

XV. *Observations on the Uraniidæ, a Family of Lepidopterous Insects, with a Synopsis of the Family and a Monograph of Coronidia, one of the Genera of which it is composed.* By J. O. WESTWOOD, M.A., F.L.S., &c.

(PLATES LXXXV.—LXXXVIII.)

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IT is now more than forty years ago since there appeared in the Transactions of this Society a memoir by Mr. W. S. MacLeay, and a notice in the 'Annales' of the French Entomological Society by M. Boisduval, in which were first made known the transformations of two of the most splendid of Lepidopterous insects. These insects had, up to that time, been regarded by most writers as butterflies, but were proved, by the details then made known, to belong to the Heterocerous division of the order, although their day-flying habits, and the extraordinary brilliancy of their colours, had naturally led to their having been considered as belonging to the Rhopalocera or true butterflies.

M. Boisduval has well described one of these insects as "ce magnifique Lépidoptère, le plus beau de la création." Hence, as well as in consequence of the singular manner in which systematic writers on the order have treated the position of the different members of the group to which these brilliant insects belong, and their interesting metamorphoses, it will not be considered irrelevant to the special subject of this memoir to enter into some details upon the subject, more especially as some very difficult questions as to the rules of nomenclature are involved in the inquiry.

Amongst the species of his great genus *Papilio*, containing the whole of the day-flying Lepidoptera, Linnæus introduced *Papilio leilus*, *P. orontes*, *P. patroclus*, and *P. lunus*, to which were added in the last century *Papilio rhipheus* by Drury, and *P. sloanus* and *P. empedocles* by Cramer. Another species belonging to this group was added by Cramer, but regarded by him as a moth, under the name of *Phalæna orithea*.

In 1807 there appeared in the sixth volume of Illiger's Magazine a posthumous sketch of the proposed division of the Lepidoptera into genera by Fabricius, who had previous to his death published his separate works on the Coleoptera (*Eleutherata*, F.), Hymenoptera (*Piezata*, F.), Diptera (*Antliata*, F.), and Hemiptera (*Rhyngota*, F.), in which each of these orders of insects had been cut up into very numerous genera. In this sketch of the Lepidoptera<sup>1</sup> Fabricius placed at the head of the order (followed by the other numerous genera of butterflies) his new genus *Urania*, shortly charac-

<sup>1</sup> Mr. J. G. Children published an English abstract of the proposed system of Fabricius in the 'Philosophical Magazine and Annals' for February 1830.



terized, with *P. leilus* and *P. patroclus* mentioned as two of the seven species of which it was stated to be composed, the names of the other five species not being given.

The name *Urania* proposed by Fabricius for this new genus had unfortunately been, then recently, applied by Schreber to a genus of plants of the natural order Musaceæ, from Madagascar, to which Adanson, Sonnerat, and Jussieu had previously given the name of *Ravenala*, which the tree also bears in Madagascar. It is true that the name *Urania* is still "unjustifiably"<sup>1</sup> retained for the tree in botanical works; but surely it ought to give way to *Ravenala*, in which case *Urania* would be free for use in entomology<sup>2</sup>. It moreover does not appear to me objectionable to employ a generic name for a group of objects in one kingdom of nature which has already been, and is even still in use in a different kingdom. I should therefore not hesitate on both these grounds to retain the generic name of *Urania* in entomology, and to consider the first species named by Fabricius (*P. leilus*) as its type, that particular species being a good representative of the group of new species which have subsequently been described as most closely allied to *P. leilus*. In like manner, as *P. leilus* and the other new species allied to it are good representatives of the whole group, I did not hesitate in my new edition of Drury's work on Exotic Insects, nor do I now, to consider *Urania* as the type of the family to which I applied and still retain the name of Uraniidæ, it having in more recent times been deemed advisable to split up the genus *Urania* into smaller genera.

In 1816, Hübner, evidently profiting by the publication of the Fabrician system in Illiger's Magazine, retained the previously mentioned species in a single subdivision of his great phalanx Geometræ, forming them into the first family Heroicæ of his 4th geometrideous stirps, *Lares*, and subdividing them as follows in his 'Verzeichniss,' pp. 289, 290:—

Coitus 1. LARUNDÆ: *LARUNDA*, *Orithearia* (*Orithea*, Cram. 262. C, D).

Coitus 2. LYSSÆ: *LYSSA*, *Achillaria* (*Patroclus*, Cram. 198. A), and *Patroclaria* (*Patroclus*, Linn., Cram. 109. A, B).

Coitus 3. ALCIDES: *ALCIDIS*, *Orontiararia* (*Orontes*, Linn., Cram. 83. A, B).

Coitus 4. CHRYSIRIDÆ: *CHRYSIRIDIA*, *Riphearia* (*Ripheus*, Cram. 385. A, B).

Coitus 5. URANIÆ: *URANIA*, *Sloanaria* (*Sloanus*, Cram. 85. E, F); *U. leilaria* (*Leilus*, Linn., Cram. 85. C, D).

Coitus 6. MANIÆ: *MANIA*, *Empedoclararia* (*Empedocles*, Cram. 199. A, B); *M. candilunaria* (*Lunus*, Linn., Cram. 200. A); *M. lunigeraria* (*Lunus*, Cram. 200. B, C).

These six subdivisions form so many genera which it is desirable still to retain.

<sup>1</sup> To use the phrase of Loudon, *Enycl. of Plants*, p. 245.

<sup>2</sup> M. Boisduval (*Nouv. Ann. du Mus.* ii. p. 260) perceived the inconvenience of the same name being employed in entomology and botany, but considered that the long usage of the name *Urania* in entomology outweighed such inconvenience. "Si le nom de ce genre n'étoit adopté depuis long-temps par la plupart des entomologistes, il seroit convenable de le changer parce qu'il existe déjà un genre des plantes appelé *Urania*."



It has happened, however, unfortunately for these names of Hübner that nearly all of them have given rise to disputes upon points of nomenclature.

