.1916. Eichhorn Bros. leg. No. 7,565 of the Meek collections.

791. *Gerygone magnirostris proxima* R. & H. = *Gerygone magnirostris proxima*.

*Gerygone magnirostris proxima* Rothschild & Hartert, *Nov. Zool.* xxv. p. 319 (1918—Fergusson Island, d'Entrecasteaux group).

Type : ♂, Fergusson Island, 3.i.1895. A. S. Meek leg. No. 1.

792. *Gerygone kühni* Hart. = *Gerygone inornata kühni*.

*Gerygone kühni* Hartert, *Nov. Zool.* 1900. p. 15 (Dammer Island).

Type : ♂ ad., Dammer, 13.x.1898. H. Kühn leg. No. 1,065.

793. *Gerygone kisserensis sequens* Hart. = *Gerygone inornata sequens*.

*Gerygone kisserensis sequens* Hartert, *Nov. Zool.* 1904. p. 205 (Romah Island).

Type : ♂ ad., Romah, 15.viii.1902. H. Kühn leg. No. 5,299 a.

794. *Gerygone everetti* Hart. = *Gerygone inornata everetti*.

*Gerygone everetti* Hartert, *Nov. Zool.* 1897. p. 267 (Savu and Timor. Terra typica restricta Savu ! Timor errore !)

Type : ♂, Savu Island, near Timor, August 1896. Alfred Everett leg.

795. *Miro dannefaerdi* Rothschild. = *Miro traversi dannefaerdi*.

*Miro dannefaerdi* Rothschild, *Nov. Zool.* i. p. 688 (1894—Snares Islands).

Type : ♂ ad., Snares Islands, south of New Zealand. Dannefaerd leg.

† 796. *Poecilodryas cyanus salvadorii* R. & H. = *Poecilodryas cyana subcyanea*.

*Poecilodryas cyanus salvadorii* Rothschild & Hartert, *Bull. B.O. Club*, xi. p. 26 (1900—Mts. Scratchley, Cameron, etc.).

*Poecilodryas subcyanea* De Vis, *Ibis*, 1897. p. 377 (S.E. New Guinea).

Type : ♂ ad., Mt. Cameron, 7,000 feet, 15.viii.1896. A. S. Anthony leg.

† 797. *Poecilodryas nigriventris* Hart. = *Poecilodryas vicaria*.

*Poecilodryas vicaria* De Vis, *Annual Report Brit. New Guinea*, 1890 to 1891, Appendix CC. p. 94 (1892—Mount Suckling).

*Poecilodryas nigriventris* Hartert, *Bull. B.O. Club*, xix. p. 51 (1907—Lower Mambare River).

Type : ♂ ad., Lower Mambare River, 5.v.1906. Albert S. Meek leg. No. A 2,813.

This species does not seem to occur on the southern side of the Owen-Stanley Mountains, but, besides from the Mambare River, we have now specimens from the Aicora River and from the Sattelberg.

798. **Poecilodryas albonotata griseiventris** R. & H. = *Poecilodryas albonotata griseiventris*.

*Poecilodryas albonotata griseiventris* Rothschild & Hartert, *Nov. Zool.* xx. p. 496 (1913—Mount Goliath).

Type: ♂ ad., Mount Goliath, in the eastern continuation of the "Snow Mountains" of New Guinea, 14.i.1911. A. E. Meek Coll. No. 5,454.

799. **Poecilodryas leucops nigro-orbitalis** R. & H. = *Poecilodryas (Tregellasia) leucops nigro-orbitalis*.

*Poecilodryas leucops nigro-orbitalis* Rothschild & Hartert, *Nov. Zool.* xx. p. 497 (1913—Snow Mountains).

Type: ♂ ad., Snow Mountains, 3,000 feet, 20.x.1910. A. S. Meek Coll. No. 4,862.

800. **Poecilodryas leucops albigularis** R. & H. = *Poecilodryas (Tregellasia) leucops albigularis*.

*Poecilodryas leucops albigularis* Rothschild & Hartert, *Nov. Zool.* xiv. p. 459 (1907—Cape York, North Queensland).

Type: ♂ ad., Cape York, 21.vii.1898. A. S. Meek's assistant leg. No. 1,992 of the Meek Collections.

801. **Parisoma blanfordi distincta** Hart. = *Parisoma blanfordi distincta*.

*Parisoma blanfordi distincta* Hartert, *Nov. Zool.* 1917. p. 459 (S. Arabia).

Type: ♂ ad., Gerba, S. Arabia, 15.xi. G. W. Bury leg. No. 511.

802. **Chloropeta natalensis major** Hart. = *Chloropeta natalensis major*.

*Chloropeta natalensis major* Hartert, *Bull. B.O. Club*, xiv. p. 73 (1904—Angola).

Type: Canhoca, Angola, 23.xii.1903. W. J. Ansorge leg. No. 1,545.

803. **Diaphorophyia graueri** Hart. = *Diaphorophyia graueri*.

*Diaphorophyia graueri* Hartert, *Bull. B.O. Club*, xxiii. p. 7 (1908—Primeval forest, 90 kilometres west of Lake Albert Edward).

Type: ♂ ad., primeval forest, 90 kilometres west of Lake Albert Edward, 1,600 m., 11.ii.1908. Rudolf Grauer leg. No. 2,011.

804. **Diaphorophyia ansorgei** Hart. = *Diaphorophyia ansorgei*.

*Diaphorophyia ansorgei* Hartert, *Bull. B.O. Club*, xv. p. 74 (1905—Benguella).

Type: ♀ ad., Cabeça de Ladrões, Benguella, 29.vii.1904. W. J. Ansorge leg. No. 467.



805. *Platysteira cyanea aethiopica* Neum. = *Platysteira cyanea aethiopica*.

*Platysteira cyanea aethiopica* Neumann, *Journ. f. Orn.* 1905. p. 210 ("Schoa und Süd-Athiopien").

Type: ♂ ad., Banka, in Malo, 15.ii.1901. Oscar Neumann leg. No. 807.

806. *Pseudocalyptomena graueri* Rothschild. = *Pseudocalyptomena graueri*.

*Pseudocalyptomena graueri* Rothschild, *Ibis*, 1909. p. 690. pl. x. (50 miles west of Russisi).

Type: ♂, 50 miles west of Russisi, north of Lake Tanganyika, November 1908, 2,000 m. in bamboo forest. Rudolf Grauer leg. No. 3,956.

807. *Smithornis capensis medianus* Hart. & Som. = *Smithornis capensis medianus*.

*Smithornis capensis medianus* Hartert & van Someren, *Bull. B.O. Club*, xxxvi. p. 59 (1916—"Kyambu Forest, Uganda, Toro, and forests west of Lakes Albert Edward and the northern portion of Tanganyika").