The name of Hübner's first group, *Larunda* had been used by Dr. Leach in 1814-15 for a genus of Crustacea, to which the name of *Cyamus* had been given by Lamarck in 1801, and adopted by Latreille (as quoted by Leach himself in Linn. Trans. xi. p. 364, where the name *Larunda* was proposed). It is still undecided whether a name which has been proved to be a synonym can subsequently be used for a different genus in a different group. The difficulty here might have been solved by the employment of Latreille's generic name *Coronis* (proposed in the 'Familles Naturelles' in 1825, and in the second edition of the 'Règne Animal' in 1829) for the *Larundæ* of Hübner, only that it still more unfortunately happened—1st, that the name *Coronis* itself had been proposed by Hübner in his 'Verzeichniss,' 1816, p. 265, for a totally different genus belonging to the Noctuidæ (*Phal. stollii*, Cram. pl. 310. figs. A, B); 2ndly, that *Coronis* had also been actually proposed by Latreille himself for a genus of Squillideous Crustacea, to which it is still applied, in the work in which he also gave it to the Lepidopterous genus in question; and, 3rdly, that in 1827 *Coronis* had been given to a genus of passerine birds by Gloger, to which, however, the name of *Gymnoderus* had been given in 1809 by Geoffroy. This is the more annoying because for nearly fifty years the generic name of *Coronis* has been universally applied to *Phalæna orithea*, Cramer, and its congeners by all entomologists, except Dr. Felder, who in 1875 used the objectionable Hübnerian name *Larunda*, but with reservation.

Although, as I have said above, I do not consider it unadvisable to employ the same generic name in two different kingdoms of nature, I can scarcely go so far as to think it proper to use the same name for a genus of birds, a genus of Crustacea, and a genus of Noctuideous moths (for if used in Lepidoptera, Hübner's appropriation of the name has the priority). It has, I know, been proposed recently to treat the 'Verzeichniss' of Hübner as a nullity; but I cannot agree to the proposal. In many respects, indeed, this work is most unsatisfactory; but where the author has made (as he has often done) good arrangements of the multitudinous species of Lepidoptera, which had up to his days been in a chaotic state of confusion (either as regards their family distribution or the juxtaposition of the different species), I think it is an act of justice to give him credit for his work. To prevent further confusion I therefore propose in this memoir to employ the name *Coronis* in a slightly modified form, *Coronidia*.

Hübner's second name, *Lyssa*, is also liable to the objection that in 1815 Dr. Leach had used *Lissa* for a genus of Crustacea, for which it is still retained. The same name was also used generically in Diptera by Meigen in 1826. To avoid this confusion, I propose to modify Hübner's name into *Lyssidia*.

The name *Alcides*, proposed by Dalman in 1826 for a genus of Coleopterous weevils, is, of course, posterior to the employment of *Alcidis* by Hübner in 1816; I propose,



therefore, to retain Hübner's name, with a slightly altered termination, for uniformity, into *Alcidia*.

The name *Chrysidia*, given by Hübner to *P. ripheus*, is a happy one, and may be retained for that brilliant insect; but it has unfortunately happened for Hübner's last name, *Mania*, that it has been employed by Treitschke for a genus of Noctuidæ, for which it is still retained by Guenée and H. Doubleday; I therefore have the less hesitation in altering Hübner's name into *Manidia*, and in rejecting the subsequent name given to it of *Sematura*.

In 1825 the Swedish naturalist Dalman, in his monograph of *Castnia*, neglected the arrangements of Fabricius and Hübner, blaming the former for inserting *P. orontes*, Linn., in the genus *Castnia*, with the observation "quæ vero species minime hujus generis sed ad NYCTALIDEAS nostras pertinet, etsi transitum memorabilem Papilionides inter et Nyctalideas bene offert. Genera huc pertinentia sequenti modo distribuere tentavimus:

“CYDIMON: *Ripheus*, *Sloaneus*, *Leilus* et forte *Lavinia* Fabr. = Gen. *Urania* Fabr. Latr.<sup>1</sup>

NYCTALEMON: *Orontes*, *Patroclus*.

SEMATURA: *Lunus*, *Ægistus* Fabr., *Empedocles* Herbst.”

To which he adds *Thysania* with *agrippina*, *odora*, &c., as types, evidently identical with the Noctuideous genus *Erebus*, and also doubtfully the genus *Agarista* of Leach (Zool. Misc. i. tab. xv.).

It will be seen that the genus *Cydimon* of Dalman is equivalent to the *Chrysidia* and *Urania* of Hübner, that *Nyctalemon*, Dalm., = the *Lyssæ* and *Alcides* of Hübner, and that *Sematura*, Dalm., = *Mania* of Hübner.

In 1840 (Introd. Mod. Class. Ins. ii. p. 369) I separated these insects into a single family placed between the Sphingidæ and Anthroceridæ.

In 1854 Mr. Walker, in his Catalogue of the Collection of the British Museum (Lepidoptera Heterocera, Pt. 1), adopted the genera *Urania* for *Leilus* and *Rhipheus*, *Nyctalemon* for *Orontes* and *Patroclus*, to which he added *Lunus* and its allies (gen. *Sematura*, Dalman), and *Coronis*; which last, notwithstanding its intimate relationship with *Sematura*, *Lunus*, &c., he placed in the family Castnii, as Latreille had done.

Lastly, in 1857, M. A. Guenée (Hist. Nat. Ins. Lep. tom. ix.) has arranged all the preceding genera into one group, *Uranides*, at the head of his Phalénites (*Geometra*, Linn.), divided into four families:

1. CYDIMONIDÆ: Gen. *Cydimon* (*Leilus* &c.).
2. URANIDÆ: Gen. *Urania* (*Rhipheus*).
3. NYCTALEMONIDÆ: Gen. *Alcidis* (*Orontes*) and *Nyctalemon* (*Patroclus* &c.).
4. SEMATURIDÆ: Gen. *Sematura* (*Lunus* &c.) and *Coronis* (*Orithea* &c.).

<sup>1</sup> “Obs. *Uranie* nomen pro insectorum genere nullo modo admittendum, etenim jamdiu plantarum genus, notissimum quidem, sic vocatum.”



Adopting the opinion of M. Boisduval, that the group before us will not enter into any of our generally received families, and that it is "une de ces créations à part, qui envoie à la fois un rameau vers plusieurs groupes, mais que l'on ne peut faire entrer convenablement dans aucun" (Mon. Agarist. p. 7, extr. Rev. et Mag. de Zoologie), we must now investigate the natural relationships of this most interesting group of insects, which have been alternately regarded as butterflies and moths.

Thus Linnæus regarded the more typical species as butterflies, and Fabricius even placed them at the head of the day-flying genera. Dalman, as we have already seen, considered that *P. orontes* formed the transition between the Papilionidæ and the other Uraniidæ. Latreille (Gen. Crust. et Ins. iv. p. 207) gave *Urania* and *Hesperia* as the two terminal genera of the Diurna, and *Castnia* (into which he introduced *P. orontes*) as the first genus of the Sphingides. The same arrangement was employed in the 9th volume of the 'Encyclopédie méthodique,' where Godart divided the genus *Urania* into four groups:—A, *Ripheus*; B, *Sloaneus* and *Leilus*; C, *Orontes* and *Patroclus*; D, *Lunus* and *Empedocles*. In 1825 (Fam. Nat. du Règne An. p. 470), and in 1829 (Règne An. 2nd edit. iv. p. 387), *Hesperia* and *Urania* are still given by Latreille as two genera of *Hesperiidæ*, and *Castnia*, *Coronis*, and *Agarista* of Leach as forming the first tribe (*Hesperi-Sphingides*) at the head of the Sphingidæ.

This arrangement continued unchanged by Latreille to the last, and was adopted by his more immediate French followers. It had, however, in the meantime met with opposition in Germany and Sweden, Hübner in 1816, as we have already seen, having placed the entire group amongst the Geometridæ, while Dalman had removed them from the Diurnal Lepidoptera to form his uncharacterized group Nyctalidæ with *P. orontes* as the connecting link between them and the butterflies. M. Guenée, however, did not hesitate in 1857 entirely to reject their relationship with the Diurna, showing that with respect to the characters derived from the spring and socket at the base of the wings, the form of the antennæ and palpi, the structure and armature of the legs, and the venation of the wings, together with the form of the larvæ, so far as known at that time, these insects had no real relation with the Diurnal Lepidoptera (Hist. Nat. Ins. Léop. ix. p. 3), that they formed one entire group, and that they ought to be placed among the Nocturna; in fact, although by being placed by some writers at the head of the Heterocera their supposed relationship with the *Hesperiidæ* has been in a manner kept up, the pointed tips of the antennæ of some of the species, and the spines on the hind legs favouring such a view, they exhibit no real relationship with the *Hesperiidæ*.

In like manner a comparison of the structural details which I have given in the accompanying plates, with those of the *Castniidæ* and *Hepialidæ* published in my recent memoir on the former family in the 'Transactions of the Linnean Society,' will clearly show that the relationship of *Coronis* with *Castnia* as indicated by Latreille, and that of *Urania* with *Castnia* as suggested by Macleay in this Society's 'Transactions,' i. p. 188, must be completely ignored.



Rejecting, then, the Rhopalocera (including the Hesperiidæ), the typical Sphingidæ, Castniidæ, and Hepialidæ, together with the whole of the Microlepidoptera, we have to inquire which of the remaining Macrolepidopterous groups show the greatest amount of affinity to the Uraniidæ.

If we regard the Noctuidæ, we find a robust body with comparatively small wings formed for powerful flight, and generally marked with a peculiar reniform and a circular spot or patch in the middle of the fore wings; the antennæ are also almost invariably slender and setaceous, becoming gradually attenuated to the tip. In this family, however, is found a group (*Erebus*<sup>1</sup>) with the palpi elongated, terminated by a slender joint, which probably induced Dalman to place them, under the name of *Thysania*, with the Uraniidæ.

Plate LXXXVI. fig. 4 represents the head of *Erebus* (*Patula*) *macrops*, Linn., Guén. (*Bubo*, Fabr., Donovan, Ins. China, pl. 44. f. 1). The venation of the wings, however (Plate LXXXVI. fig. 1 fore wing, and fig. 2 hind wing of the male, and fig. 3 hind wing of the female), of the same Indian species of *Erebus* denuded of scales, is entirely different from that of any of the Uraniidæ, the fore wings having the small subcostal cell (*sc. c*) and the lower discoidal vein (*c 3\**) arising close to the base of the third branch (*c 3*) of the median vein from a very short transverse discocellular vein.

Mr. MacLeay, in his memoir on *Urania*, noticed the resemblance between the more or less spherical eggs of *Urania* and *Catocala*. The last-named genus, however, is an aberrant one in the family Noctuidæ; and the oology of the Lepidoptera has not been sufficiently studied to allow much weight to be given to the character of the eggs of these insects. At all events, as Mr. MacLeay remarked, the form of the eggs of *Urania* is a very common one in Lepidopterous insects. Hence we may reject the Noctuidæ from amongst the near relations of the Uraniidæ.

Of the remaining families, typified by the Linnean genera *Bombyx* and *Geometra*, M. Guenée is decidedly in favour of the latter:—"Il me semble," says he (Hist. Nat. Ins. Lép. ix. p. 4), "qu'aucune ne peut lutter a cet égard avec les Géomètres. Nous retrouvons d'abord dans la première famille de ces dernières que personne ne sera tenté de disputer aux Phalènes une nervulation [venation] exactement semblable. Les antennes quoique légèrement renflées près du sommet chez plusieurs Uranides, sont filiformes ou plutôt sétacées, et tout le monde sait que ce n'est que chez les *Geometra* que cette forme est vraiment normale. L'absence des stemmates et des taches réniformes et orbiculaires suffit pour les éloigner des Noctuelles et les rapprocher des *Geometra* où ces caractères manquent également. Les queues des ailes inférieures, avec les taches ocellées qui les accompagnent ne se retrouvent que chez les Géomètres de la première famille ou chez les Saturnides qui les précéderont dans la distribution que j'ai adoptée. L'aspect général des deux dernières familles, leurs ailes minces, étendues, leur vol diurne

<sup>1</sup> M. Boisduval (in Nouv. Ann. du Mus. ii. p. 260) introduced the genus *Urania* between *Erebus* and the Geometridæ.



les poussent encore vers cette division. Quant aux premiers états, il y a sans doute du pour et du contre, cependant ceux de l'*Urania rhipheus* sont tellement décisifs, que personne n'a hésité à la rejeter dans les Phalènes."