Type: ♂ ad., Kyambu Forest, in Uganda, 10. x. 1915. V. G. L. van Someren leg.

808. *Smithornis capensis albigularis* Hart. = *Smithornis capensis albigularis*.

*Smithornis capensis albigularis* Hartert, *Bull. B.O. Club*, xiv. p. 73 (1904—Canhoca, North Angola).

Type: ♂ ad., Canhoca, 23.xi.1903. W. J. Ansorge leg. No. 1,332.

809. *Hypothymis azurea oberholseri* Stres. = *Hypothymis azurea oberholseri*.

*Hypothymis azurea oberholseri* Stresemann, *Nov. Zool.* xx. p. 295 (1913—Formosa).

Type: ♂ ad., Sliaraikisha, Formosa, 5.iv.1907. Collected by Alan Owston's Japanese collectors.

810. *Hypothymis azurea symmixta* Stres. = *Hypothymis azurea symmixta*.

*Hypothymis azurea symmixta* Stresemann, *Nov. Zool.* xx. p. 294 (1913—Lombok, Sumbawa, Flores, Alor).

Type: ♂ ad., Alor, March 1897. Alfred Everett leg.

811. *Hypothymis puella blasii* Hart. = *Hypothymis puella blasii*.

*Hypothymis puella blasii* Hartert, *Nov. Zool.* v. p. 131 (1898—Sula Mangoli and Sula Besi Islands).

Type: ♂, Sula Besi, November 1897. William Doherty leg.

812. *Rhipidura sumbensis* Hart. = *Rhipidura rufifrons sumbensis*.

*Rhipidura sumbensis* Hartert, *Nov. Zool.* iii. p. 585 (1896—Sumba).

Type: ♂ ad., Sumba Island, February 1896. William Doherty leg.

813. *Rhipidura lousiadensis* Hart. = *Rhipidura rufifrons lousiadensis*.

*Rhipidura lousiadensis* Hartert, *Nov. Zool.* vi. p. 78 (1899—Lousiades, Rossel Island).

Type: ♂ ad., Rossel Island, 30.i.1898. A. S. Meek leg. No. 1,335.

814. *Rhipidura saipanensis* Hart. = *Rhipidura rufifrons saipanensis*.

*Rhipidura rufifrons saipanensis* Hartert, *Nov. Zool.* v. p. 54 (1898—Saipan, Marianne Islands).

Type : ♂ ad., Saipan, 1.viii.1895. Collected by Alan Owston's Japanese skinners.

815. *Rhipidura superflua* Hart. = *Rhipidura rufifrons superflua*.

*Rhipidura superflua* Hartert, *Bull. B.O. Club*, viii. p. 32 (1899—Buru).

Type : ♂, Mount Madang ("Mada"), Buru, 3,000 feet, September 1898. Dumas leg.

816. *Rhipidura rufiventris pallidiceps* Hart. = *Rhipidura rufiventris pallidiceps*.

*Rhipidura rufiventris pallidiceps* Hartert, *Nov. Zool.* xi. p. 205 (1904—Wetter Island, near Timor).

Type : ♂ ad., Wetter, 16.ix.1902. Heinr. Kühn leg. No. 5,511.

817. *Rhipidura rufiventris tiandu* subsp. nov.

While in *R. rufiventris rufiventris*, *pallidiceps*, and *assimilis* the chest is pale brownish grey and the white spots have a somewhat washed-out appearance, not being in so sharp a contrast, in the new subspecies the chest is darker, more slate-grey, and the white spots stand out bolder, in sharp contrast; moreover, the crown of the head is darker, more blackish, and the ear-coverts almost pure black. The tips of the lateral rectrices are purer white. The dimensions are the same.

Type : ♂ ad., Taam Island, in the Tiandu group, 25.vii.1899. Heinrich Kühn leg. No. 1,349.

Of *Rh. rufiv. tiandu* I have now 12 specimens from Taam, Kilsuin, and Kur in the Tiandu or Kur group, stretching from Tenimber to Ceram (Seran). I had long ago noticed these differences, but the distribution seemed so very improbable, as we have 21 specimens, indistinguishable, so far as I am able to make out, from Add, near Great and from Little Key, as well as from Kisui and Teoor in the Watubela group, north of the Tiandu Islands. But the difference of the new subspecies is so striking that I cannot hesitate any longer, but herewith give it a name. Perhaps the Tiandu group, for reasons unknown to us, has been peopled with its birds in another way than the Watubela Islands.

818. *Rhipidura setosa niveiventris* R. & H. = *Rhipidura rufiventris niveiventris*.

*Rhipidura setosa niveiventris* Rothschild & Hartert, *Bull. B.O. Club*, xxxiii. p. 109 (1914—Admiralty Islands).

Type : ♂ ad., Manus, Admiralty Islands, 13.ix.1913. Eichhorn Bros. leg. A. S. Meek Expeditions, No. 6,053.

819. *Rhipidura setosa nigromentalis* Hart. = *Rhipidura rufiventris nigromentalis*.

*Rhipidura setosa nigromentalis* Hartert, *Nov. Zool.* v. pp. 525, 526 (1898—Sudest and St. Aignan Islands).

Type : ♂ ad., Sudest Island, Louisiade group, 13.iv.1898. A. S. Meek leg. No. 1,721.

820. *Rhipidura nigrocinnamomea* Hart. = *Rhipidura nigrocinnamomea*.

*Rhipidura nigrocinnamomea* Hartert, *Bull. B.O. Club*, xiv. p. 12 (1903—Apo Volcano, Mindanao).

Type: ♂ ad., Apo Volcano, Mindanao, 8,000 feet, April 1903. Walter Goodfellow leg. No. 137.

821. *Rhipidura cockerelli septentrionalis* R. & H. = *Rhipidura cockerelli septentrionalis*.

*Rhipidura cockerelli septentrionalis* Rothschild & Hartert, *Bull. B.O. Club*, xxxvi. p. 73 (1916—Bougainville Island).

Type: “♀” ad., Bougainville Island, Solomon group, 11.xii.1912. A. S. Meek leg. No. 3,537.

822. *Rhipidura cockerelli interposita* R. & H. = *Rhipidura cockerelli interposita*.

*Rhipidura cockerelli interposita* Rothschild & Hartert, *Bull. B.O. Club*, xxxvi. p. 73 (1916—Isabel Island).

Type: “♀” ad., Isabel Island, Solomon group, 4.vii.1901. A. S. Meek leg. No. 3,494.

823. *Rhipidura cockerelli lavellae* R. & H. = *Rhipidura cockerelli lavellae*.

*Rhipidura cockerelli lavellae* Rothschild & Hartert, *Bull. B.O. Club*, xxxvi. p. 74 (1916—Vella Lavella Island).

Type: “♀” ad., Vella Lavella Island, Solomons, 1.iii.1908. A. S. Meek leg. No. 3,902.