Mr. Packard, in his fine monograph upon the American Geometrideous Moths, goes even further than M. Guenée. On account of the structure of the head<sup>1</sup> in the Uranides he cannot agree with Guenée in regarding them as a family distinct from the Geometridæ. He adds, "The venation is also much as in the Phalænidæ" (a group of the Geometridæ), there being only three median nervules, on which account he regards them as forming the highest subfamily of the Phalænidæ. "I am aware that the larvæ have sixteen feet, no other Phalænid having more than fourteen" (Mon. p. 22).

Mr. Packard, who has devoted six plates and nearly 150 figures to represent the venation of the wings of the genera of Geometrideous moths, gives the following as the general character of the venation of the family:—"Usually six subcostal venules, always but three median venules; no submedian vein, sometimes a fold representing it. A subcostal cell often present, sometimes two, the cell being formed almost invariably by the anastomosis of the first subcostal venule with its vein. Independent vein well marked, usually in the middle of the discal space" (p. 16).

I have copied from Mr. Packard's plates one of the most characteristic figures of the fore wings of the Geometridæ (Plate LXXXVI. fig. 7), representing that of *Hydria undulata*, Packard (pl. i. fig. 14), in which we see two small prediscoidal cells distinct from the costal vein, the upper discoidal vein (B5\*) arising at a distance beyond the discoidal cell from what I consider as normally constituting the basal portion of the branch B 2 or more probably of B 3. In the fore wing of *Eumacaria brunnearia*, Packard (pl. iii. fig. 7), we see only a single small prediscoidal cell, the first branch of the subcostal vein uniting with the costal vein near its extremity, whilst the upper discoidal vein (B5\*) extends backwards so as to form the upper extremity of the discoidal cell, the basal portion of the upper discoidal vein being the upper discocellular veinlet of E. Doubleday, and the lower discoidal vein (c3\*) arising halfway between the branch B5\* and c3 from an oblique veinlet, the upper part of which forms the middle discocellular veinlet of E. Doubleday, and the lower part being his lower discocellular veinlet.

On looking over Mr. Packard's numerous figures of the veining of the wings, we see

<sup>1</sup> The following are the characters of the head of *Cydimon leilus* (which, following Guenée, Mr. Packard has introduced at the end of the Geometridæ) given by the last-named writer:—

"*Cydimon leilus* (pl. vi. f. 25'). The occiput and epicranium are small and narrow, the antennæ being inserted on the summit of the head; the epicranium is very small, the basal joints of the antennæ being large and near together. The clypeus occupies the entire front, being much longer than broad, narrow, the sides parallel, not narrowing in front, and the surface flush with the eyes; the front edge is slightly arcuate, being slightly produced in the middle of the edges, with lateral foramina distinct. Mandibles rather long, incurved, and with the usual dense golden setæ lying over the base of the maxillæ. Labrum small, narrow. Maxillæ well developed."



that the tendency to form one, two, or even three small cells by the branchlets of the subcostal vein more or less anastomosing together, near the middle of the fore margin of the fore wing, is one of the most constant characters of the Geometridæ. No such small cell occurs in the Uraniidæ<sup>1</sup>; nor, as Mr. Packard remarks, is any Geometrideous larva known having the normal number of sixteen feet, in consequence of which the peculiar mode of locomotion exhibited by the "looper" caterpillars of the latter family is rendered necessary. In the Uraniidæ, on the contrary, the larvæ have sixteen feet; for, even in that of *Urania rhipheus*, as described by M. Sganzin, "il n'y avait aucune interruption de pattes," although when walking they are said to have "quelques rapports avec les chenilles dites Arpenteuses et dans le repos elles formaient entièrement la boucle."

On casting our eyes over the extensive family of the Geometridæ there are a few species which, in their larger size and in the possession of a short tail to each of the hind wings, approach more nearly to the Uraniidæ than the rest. *Urapteryx*, with which M. Guenée commences the series of the Geometridæ, forming "un assez bon passage aux *Uranides*," is remarkable for the arrangement of the veins of the wings, recalling to mind that of the Saturnides, and differing from the general types of the family. Plate LXXXVI. fig. 5 represents the veins of the fore wing, and fig. 6 those of the hind wings of *U. sambucaria*. It is true that we here see three branches to the median vein and the lower discoidal (c3\*), or the independent vein of Mr. Packard, arising from the middle of the extremity of the discoidal cell; but both on the fore and hind wings a branch (representing the upper discoidal vein, B5\*, in the fore wings) is wanting, as is also the small subcostal discoidal cell or cells.