824. *Rhipidura albina* R. & H. = *Rhipidura cockerelli albina*.

*Rhipidura cockerelli albina* Rothschild & Hartert, *Nov. Zool.* 1901. p. 183 (Kulambangra).

Type: ♂ ad., Kulambangra Island, Solomon group, 13.iii.1901. A. S. Meek leg. No. 2,872.

More specimens must be collected on Kulambangra, where only this one was obtained, to show finally whether the Rendova specimens (cf. *Nov. Zool.* 1905, p. 260) are exactly the same as the Kulambangra form.

825. *Rhipidura atra* Salvad. = *Rhipidura atra*.

*Rhipidura atra* Salvadori, *Ann. Mus. Civ. Genova*, viii. p. 922 (1875—Arfak, New Guinea).

Cotype: ♂ ad., Hatam, Arfak, 28.vi.1875. Collected by Bruijn's hunters. Specimen e of Salvadori's list in *Orn. Papuaria Molucc.* Marked in the author's handwriting: “e *Rhipidura atra* Salvad. nov. sp. Typus!” It is according to modern nomenclature a cotype, as all specimens were marked “Typus.”

826. *Callaeops periophthalmica* Grant = *Tchitrea periophthalmica*.

*Callaeops periophthalmica* Ogilyic-Grant, *Bull. B.O. Club*, iv. p. xviii. (1895—Luzon).

Type: “♂,” bought in Manila by the late John Whitehead, said to have been killed with a blow-pipe near Manila.

In *Nov. Zool.* xxiii. pp. 335–336, pl. i. 1916, I have given a brief history of what I then supposed to be the unique specimen of this rare bird. I was, at the time, not aware that the bird described by Mr. McGregor in the *Philippine Journal of Science*, ii. A, No. 5, pp. 340–342, from Batan Island, north of Luzon, where he found it to be common, was the same. The possibility of this has been suggested in the *Manual of Philippine Birds*, 2, p. 467, but I agree with Richmond (*Auk*, xxxiv. pp. 216, 217, 1917), that certainly the two birds are the same, and also that I was in error in maintaining the genus *Callaeops*, which in reality cannot be separated from *Tchitrea*. This extraordinary species must therefore be called *Tchitrea periophthalmica* (Grant), and is no longer unique, though the only specimen in any European Museum, so far, is the type. If the statement of the native was correct, that it was killed near Manila, its occurrence there must have been quite exceptional, its real home being Batan Island, between Luzon and Formosa.

827. *Tchitrea camburni* Neum. = *Tchitrea camburni*.

*Tchitrea camburni* Neumann, *Bull. B.O. Club*, xxi. p. 43 (1908—Ituri Forest).

Type : ♂, "Ituri Forest, "Congo Free State," 11.vii.1906. C. F. Camburn leg. No. 299.

This was the only specimen obtained by the collector.

828. *Tchitrea paradisi borneensis* Hart. = *Tchitrea paradisi borneensis*.

*Tchitrea paradisi borneensis* Hartert, *Bull. B.O. Club*, xxxvi. p. 75 (1916—Sarawak, Borneo).

Type : ♂ ad., Bejalong, Sarawak, vi.1903. Brook leg.

829. *Philentoma dubium* Hart. = *Philentoma pyrrhopterum dubium*.

*Philentoma dubium* Hartert, *Nov. Zool.* i. p. 477 (1894—Bunguran, Natuna Islands).

Type : ♂, Bunguran Island, 6.x.1893. Alfred Everett leg.

830. *Rhinomyias pectoralis baliensis* Hart. = *Rhinomyias umbratilis baliensis*.

*Rhinomyias pectoralis baliensis* Hartert, *Nov. Zool.* iii. p. 549 (1896—Bali).

Type : ♂, Bali, March—April 1896. William Doherty leg.

831. *Rhinomyias ruficrissa* Sharpe = *Rhinomyias ruficrissa*.

*Rhinomyias ruficrissa* Sharpe, *Ibis*, 1887. p. 441 (Kina Balu, Borneo).

Type : ♀, Kina Balu, 3,000 feet, 4.iii.1887. John Whitehead leg. No. 1,061.

832. *Rhinomyias colonus* Hart. = *Rhinomyias colonus*.

*Rhinomyias colonus* Hartert, *Nov. Zool.* v. p. 131 (1898—Sula Mangoli, east of Celebes).

Type : ♂, Sula Mangoli, November 1897, William Doherty leg.

833. *Rhinomyias gularis* Sharpe = *Rhinomyias gularis*.

*Rhinomyias gularis* Sharpe, *Ibis*, 1888. p. 385 (Kina Balu, Borneo).

Type : ♀, Kina Balu, 7,000 feet, 27.iii.1888. John Whitehead leg. No. 2,323.

834. *Culicicapa ceylonensis sejuncta* Hart. = *Culicicapa ceylonensis sejuncta*.  
*Culicicapa ceylonensis sejuncta* Hartert, *Nov. Zool.* iv. p. 526 (1897—South Flores).

Type : ♂, South Flores, October 1896. Alfred Everett leg.

835. *Myiagra rubecula papuana* R. & H. = *Myiagra rubecula papuana*.  
*Myiagra rubecula papuana* Rothschild & Hartert, *Nov. Zool.* xxv. p. 317 (1918—British New Guinea).

Type : ♂ ad., Kumusi River, N.E. British New Guinea, 28.vii.1907. A. S. Meek leg. No. 3,322.

836. *Myiagra rubecula sciurorum* R. & H. = *Myiagra rubecula sciurorum*.  
*Myiagra rubecula sciurorum* Rothschild & Hartert, *Nov. Zool.* xxv. pp. 316. 318 (1918—Rossel and Sudest Islands).

Type : ♀ ad., Rossel Island, 3.iii.1898. A. S. Meek leg. No. 1,352.

837. *Myiagra feminina* R. & H. = *Myiagra ferrocyanea feminina*.  
*Myiagra feminina* Rothschild & Hartert, *Nov. Zool.* viii. p. 183 (1901—Kulambangra Island, Solomon group).

Type : ♀, Kulambangra, 8.iii.1901. A. S. Meek leg. No. 2,850.

† 838. *Myiagra nupta* Hart. = *Myiagra cyanoleuca* (Vieill.).  
*Myiagra nupta* Hartert, *Nov. Zool.* 1898. p. 526 (Sudest Island).

Type : ♂ ad., Sudest Island, 16.iv.1898. A. S. Meek leg. No. 1,738. (Cf. *Nov. Zool.* 1918, p. 316 !)

839. *Myiagra rufigula colonus* Hart = *Myiagra ruficollis colonus*.  
*Myiagra rufigula colonus* Hartert, *Nov. Zool.* iv. p. 266 (1897—Djampoa and Kulao, south of Celebes).

Type : ♂ ad., Djampoa, December 1895. Alfred Everett leg.

840. *Myiagra galeata buruensis* Hart. = *Myiagra galeata buruensis*.  
*Myiagra galeata buruensis* Hartert, *Nov. Zool.* 1903. p. 9 (Buru).

Type : ♂ ad., Kayeli, Buru, October 1898. Alfred Everett leg.

841. *Myiagra galeata seranensis* Stres. = *Myiagra galeata seranensis*.  
*Myiagra galeata seranensis* Stresemann, *Nov. Zool.* xxi. p. 127 (1914—Seran [Ceram]).

Type : ♂ ad., Manusela, Ceram, 9.vi.1911. Erwin Stresemann leg. No. 595.

842. *Machaerirhynchus flaviventer novus* R. & H. = *Machaerirhynchus flaviventer novus*.

*Machaerirhynchus flaviventer novus* Rothschild & Hartert, *Nov. Zool.* xix. p. 200 (1912—Kumusi River and Collingwood Bay, British New Guinea).

Type : ♂ ad., Haidana, Collingwood Bay, 15.iv.1907. A. S. Meek coll. No. 2,839.



843. *Machaerirhynchus nigripectus saturatus* R. & H. = *Machaerirhynchus nigripectus saturatus*.

*Machaerirhynchus nigripectus saturatus* Rothschild & Hartert, *Nov. Zool.* xx. p. 498 (1913—Mt. Goliath).

Type : ♀ ad., Mt. Goliath, 2.ii.1911. A. S. Meek coll. No. 5,276.

(Mr. Ogilvie-Grant, *Ibis*, Jubilee Suppl. 2, 1915, p. 144, doubted the distinctness of *saturatus* from *harterti* of British New Guinea, but the two forms are easily distinguishable, if series are compared.)

844. *Cryptolopha burkii valentini* Hart. = *Cryptolopha burkii valentini*.

*Cryptolopha burkii valentini* Hartert, *Vög. pal. Fauna*, i. p. 497 (1907—"Süd-Kansu und Schensi; Tsin-ling Gebirge, im Waldgürtel").

Type : ♂ ad., Taipaishan, Tsin-ling Mts., 2.vi.1905. Collected by Alan Owston's Japanese collectors. No. 13,205.

845. *Cryptolopha mindanensis* Hart. = *Cryptolopha mindanensis*.

*Cryptolopha mindanensis* Hartert, *Bull. B.O. Club*, xiv. p. 12 (1903—Mt. Apo, Mindanao).

Type : ♀, Mt. Apo, Mindanao, 8,000 feet, April 1903. Walter Goodfellow leg.

When I described this species, I had only the one specimen, but it has since been collected by Mearns.

846. *Cryptolopha montis* Sharpe = *Cryptolopha montis montis*.

*Cryptolopha montis* Sharpe, *Ibis*, 1887. p. 442 (Kina Balu, Borneo).

Type : ♂ ad., Kina Balu, 4,000 feet, 25.ii.1887. John Whitehead leg. No. 1,017.

847. *Cryptolopha xanthopygia* Whitehead = *Cryptolopha montis xanthopygia*.

*Cryptolopha xanthopygia* Whitehead, *Bull. B.O. Club*, i. p. xxxi. (1893—"Hab. in montibus insulae Palawanensis").

Type : ♀ ad., Palawan, 1,500 feet, 4.viii.1887. John Whitehead leg. No. 1,642.

I consider this form undoubtedly to be a subspecies of *C. montis*; the latter has no yellow on the rump, *C. montis floris* a narrow, *C. m. xanthopygia* a wide yellow rump-band. The bill of *xanthopygia* is rather longer than thicker than that of *C. m. montis*.

848. *Cryptolopha montis floris* Hart. = *Cryptolopha montis floris*.

*Cryptolopha montis floris* Hartert, *Nov. Zool.* iv. p. 171 (1897—South Flores).

Type : ♂ ad., South Flores, above 3,500 feet, November 1896. Alfred Everett leg.

849. *Cryptolopha butleri* Hart. = *Cryptolopha castaneiceps butleri*.

*Cryptolopha butleri* Hartert, *Bull. B.O. Club*, vii. p. 1. (1898—"Gunong Ijau, 4,000 feet").

Type : ♂ ad., Gunong Ijau, Perak, Malay Peninsula, iii.1898. A. L. Butler leg.

In view of the subspecies of *C. montis* I do not now hesitate to treat this as a subspecies of *castaneiceps*, another subspecies of which is *C. castaneiceps sinensis*.

850. **Cryptolopha budongoensis** Seth-Smith = *Cryptolopha budongoensis*.

*Cryptolopha budongoensis* Seth-Smith, *Bull. B.O. Club*, xxi. p. 12 (1907—"Budongo Forest, Uganda Protectorate").

"Types": ♂, 25.ii.1907; ♀, 20.v.1907, Budongo Forest. L. M. Seth-Smith leg.

† 851. **Abrornis sakaorum** Stres. = *Abrornis superciliaris schwaneri* aberr.

*Abrornis sakaorum* Stresemann, *Bull. B.O. Club*, xxxi. p. 27 (1912—"Upper Batang-Padang Valley, 3,000 feet").

Type and unique specimen: ♂, Batang-Padang Valley, Perak, 1.x.1910. Erwin Stresemann leg. No. C 25.

Evidently a colour-variety of *A. superciliaris schwaneri* as suggested by Stresemann *in litt*.

852. **Monarcha cinerascens rosselianus** R. & H. = *Monarcha cinerascens rosselianus*.

*Monarcha cinerascens rosselianus* Rothschild & Hartert, *Nov. Zool.* xxiii. p. 297 (1916—Rossel Island).

Type: ♂ ad., Rossel Island, Louisiade group, 6.ii.1898. A. S. Meek leg. No. 1,385.

853. **Monarcha everetti** Hart. = *Monarcha everetti*.

*Monarcha everetti* Hartert, *Nov. Zool.* iii. p. 173 (1896—Djampea).

Type: ♂ ad., Djampea in the Flores Sea, south of Celebes, December 1895. Alfred Everett leg.

854. **Monarcha kulambangrae** R. & H. = *Monarcha kulambangrae kulambangrae*.

*Monarcha kulambangrae* Rothschild & Hartert, *Nov. Zool.* 1901. p. 183 (Kulambangra Island).

Type: ♂ ad., Kulambangra, Solomon Islands, 12.iii.1901. A. S. Meek leg. No. 2,868.

855. **Monarcha chalybeocephalus manumudari** R. & H. = *Monarcha chalybeoceph. manumudari*.

*Monarcha chalybeocephalus manumudari* Rothschild & Hartert, *Nov. Zool.* xxii. p. 43 (1915—Vulcan Island).

Type: ♂ ad., Vulcan or Manumudar Island, north coast of Kaiser Wilhelm's Land, 4.xii.1913. Eichhorn Bros. leg. A. S. Meek's expeditions, No. 6,358.