There are, however, certain moths, natives of the Malayan archipelago, which exhibit a much closer resemblance to the Uraniidæ than *Urapteryx* in the arrangement of the veins of their wings, the hind pair of which are likewise furnished with a short broad tail, marked (like that of *Urapteryx*) with a somewhat eye-like black spot. These form the genus *Strophidia* of Hübner and Felder (*Micronia*, group 1, H. N. Lép. x. p. 24), the first species of which (*Micronia astheniata*, from Borneo) is named by M. Guenée after my genus *Asthenia* (upon which observations will be found in the later part of this memoir). Other species are:—*M. caudata*, Fab. (*fasciata*, Cram. pl. 104. f. D); *M. obtusata*, Guen. pl. 5. f. 6 (errore *caudata*); *M. aculeata*, Guen. pl. 13. f. 8; *M. striataria*, Linn., Clerck, pl. 55. Two very typical species have also been figured by Messrs. Felder and Rogenhofer (*Strophidia pannata*, Novara Exp. pl. cxxviii. fig. 39, from Halmaheira and Salwatti, and *S. phantasmah*, ib. fig. 40, from Gebeh, Java (*Bernstein*)). Plate LXXVI. fig. 8 represents the venation of the anterior, and fig. 9 that of the posterior wing of a typical species of this genus closely allied to *S. phantasmah*, which

<sup>1</sup> In *Chrysidia rhipheus* (Pl. LXXXV. fig. 15) there is a very narrow elongated subdiscoidal cell, resulting from the abortion of the extremity of the second branch of the postcostal vein (b2) and its coalescing with the base of the third branch (b3), quite unlike that of any of the Geometridæ.



I received from the Leyden Museum, and which appears to be undescribed<sup>1</sup>. On comparing the venation of this insect with that of the Uraniidæ (*e. g. sloanus* &c.), it will be seen that they are so nearly identical that no doubt could be entertained of their affinity if we were assured that the larvæ of the *Strophidia* were not loopers, and possessed the full complement of sixteen legs. It will, however, be remarked that M. Guenée (H. N. Lép. x. p. 24) is by no means absolutely satisfied that the *Strophidia* are really geometrideous, since he enters into a description of the differences which separate them from *Asthenidia*, Westw., which he assumes to belong to the Bombycides.

In instituting this genus *Asthenia*<sup>2</sup> in the volume of Exotic Moths in Jardine's 'Naturalist's Library,' Entom., vii. 1841, p. 209, pl. xxix. f. 1, I regarded the type, *A. podaliriaria*, as belonging to the Geometridæ, pointing out its chief distinctive characters, especially the short strongly bipectinated antennæ, the very short and weak legs and body, and the venation of the wings. The latter character is here represented (Plate LXXVI. fig. 10, fore and hind wings of *A. podaliriaria*), whence it will be seen that, whilst differing considerably from *Urapteryx*, it approximates more closely to *Strophidia*, from which it, however, differs at once in wanting several of the branches of the postcostal vein of the fore wings. M. Guenée directs attention to the woolly forehead, the bipectinated antennæ, the short indistinctly jointed palpi, the rudimental spiral tongue, the short woolly body, the short legs, woolly anterior tibiæ and basal joint of the tarsi, the venation of the wings, and especially to the fact that "tous les rameaux costaux [of the subcostal vein of the fore wings] sont retranchés comme chez toutes les *Saturnides*," as so many characters separating *Asthenidia* from *Strophidia*, and consigning it to the Bombycides—an opinion in which I am fully prepared to acquiesce from a careful examination of various Saturnideous types.

Regarding, then, the relationship between *Asthenia* and *Urapteryx* as one of analogy, and not of affinity, and considering *Asthenia* as belonging to the great group of Bombycidæ, and that *Strophidia* is more nearly allied to *Asthenia* than it is to *Urapteryx*, I conceive that we shall be warranted in placing the Uraniidæ at a distance from the Geometridæ and amongst the Bombycidæ, on account, 1st, of the structure of the larva of *Coronidia*, *Uranidia*, and *Chrysidia*, and, 2ndly, the venation of the wings destitute of a small cell. The long slender terminal joint of the palpi, and the prolongation of the hind wings into caudate appendages, appear to me to be of secondary importance in determining the relations of the group.

<sup>1</sup> The following are its short characters:—

*STROPHIDIA VOLLENHOVII*, Westw. Alis albis, anticarum margine tenui antico et apicali fascisque duabus transversis mediis pallide fuscis, posticarum fascia e medio costæ ad angulum analem alteraque apicali pallide fuscis, maculis duabus nigris caudalibus. Exp. alar antic. unc. 2½.

*Hab.* In ins. Malayanis (Mus. Hopeiano Oxoniæ).

<sup>2</sup> As the name *Asthenia* has been elsewhere employed in Diptera, it may be well to slightly modify it to prevent all confusion. I propose, therefore, to change the Lepidopterous name to *Asthenidia*.



The fact that Godart, in the 'Encyclopédie méthodique,' described a species of *Coronidia* as an *Agarista*, that Latreille placed the two genera in juxtaposition, and that M. Boisduval had united the three genera named by him *Urania* (*Chrysidia*), *Cydimon* (*Uranidia*), and *Nyctalemon* (*Alcidia* and *Lyssidia*) as three of the tribes of his family Agaristidées in his 'Monographie des Agaristidées,' render it necessary to inquire how far this relationship is real. It is true that the shape of the antennæ in *Uranidia* agrees with that of *Agarista*, and that the armature of the four posterior tibiæ is similar; but the arrangement of the wing-veins in the two groups is wholly unlike, as may be seen by comparing my figures accompanying the present memoir with that of *Agarista lindigii* given by me in the 'Transactions of the Linnean Society,' Ser. 2, Zool. vol. i. pl. xxix. fig. 24, which exhibits the small lozenge-shaped cell (occurring also in *Othria augias*, tab. cit. fig. 18, *Hespagarista interjecta*, ibid. fig. 22), of which there is no trace in *Uranidia*, where the lower discoidal vein is far removed at its base from the terminal portion of the median system of veins.

A more careful examination than has hitherto been published of the arrangement of the veins of the wings in the chief types of the Bombycidæ discloses the fact, that there is more variation amongst them in this respect than is to be met with in other great groups, such as the Sphingidæ, Noctuidæ, and Geometridæ, and hence that a discrepancy between the veining of the wings of the Uraniidæ and the Bombycidæ is not a sufficient argument for their rejection from the latter. In the accompanying Plate LXXXVI. I have given figures of a few of the leading types of Bombycidæ, commencing with those in which some of the branches of the veins are obsolete, and terminating with some which have the full complement of veins and branches. It is remarkable that the gigantic types of the Bombycidæ (*Attacus atlas* and its allies), notwithstanding the comparatively large size of the wings, should have several branches wanting; and it is not easy to trace the precise analogies of some of those which remain. In this species the strong costal vein of the fore wings (*a*) extends about three fourths of the length of the entire costa; the subcostal vein has apparently only three instead of five branches; the first branch (*b* 1) arises at a short distance before the extremity of the discoidal cell, and reaches the costa halfway between the extremity of the costal vein and the tip of the wing; the second branch (*b* 2) of the subcostal arises at a moderate distance beyond the cell and reaches the tip of the wing, whilst the main branch (*b* 3) extends to the middle of the rounded hook or apex of the wing. From the underside of the subcostal vein, just beyond the branching of the first branch, extends a vein obliquely, forming a portion of the anterior margin of the glassy disk, and branching into two branches at the middle of this vitreous spot. Are these two branches the fourth and fifth branches of the subcostal vein? or are they the two discoidal branches of Mr. E. Doubleday, one of which I have considered as supplemental to the subcostal series, and the other to the median series? In their position they exactly correspond to the arrangement of the veins in *Morpho*, as represented by Mr. Doubleday (Gen. D.



Lep. pl. A. fig. 3), the only difference being that in that figure we have all the five branches and the postcostal vein. In that work these two branches are rightly regarded as the two discoidal branches, whilst in *Attacus*, as in *Morpho*, we only find three clearly defined branches of the median vein,  $c\ 1$ ,  $c\ 2$ ,  $c\ 3$ .

In *Attacus pavonia minor* (Plate LXXXVI. fig. 11) we have the same small number of branches in the fore wing as in *A. atlas*, with the exception that the first branch of the postcostal vein ( $B'$ ) is so very short and slender as to be scarcely visible, arising nearly at the tip of the wing and almost immediately joining the costa; the difficulty as to the two discoidal branches ( $B4 = ?\ B5*$  and  $B5 = ?\ C3*$ ) is the same as in *A. atlas*. In *Aglaia tau* (fig. 14) the same arrangement of the veins of the fore wings exists as in *A. atlas*. In the large long-tailed Bombycidæ (*Actias luna* &c., Plate LXXXVI. fig. 15, fore wing, fig. 16, hind wing) we have the same arrangement of the median and two supposed discoidal veins; but the postcostal vein has an extra fourth branch; the first ( $b\ 1$ ) arises at about three fourths of the length of the costal margin, and extends to its five-sixth portion, whilst the second branch ( $b\ 2$ ) is exceedingly short and close to the tip of the wing, just as in *Pavonia minor*; the third branch extends ( $b\ 3$ ) to the tip of the wing, and is followed by a long branch ( $b\ 4$ ), which agrees equally with the branch ( $b\ 3$ ) in *Pavonia minor*; the fifth postcostal branch is wanting, whilst the two discoidal ones ( $b5*$  and  $c3*$ ) arise from a very short basal vein near the extremity of the discoidal cell. In the tailed hind wings of this group (by which they are rendered to a certain degree analogous to some of the Uraniidæ) the three branches of the median vein ( $c\ 1$ ,  $c\ 2$ ,  $c\ 3$ ) run to the extremity of the long tail. Such is also the case with the remarkable *Phalæna brachyura* of Cramer, from tropical Africa, whilst in *Eudæmonia semiramis* (Plate LXXXVI. fig. 13) the long tail is strengthened by the third subcostal branch as well as the second and short third median branches. (In the Uraniideous genera *Manidia* and *Coronidia* the tail of the hind wings is strengthened by two of the branches of the median vein, whilst in *Uranidia leilus* it bears only the third median branch.)

In *Saturnia certhia*, Fabr., we find a deficiency in one of the branches of the postcostal vein, the first branch arising at about three fourths of the length of the wing, the second branch extending to the tip, the third and fourth arising at about the middle of the wing at some distance beyond the discoidal cell, whilst the two discoidal branches, as well as the third branch of the median veins, arise from the transverse extremity of the discoidal cell.

In *Endromis versicolor* (Plate LXXXVI. fig. 12) we find the full complement of veins and branches in the fore wings; and here the two discoidal branches are so placed as completely to prove (as it seems to me) that the upper one ( $B5*$ ) is a portion of the postcostal series, and that the lower one ( $C3*$ ) is a portion of the median series. The discoidal cell is here closed by a much curved discocellular vein, emitting two veinlets running towards the base of the wing within the cell, which might be assumed to be



the representatives of the lost basal portions of the discoidal branches, if these should be considered distinct from the two series, postcostal and median.

In *Gastropacha quercifolia* there is also the full complement of veins and branches (Plate LXXXVI. fig. 17); but here the binary system of the branches into postcostal and median is still more marked, the branch marked c3\* being as completely a branch of the median vein as either c 2 or c 3 (in which respect it agrees with *Papilio*), whilst B5\* is as completely a portion of the postcostal series as B 5 or B 4, the latter of which will be seen to arise at the upper extremity of the discoidal cell. In *Gastr. expansa*, B 4 arises beyond the cell, whilst the basal portion of B 2 and B 3 arises at the extremity of the cell (where B 4 arises in *G. quercifolia*); so that the first postcostal branch (B 1) is the only branch arising from the upper margin of the discoidal cell.

The only other Bombycideoous insects which I shall here notice belong to the singular genus *Epicopeia*, Westw. (Arc. Ent. i. pl. 5), founded upon certain Indian moths which have entirely the appearance of some species of *Papilio*. The late Mr. Edward Doubleday, to whom I applied for his opinion on the relations of this singular genus, observed "that it seems to partake of the characters of *Papilio*, *Urania*, and that group of Bombyces to which *B. luna* belongs. The last-named species has no bridle to the wings, no maxillæ; and there is some resemblance in the neuration of the wings. But I must confess that I see no real connexion between the two insects. My impression is that it must be nearer the *Uranie*, some of which, in form, nearly resemble it; but all these have maxillæ and the discoidal cell of the posterior wings open, and two pairs of spines, I think, to the posterior tibiæ. The one middle spine to the anterior tibiæ is found in some *Uranie*."