856. **Monarcha kulambangrae meeki** R. & H. = *Monarcha kulambangrae meeki*.

*Monarcha kulambangrae meeki* Rothschild & Hartert, *Nov. Zool.* 1905. p. 262 (Rendova Island).

Type: ♂ ad., Rendova, Solomon Islands, 23.ii.1904. A. S. Meek leg. No. A 1,355.

857. *Monarcha brodiei floridana* R. & H. = *Monarcha brodiei floridanus*.

*Monarcha brodiei floridana* Rothschild & Hartert, *Nov. Zool.* 1901. p. 182 (Florida Island).

Type: ♂ ad., Florida, Solomon Islands, 4.i.1901. A. S. Meek leg. No. 2,740.

858. *Monarcha brodiei nigrotectus* Hart. = *Monarcha brodiei nigrotectus*.

*Monarcha brodiei nigrotectus* Hartert, *Bull. B.O. Club*, xxi. p. 107 (1908—Vella Lavella Island).

Type: ♂ ad., Vella Lavella Island, Central Solomon Islands, 8.iii.1908. A. S. Meek Coll. No. 3,957.

859. *Monarcha castaneiventris megarhynchus* R. & H. = *Monarcha castaneiventris megarhynchus*.

*Monarcha castaneiventris megarhynchus* Rothschild & Hartert, *Nov. Zool.* xv. p. 363 (1908—San Christoval Island).

Type: ♂ ad., Yanuta, San Christoval Island, Solomon Islands, 26.iv.1908. A. S. Meek Coll. No. 4,089.

† 860. *Pomarea ribbei* Hart. = *Pomarea erythrosticka*.

*Pomarea erythrosticka* Sharpe, *Proc. Zool. Soc. London*, 1888. p. 185 (Fauro Island).

*Pomarea ribbei* Hartert, *Nov. Zool.* 1895. p. 485 (Munia Island).

Type: ♂ ad., Munia Island, Shortland group, in the Solomon Archipelago, 27.ix.1893. Wahnes & Ribbe leg.

(Munia is very near Fauro. The specimens with white crescent in front of the eyes and larger size are the males, those with the rufous crescent and smaller dimensions the females!)

#### PRUNELLIDAE (ACCENTORIDAE).

861. *Prunella collaris ripponi* Hart. = *Prunella collaris ripponi*.

*Prunella collaris ripponi* Hartert, *Vög. pal. Fauna*, i. p. 766 (1910—"Von den hohen Bergenöstlich von Tali—Talifu—im westlichen Jünnan").

Type: Ad., Gyi-dziu-shán, east of Talifu, 10,000 feet, 5.iv.1902. Col. G. Rippon leg.

862. *Accentor erythropygius* Swinh. = *Prunella erythropygia*.

*Accentor erythropygius* Swinhoe, *Proc. Zool. Soc. London*, 1870. p. 124. pl. ix. ("On my journey back from Mongolia to Peking, in the Prefecture of Senen-hwafoo, 26th September, 1868, at a place called Kemeih," . . . "we secured one" out of a small flock).

Type: ♂ ad., Kemeih, 26.ix.1868. R. Swinhoe leg.

863. *Accentor modularis occidentalis* Hart. = *Prunella modularis occidentalis*.

*Accentor modularis occidentalis* Hartert, *Brit. B.* iii. p. 313 (1910—"British Isles").

Type: ♂ ad., Tring, 10.iv.1893. Ex Coll. N. C. Rothschild.

## TROGLODYTIDAE.

† 864. *Cinclus cinclus sardus* Hart. = *Cinclus cinclus sapsworthi*.

*Cinclus cinclus sapsworthi* Arrigoni, *Atlante Ornitologico*, p. 150 (1902—Corsica).

*Cinclus cinclus sardus* Hartert, *Bull. B.O. Club*, xiv, p. 51 (1904—Sardinia).

Type : ♂ ad., near Ogliastro, Sardinia, 14.xi.1902.

865. *Cinclus cinclus hibernicus* Hart. = *Cinclus cinclus hibernicus*.

*Cinclus cinclus hibernicus* Hartert, *Vög. pal. Fauna*, i, p. 790 (1910—Ireland).

Type : ♂, County Cork, Ireland, 25.viii.1896. Bought from Brazenov Bros. No. 2,598.

866. *Hydrobata marila* Swinh. = *Cinclus pallasii marila*.

*Hydrobata marila* Swinhoe, *Journ. North China Branch R. Asiat. Soc.* No. 2, p. 227 (1859—Formosa).

Type (marked in Swinhoe's handwriting "Type of *Hydrobata marila*, Swinh."). ♀ ad., Formosa, 24.vi.1858. R. Swinhoe leg. No. 175.

† 867. *Cinclus bilkevitchi* Zar. = *Cinclus cinclus leucogaster* Bp.

*Cinclus bilkevitchi* Zarudny, *Orn. Jahrb.* xiii, p. 57 (1902—Descr. of one ♂ ad., Tau-Tekele, Altai, 16.(28.)vii.1894).

Type : ♂ ad., Tau-Tekele, Altai Mts. 16.vi.1894, Russian date (= 28.vi.1894, erroneously vii. in *Orn. Jahrb.*). S. Bilkevitch leg. Ex Coll. Zarudny.

868. *Troglodytes troglodytes islandicus* Hart. = *Troglodytes troglodytes islandicus*.

*Troglodytes troglodytes islandicus* Hartert, *Bull. B.O. Club*, xxi, p. 25 (1907—Iceland).

Type : ♂ ad., Gilsbakki, Iceland, 13.vi.1900. H. H. Slater leg. No. 3,690.

869. *Troglodytes troglodytes kabylosum* Hart. = *Troglodytes troglodytes kabylosum*.

*Troglodytes troglodytes kabylosum* Hartert, *Vög. pal. Fauna*, i, p. 870 (1910—Atlas).

Type : ♂ ad., near Alger, 25.ii.1909. Rothschild, Hartert, and Hilgert leg. No. 8.

870. *Troglodytes troglodytes szetschuanus* Hart. = *Troglodytes troglodytes szetschuanus*.

*Troglodytes troglodytes szetschuanus* Hartert, *Vög. pal. Fauna*, i, p. 783 (1910—Tsinling Mts., Sechuan to Ichang).

Type : ♂, Mu-kua-chi, Lung-an, Sechuan, 15.v.1893 (Russian date). Bere-zowsky leg.

871. *Troglodytes troglodytes taivanus* Hart. *Troglodytes troglodytes taivanus*.

*Troglodytes troglodytes taivanus* Hartert, *Vög. pal. Fauna*, i, p. 776 (1910—Formosa).

Type : ♂ ad., Mt. Arizan, Formosa, 13.xii.1906. Collected by Alan Owston's Japanese collectors.

872. *Cistothorus platensis tucumanus* Hart. = *Cistothorus platensis tucumanus*.

*Cistothorus platensis tucumanus* Hartert, *Nov. Zool.* 1909. p. 163 (Tucuman, Argentina).

Type : ♀ ad., Tucuman, 30.x.1899. J. Venturi leg.

873. *Cistothorus platensis meridae* Hellm. = *Cistothorus platensis meridae*.

*Cistothorus platensis meridae* Hellmayr, *Bull. B.O. Club*, xix. p. 74 (1907—Merida, Venezuela).

Type : Ad., El Loro, Andes of Merida, 3,000 m., 13.viii.1898. Sal. Briceño Gabaldón é hijos leg.

874. *Thryothorus genibarbis intercedens* Hellm. = *Thryothorus genibarbis intercedens*.

*Thryothorus genibarbis intercedens* Hellmayr, *Nov. Zool.* 1908. p. 17 (Goyaz, Brazil).

Type : ♂ ad., Rio Thesouras, state of Goyaz, 600 m., May 1906. G. A. Baer leg. No. 2,167.

875. *Thryothorus griseipectus caurensis* Berl. & Hart. = *Thryothorus griseipectus caurensis*.

*Thryothorus griseipectus caurensis* Berlepsch & Hartert, *Nov. Zool.* ix. p. 7 (1902—Caura River, Orinoco region, Venezuela).

Type : ♂ ad., Nicare, Caura River, 12.i.1901. E. André leg.

876. *Thryothorus goodfellowi* Scl. = *Thryothorus goodfellowi*.

*Thryothorus goodfellowi* Sclater, *Bull. B.O. Club*, xi. p. 47 (1901—"Aequatoria occidentalis").

Type : ♂ ad., Papallacta, Eastern Ecuador, 11,500 feet, February 1899. Goodfellow and Hamilton leg.

877. *Thryophilus albipectus hypoleucus* Berl. & Hart. = *Thryophilus albipectus hypoleucus*.

*Thryophilus albipectus hypoleucus* Berlepsch & Hartert, *Nov. Zool.* ix. p. 6 (1902—Altagracia on the Orinoco).

Type : ♂ ad., Altagracia, 6.i.1898. Geo. K. Cherrie Collection. No. 9,550.

878. *Odontorhynchus branickii minor* Hart. = *Odontorhynchus branickii minor*.

*Odontorhynchus branickii minor* Hartert, *Bull. B.O. Club*, xi. p. 40 (1900—Paramba, N. Ecuador).

Type : ♂, Paramba, 3,500 feet, 21.iii.1899. G. Flemming leg.



# A NOTE ON THE TYPE-LOCALITY AND GEOGRAPHICAL RACES OF THE GUNDI (*CTENODACTYLUS GUNDI* ROTHM.)

BY OLDFIELD THOMAS.

**A**MONG M. Blane's Mammals from S. Tunis there are two skins of Gundis, and these are so much more vivid and warm in colour than those we have had from Biskra and elsewhere that they would seem to be worthy of subspecific distinction from the better-known form. But the first consideration was as to the type-locality of Rothmann's original *Mus gundi*, which has been quoted as "Masuffin, Atlas Mountains," the village "Masuffin" not being identifiable, and the "Atlas Mountains" having been simply assumed to be the comparatively high Atlas mountains of Algeria or Tunis.

But Mr. Hinton has been good enough to examine for me the copy in the British Museum of Schloezer's *Briefwechsel*, 1776, on p. 339 of which Rothmann described *Mus gundi*. The result is very unexpected, for that work shows that Rothmann was not in the Great Atlas at all, but made his journey inland from the town of Tripoli, and obtained his Gundi in the hills of Gharian (spelt Garean by him), some 80 kilometres south of that place. Masuffin was a little farther on, and was mentioned, but was not the place where the Gundi was found.

Now the expression "*testaceo rufescens*" used by Rothmann in his diagnosis suits exceedingly well the strong-coloured Gundis from South Tunis sent by M. Blanc, and the relation of the localities to each other is such that it is quite natural that the same form should occur in both. I should therefore propose to identify the Tunisian specimens as representing the true Gundi of Rothmann.

In the *Proceedings of the Zoological Society for 1830*, p. 48, an account was given by Mr. Yarrell of two Gundis which had been sent by Colonel Hanmer Warrington from Tripoli, and of these, one—B.M. No. 55.12.24.128, Zoological Society's MS. list, No. 311—is still in the Museum. Pending the arrival of specimens from Gharian, this latter may be taken as a topotype of *C. gundi*.

The importance of this Tripoli specimen lies in the fact that one bulla is still extant in the skull, and is of the small size characteristic of the ordinary Algerian Gundi, with no resemblance to that of the Middle Tripolitan *C. vali*, Thos. Presumably, therefore, Rothmann's Gundi was not the latter species.

But since the name *gundi* now proves to belong to the vivid-coloured eastern form, the question naturally arises as to the proper name of the Biskra Gundi, which as already indicated, may be subspecifically distinguished from true *gundi* by its duller and more drab coloration.

On examination I find that the two cotypes of Gray's *Ctenodactylus massoni* are absolutely and exactly like ordinary Biskra Gundis, and might very well have come from there. In consequence, I propose to term that animal *C. gundi massoni*, and to take Biskra as representing the typical locality of the subspecies.

Of this most interesting group we have therefore, proceeding from east to west, the following six recognisable forms :

1. *Ctenodactylus vali* Thos., Middle Tripoli.
  2. *Ctenodactylus gundi gundi* Rothmann, N.W. Tripoli and S. Tunis.
  3. *Ctenodactylus gundi massoni* Gray, southern slopes of Algerian Atlas, Biskra.
  4. *Massoutiera mzabi* Lat., Mzab, Algerian Sahara.
  5. *Massoutiera harterti* Thos., Southern Algerian Sahara.
  6. *Felovia vae* Lat., Felou, Senegal.
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## SUPPLEMENTARY NOTES ON DIOPTIDAE.

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

**A**LTHOUGH—as anticipated—I have not been able to follow up the study of this interesting family since publishing my “Provisional Arrangement” (NOVITATES ZOOLOGICAE, XXV. 395–429), I have come across a few additions and corrections to which it seems a duty to call attention. I may also take this opportunity to point out that Monsieur Dognin, in his valuable work, *Hétérocères Nouveaux de l'Amérique du Sud*, fascicule xv. pp. 7–8 (February 1919), has published the following synonymic and taxonomic notes:

*Phaeochlaena costidentata* Dogn. is certainly the ♀ of *bicolor* Mösch. (as I suggested with ?).

*Myonia conjuncta* Dogn. is the same species as *citrina* Druce.