In *Epicopeia polydora* ♀ (Plate LXXXVI. fig. 18) we have the full complement of the veins of the fore wings arranged almost as in *Saturnia certhia*, except that the second and third postcostal branches arise from the front margin of the fourth branch, which, as well as the fifth branch, arises from the upper extremity of the discoidal cell, which emits the two discoidal branches and the third median branch from its truncated extremity, as in *Saturnia certhia*. The hind wings are very remarkable, terminating in a very broad tail, which is traversed by all the three branches of the postcostal vein.

Although the relationship of *Epicopeia* with *Urania*, pointed out by Mr. Doubleday, does not appear to me so strong as it did to him, the nearer relationship of the former being, as it seems to me, towards certain of the Chalcosideoous Bombycidæ, it is impossible not to see that we have in all these insects a proof of the stronger relationship of *Urania* with the Bombyces than with any other of the Heterocera.

It remains to notice the structure of these insects in their preparatory states, which equally supports the opinion advanced above, that the group is to be referred to the great division of the Bombyces. The transformations of *Urania boisduvalii* (*U. fernandina*, MacL.) are fully described by Mr. MacLeay in his memoir in the first volume of the 'Transactions' of this Society. The larva cannot, from his account and figure,



be referred either to the Hesperideous, Sphingideous, or Geometrideous divisions of the order. "Its head," says Mr. MacLeay, "is not set on the body by means of a narrow neck, as in the larvæ of the true *Hesperidæ*. It can run about as quickly as the larvæ of any Bombycidæ, and shows little affinity to the caterpillars of the diurnal Lepidoptera, which usually have a slow motion. In form it agrees very closely with the caterpillar of *Agarista*, as figured by Lewin, but is more simple, having no hinder protuberances on the penultimate segment." It, indeed, appears to me to bear a close resemblance to the larva of the buff-tip moth, *B. bucephala*, Linn. Mr. MacLeay describes the cocoon of this insect as made of loose dirty yellow silk, the meshes of which were so few as to allow the inmate to be easily seen; but his figure represents a much more solid structure. The chrysalis, which is not at all angular, moreover, is said to repose in a horizontal position—circumstances which bear upon the question whether the chrysalis is supported by a thread girt round the middle of the body, as in the butterflies with perfect fore legs, and which does not appear likely to be the case with the *Urania*-chrysalis. The transformations of *U. rhipheus* were observed by M. Sganzin in Madagascar, and communicated to M. Boisduval, by whom they were published in his "Monographie des Agaristidées," in the 'Revue et Magasin de Zoologie,' 1874. On the 9th of August "la femelle pondit un grand nombre d'œufs blancs agglomérés ensemble et placés sur les feuilles de manguiier. Au bout d'une douzaine de jours les œufs vinrent d'éclore. . . . La chenille en grossissant changeait de couleur et devenait de plus en plus noirâtre. Quand elle eut quelques lignes de grandeur, on apercevait très-distinctement de petites épines jaunâtres et deux petits cornes roses retractiles; elles les faisaient mouvoir à volonté et les rentraient quand on les inquiétait le moins et surtout lorsqu'on les exposait à l'ombre. En grossissant mes chenilles prenaient une singulière forme, elles s'élargissaient vers le milieu et devenaient minces aux extrémités. On apercevait sur les côtés un feston à dents de loup, composé de plusieurs bandes régulières de points blancs, verts et jaunes; les cornes devenaient d'un rose foncé, tirant sur le carmin: elles avaient dans leur marche quelques rapports avec les chenilles dites Arpenteuses, et dans le repos, elles formaient entièrement la boucle; cela m'a paru d'autant plus extraordinaire, qu'il n'y avait aucune interruption de pattes comme cela a lieu chez les Arpenteuses. La plus grande des chenilles pouvait avoir trois pouces de longueur; toutes les autres étaient plus petites. Il est possible que dans l'état de liberté elles prennent plus d'accroissement. Lorsque les chenilles ont fait leurs chrysalides, elles se sont attachées au moyen d'un fil passé au milieu du corps; je crois qu'elles étaient aussi attenantes par la queue. La chrysalide était verte, conique, et un peu anguleuse, avec des bandes dorées placées horizontalement depuis la tête jusqu'à la queue. L'extrémité était d'un vert bien plus foncé et parsemée d'un grand nombre de points dorés. Les papillons sont restés 21 jours en chrysalides."

Three circumstances in M. Sganzin's account merit notice, as showing differences not



mentioned by Mr. MacLeay :—1st, the retractile rosy-coloured tentacles of the larvæ ; 2ndly, its somewhat Geometriform movement ; and, 3rdly, the want of a cocoon (at least no mention is made thereof by M. Sganzin), and the girt condition of the chrysalis.

I am able to add descriptions and figures of the larva and pupa of a species of the genus *Coronidia*, allied to *C. orithea*, which had been observed by Herr Moritz at Bogota, and to which he had applied the name of *C. regina*. The specimens of the larva and pupa were carefully prepared, and were in the collection of Dr. Kaden, of Dresden, where I examined and made the drawings of them here published (Pl. LXXXV. figs. 1, 2). The caterpillar has a small head, and the prothorax is smaller and thinner than the following segment. The general colour is luteous, with black spots and a black head ; on the prothorax are ten small shining points, forming an oval patch placed transversely ; the segments of the body are furnished with two small conical luteous tubercles, and on the second, sixth, and seventh segments are two erect black, slightly curved spines. The chrysalis is oval, entire, without conical protuberances ; the tongue-case is considerably elongated beyond the wing-cases ; and the extremity of the body forms an acute deflexed spine. It is enclosed in a loose open-work cocoon spun at the base of a folded leaf.

The following Table combines the principal characters of the sections and genera comprising the family Uraniidæ, details of which are illustrated in Plate LXXXV.

Family URANIIDÆ, *Westw.*, Introduction, ii. p. 369 (1840).

*Uranides*, Guenée, Sp. Gén. ix. p. 1.