*Momonipta pellucida* Dogn. (*Scotura*), *Hét. Nouv. Amér. Sud*, i. 16 (1910), omitted in my list, is near *jipiro* Dogn., agreeing in markings but smaller and much more contrasted. From Colombia.

*Tanaostyla disconnexa* Dogn., *Hét. Nouv. Amér. Sud*, iii. 21 (relegated by me to the species *incertae sedis*), is really referable to this genus. (M. Dognin, in litt. January 12, 1919, wrote me that it “was placed in this genus by Warren, and, I think, with reason. It fits . . . fairly exactly, except that cell of forewing is less than two-thirds—about one-half, 7, 8, 9, 10 stalked from upper angle of cell, DC of hindwing oblique but straight at two-thirds of wing.”)

*Phaeochlaena augustimacula* Dogn., *Ann. Soc. Ent. Belg.*, xlvi. 475, is a *Tithraustes* near *albitumida* Dogn.

Two new *Myonia* forms have since been published by the same author:

12a. *biplagiata peruviana* Dogn., *Hét. Nouv.* xvii. 11 (1919) (Peru).

13 bis. *primula* Dogn., *Hét. Nouv.* xvii. 10 (1919) (*graba* form. ?) (Ecuador).

On account of Druce's deplorable ignorance of systematic entomology, I overlooked three of his types which should have been studied in connection with my work, but which have only just been unearthed in my preparations for arranging Mr. Joicey's *Larentiinae*, they having been described under *Trochiodes* (!). These are the following:

*Trochiodes coniadus* Druce, *Proc. Zool. Soc. Lond.* 1893, p. 309, t. xxi. f. 21. An aberrant *Tithraustes* (?), possibly akin to *mirma* Druce, but the ♀ antenna simple. A ♂ in coll. Brit. Mus. has lost both antennae.

*Trochiodes* (?) *coras* Druce, *Proc. Zool. Soc. Lond.* 1893, p. 310. A *Momonipta*, supplanting *biplaga* Dogn. I have only previously seen the colour-form (?) *flaviplaga* Dogn. The actual status of the two forms can hardly be decided without ampler material.

*Trochiodes plataea* Druce, *Proc. Zool. Soc. Lond.* 1893, p. 310, t. xxi. f. 22. A *Xenorma*, very distinct from anything yet known to me. Druce's 11 are all ♂♂.

In the genus *Myonia* is to be placed:

36. *maera* Schaus, inadvertently cited by me on p. 422 as *Josia*, No. 18, but really a near ally of *evippe* Walk.

On p. 404, under *Tolimicola*, read :

1. *consanguinea* Dogn., *Hét. Nouv.* iii. 22 (1911) (*Tithraustes*) = *fassli* Prout (from correspondence with its author I have no doubt that *consanguinea* is the ♀ to my *fassli*. The "second species, too worn to describe," is perhaps *nubilata* Dogn., which I cited on p. 410 as a doubtful *Tithraustes*).

Under *Xenorma* :

*X. ovata* Dogn. is to be accorded specific rank, its palpus and tegulae being black, not yellow as in *cytheris*.

Under *Oricia* :

*O. damalis* Schaus is, I now feel convinced, the ♂ of *homalochroa*.

Under *Tithraustes* :

Dognin, *in litt.*, suggests that *pyrifera* Dogn. (No. 14) may well be merely a local variation of *caliginosa* Dogn. (No. 15).

16. *inaequiplaga* Dogn. I now gather that this is very close to *tiznon* Dogn. (listed by me as *Polypoetes*, No. 3), whence it is clear that one or other of these species is at present wrongly placed.

Under *Josia* :

3. *abrupta* ab. *icca* is a curiosity of nomenclature. I find the name given "without elucidation" was by Butler, and was a misreading of a scribbled "*Scea*" appended to one of the specimens by Walker (!). It is, moreover, not exclusively a ♀ aberration, one of the British Museum examples being a ♂.

47 bis. *andosa* Druce, *Ann. Mag. Nat. Hist.* (8) vii. 290 (1911) (*Josiomorpha*) (Colombia) is to be intercalated.

58. *latifascia* Prout, *nom. nov.*, is to be substituted for *lativitta* Warr. (nec Walk.). Mr. Tams has called my attention to the fact that a *nom. bis lectum* stands in the genus as at present constituted.

Under *Scea* :

8. *gigantea gigantea* Druce, *Ann. Mag. Nat. Hist.* (6) xviii. 42 (1896) (*Thirmida*) (Bolivia), = *caesiopicta* Warr., *Nov. Zool.* vii. 128 (1900) (Bolivia).

8a. *gigantea cyanea* Prout, *Nov. Zool.* xxv. 425 (1918) (S.E. Peru).

Under the species *incertae sedis* (p. 429) :

*Ephialtias superbior* Strand is an Amatid = *Ctenucha cyaniris* Hmps. ♀.

*Josia gigantea* Druce is probably an Aganaid (*sens. lat.*), as M. Dognin tells me that his *Josiomorpha flammata* (*Ann. Soc. Ent. Belg.* liii. 223) is evidently very close to it, if not even a race, and certainly belongs to that family (= *Callimorphidae* Hmps., *Hypsidæ* Hmps. olim).

## ON SOME AFRICAN SPHINGIDAE.

By DR. KARL JORDAN.

(With five text-figures.)

*Litosphingia* gen. nov.

♂. Generibus *Hoplistopus* et *Praedora* dictis similis, sed tibia antica duabus spinis lateralibus armata et intermedia haud spinosa distinguenda.

Tongue well developed; genal process large; pilifer with bristles only. Antenna not distinctly club-shaped, cilia as in *Hoplistopus*. Palpus just visible from above, joint between segments I and II slightly open. Head with a feeble median crest. Foretibia with two spines, both lateral; foretarsal segment I one-third shorter than foretibia, likewise with two lateral spines, the first submedian, the second apical, segments II to V together very little longer than tibia. Midtibia without spines, without comb. Hindtibial apical inner spur about one-third the length of the first hindtarsal segment. Pulvillus present; paronychium with one lobe each side. Spines on abdominal tergites very weak.

Genitalia: Tenth tergite compressed, its apex widened, rounded in dorsal view, convex above and concave beneath. Tenth sternite much shorter than tergite, pointed. Clasper without friction-scales, short. Penis-sheath with a peculiar rim around apex.

Neuration: Lower cell-angle of forewing obtuse;  $SC^2$  and  $R^1$  of hindwing on a very short stalk, cross-vein  $D^2$  incurved, nearly double as long as  $D^3$ .

♀ and early stages not known.

One species.

1. *Litosphingia corticea* spec. nov.

♂. Grisea; abdomine linea mediana dorsali continua nigra bene expressa notato. Ala antica elongata angulo postico valde obtuso subrotundato, grisea nigro suffusa, basi macula longitudinali diffusa mediana griseo-alba, venis plus minusve nigris in area submarginali grisco-albo striatis, fascia sat lata nigra e duabus maculis inter apicem et venam  $R^1$  sitis composita in discum continuata, ubi reducta diffusa inconspicua. Ala postica grisea nigro-venata. Cilia nigro-guttata.

Al. ant. long. 24 mm., lat. 8.5 mm.

*Hab.* Umvuma, S. Rhodesia, 18.i. 1918 (A. A. Carnegie); one ♂ in Rhodesia Museum.

Head, pronotum, and the middle of the meso-metanota suffused with black, the patagia whitish grey; black median line of abdomen continuous, almost one millimetre broad anteriorly, narrowing backwards; no lateral spots.

Hind angle of forewing much more rounded than in the species of *Praedora* and *Hoplistopus*, but less so than in *Ellenbeckia*. The pale upper scales on both wings bidentate, the long ones of upper side narrowing apically, many truncate,

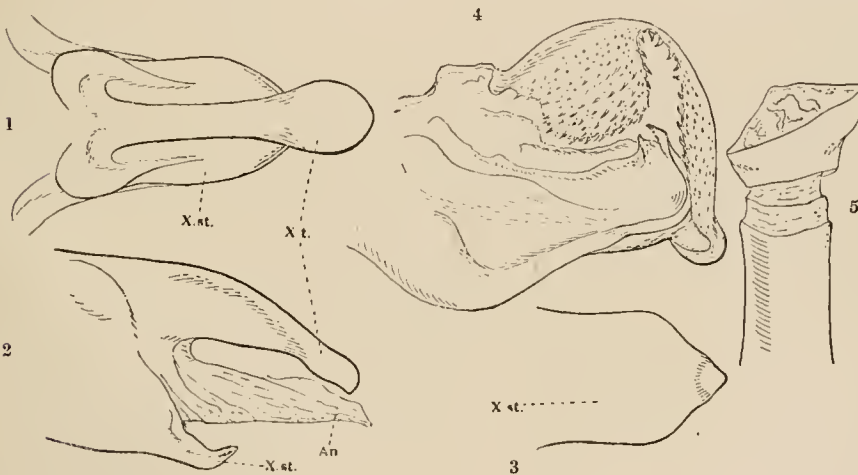


the large underscales tridentate, but the middle tooth often missing; few underscales in cell of forewing beneath.

Grey, suffused with black. Forewing: a whitish grey streak from base to  $M^2$  below cell, posteriorly bordered by a black line which is slightly longer, a median line in cell and the veins black, on disc between  $R^3$  and  $M^2$  two black streaks; from apex to  $R^1$  two black spots sharply defined costally, more diffuse distally, forming a short oblique band which is continued by a faint diffuse cloud, between  $R^1$  and  $R^2$  a blackish line from near cell to near fringe, in sub-marginal area the veins each with a more or less distinct whitish-grey dash; fringe with blackish dots at ends of veins. Hindwing almost uniformly blackish grey, the veins black, thin, abdominal area paler.

Underside without markings excepting the fringe-spots, which are more clearly defined than above.

Genitalia (text-figs. 1-5): Tenth tergite (x.t.) entire, the apical process



in dorsal aspect spoon-shaped, being proximally compressed and apically rounded-dilated; in a lateral view the process is highest in its proximal half, the apical half being depressed and gently curved downwards; underside of apical dilatation concave. Tenth sternite (x.st.), in a ventral view, with the sides parallel to about two-thirds, apical third narrowing to a point, the apex being curved upwards. Clasper (text-fig. 4) irregular in shape, dorsal margin convex, apex produced as a lobe, below which the margin is incurved; outer surface divided by a longitudinal groove; dorsal margin armed with numerous small teeth directed proximad. No friction-scales. On the inner side the dorsal margin proximally dilated into a large lobe, bent down and covering part of the cavity of the clasper; this lobe dentate. Harpe divided by a deep longitudinal groove into a broad convex ventral ridge and a thin sharp dorsal one, each ending distally with a recurved conical tooth, the two teeth lying one behind the other, the distal one, which belongs to the ventral ridge, being the longer of the two; from the wide proximal portion of the harpe an intermediate, shortened ridge extends into the groove of the harpe; above the harpe and partly covered by the dorsal marginal lobe a small double ridge. Penis-sheath (text-fig. 5)

terminating with a collar of which the proximal edge is detached from the sheath, the distal edge forming a triangle of which the ventral corner projects most; this collar in a lateral view somewhat resembles the flat-crowned three-cornered hat of our forefathers.

## 2. *Xenosphingia jansei* Jord. (1920).

Described from a single ♂ on p. 169 of the present volume. Mr. A. T. Janse has now kindly sent us, for the Tring Museum, a ♀ of this interesting species. This sex differs from the ♂ especially in the palpus, of which the third segment is long and rod-like as in ♂, but porrect and not eurved sideways. The pectination of the antenna is not quite so long as in ♂. The neuration differs in SC<sup>2</sup> of forewing being nearer to apex of cell than to SC<sup>1</sup>, and in D<sup>2</sup> of hindwing\* being but slightly longer than D<sup>1</sup>.

The ♀ was obtained by Mr. Janse at Sawmills, South Rhodesia, in January 1920.

## 3. *Temnora cinereofusca* Strand (1912).

In *Nov. Zool.* xxiii. p. 118, No. 6 (1916) we said that we regarded *cinereofusca* as synonymous with *T. reutlinger*. I have lately seen in the Berlin Museum a specimen of true *cinereofusca*. The species is not *T. reutlinger*, but comes close to *T. subapicalis* R. & J. (1905), from which it differs in the more greyish coloration.

## 4. *Nephele rosae illustris* subspee. nov.

*Nephele rosae*, R. & J., *Revis. Sphing.*, p. 563, no. 486 (1903) (pt. ; Nguelo). ♀. Fascia alba alarum antearum lata a costa usque ad marginem posticum.

*Hab.* Inyamadzi, Portug. East Africa, 2,000 ft., 28.v.1916 (Swinerton), 1 ♀ in coll. Janse, type; Nguelo, German East Africa, 1 ♀, and Pemba Island (E. Morland), 1 ♀, in the Tring Museum.

On an average larger than the West African subspecies. The white band of the forewing broader, of almost even width from costa to hindmargin; the pale line placed outside this band more or less scaled white towards costa.

Our two specimens are rather poor, while the one in coll. Janse is very fine, having been bred from the chrysalis.

In the West African race, *N. r. rosae*, the white band of the forewing varies very much in width, being sometimes almost a mere line, sometimes posteriorly several millimetres wide, but is always narrower towards the costal margin than at the hindmargin. The stigma of the forewing is usually present in *N. r. rosae*; in the above three specimens of *N. r. illustris* it is absent.

\* In the description of *Xenosphingia* read D<sup>2</sup> instead of D<sup>1</sup>.

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