*Cydimonii*, Blanchard, H. N. Ins. ii. p. 348 ; Walker, List Brit. Mus. Lep. Het. p. 4.

- A. Fore wings with the fifth branch of the subcostal vein (*b* 5) emitting the upper discoidal vein (*b* 5 \*) at a considerable distance beyond the discoidal cell.
  - a. (*Cydimon* Dalm.) Palpi with the terminal joint very short.
    - \* (*Cydimonidæ* Blanchard, Guenée.) Hind wings with the second and third branches of the median vein produced into the long tail ; second branch of the subcostal vein free.—Gen. URANIDIA, Westw. ; type *U. leilus* (figs. 13, 14).
    - \*\* (*Urania* Blanchard, Guenée.) Each of the veins of the hind wings prolonged into a tail ; second branch of the subcostal vein of the fore wing coalescing with the third branch halfway between the cell and the tip of the wing.—Gen. CHRYSIRIDIA, Hb. ; type *U. rhipheus* (figs. 15, 16).
  - b. (*Nyctalemon* Dalm., *Nyctalemonidæ* Guenée.) Palpi with the terminal joint long, slender, and pointed.
    - \* Each of the veins of the hind wings produced into a short scallop, postcostal vein of fore wings wanting the 2nd branch (*b* 2).—Gen. ALCIDIA, Westw. ; type *U. orontes* (figs. 17, 18).
    - \*\* Hind wings with the second and third branches of the median vein produced into a long tail.—Gen. LYSSIDIA, Westw. ; type *U. patroclus* (figs. 19, 20).



- B. (*Sematuridæ* Guenée.) Fore wings with the upper discoidal vein (*b* 5\*) arising at a short distance beyond the discoidal cell, between the cell and the origin of the second branch of the subcostal vein (*b* 2).
- a. Discoidal cell of the hind wings terminating at a distance before the emission of the first branch of the median vein.—Gen. MANIDIA, Westw.; type *U. lunus* (figs. 10–12).
  - b. Discoidal cell of the hind wings extending nearly to the emission of the third branch of the median vein.—Gen. CORONIDIA, Westw.; type *U. orithea* (figs. 1–9).

Genus 1. URANIDIA, Westw.

(Details, Plate LXXXV. figs. 13, 14.)

*Urania* (pars) Fabricius, in Illig. Mag. vi.; Hübner, Verz.; Latreille.

*Cydimon* (pars ult.) Dalman (1824), Kongl. Vet. Acad. p. 392.

*Cydimon* Guenée, Felder, Blanchard, Boisduval, Rev. Zool. 1874, p. 10.

*Urania* (pars prior), Walker, List B.M. Lep. Het. p. 4.

*Leilus* (pars), Swainson, Zool. Ill. n. ser. pl. 129.

The species of this genus are remarkable for the habit of migrating in large numbers, as described by Mr. MacLeay in his paper in the Society's 'Transactions.' Such flights of *U. leilus* are also described in 'Nature,' iv. pp. 12, 13, 494; and the annual migrations of *U. fulgens* from east to west in August and September, across the Isthmus of Panama, are described in the same journal ('Nature,' viii. p. 536).

Sp. 1. URANIDIA LEILUS.

*Papilio leilus*, Linn. S. N. ii. 750; Clerck, Icon. pl. 27. f. 1; Cramer, Pap. Exot. i. pl. 85. f. C, D; Fabricius, Syst. Gloss. (*Urania*, L.); Guenée, Sp. Gén. ix. p. 7; Boisduval, Rev. Zool. 1874, p. 10 (*Cydimon*, L.).

*Lars heroica leilaria*, Hübner, Samml. ex. Schm. (*L. B. heroica*), pl. A. f. 1, 2.

*Leilus surinamensis*, Swainson, Zool. Ill. 2nd ser. pl. 125.

*Hab.* Cayenne, Surinam.

Sp. 2. URANIDIA AMPHIELUS.

*Cydimon amphiellus*, Boisduval, Rev. Zool. 1874, p. 11.

*Cydimon leilus*, var., Guenée, Sp. Gén. ix. p. 7.

*Hab.* Trinidad.

Sp. 3. URANIDIA BRASILIENSIS.

*Leilus brasiliensis*, Swainson, Zool. Ill. 2nd ser. pl. 126; Guenée, Sp. Gén. ix. p. 7, pl. 1. f. 1.

*Hab.* Brazil.

Sp. 4. URANIDIA CACICA.

*Cydimon cacica*, Guenée, Sp. Gén. ix. p. 8; Boisduval, Rev. Zool. 1874, p. 11.

*Hab.* Mexico, Acapulco.



## Sp. 5. URANIDIA POEYI.

*Urania poeyi*, Herrich-Schäffer, Corr. zool. Ver. Regensburg, xx. 1868 (p. 43, Lep.); Felder, Novara, Lep. v. pl. cxxi. figs. 6, 7.

*Hab.* Cuba.

## Sp. 6. URANIDIA BOISDUVALII.

*Urania boisduvalii*, Guérin, Icon. R. An. p. 490, Ins. pl. 82. f. 1; Griffith, An. Kingd. Ins. pl. 99; Guenée, Sp. Gén. ix. p. 8; Boisduval, Rev. Zool. 1874, p. 12.

*Urania fernandinae*, MacLeay, Trans. Zool. Soc. i. 1834, p. 180, pl. 26.

*Hab.* Cuba.

## Sp. 7. URANIDIA FULGENS.

*Urania fulgens*, Boisduval, MSS.; Walker, List B.M. Lep. Het. p. 5; Guenée, Sp. Gén. ix. p. 9; Boisduval, Rev. Zool. 1874, p. 16, Lepid. Guatemala, p. 77.

*Hab.* Columbia, Guatemala, Mexico.

## Sp. 8. URANIDIA SLOANUS.

*Papilio sloanus*, Cramer, Pap. Exot. i. pl. 85. figs. E, F; Sloane, Jamaica, ii. pl. 239. f. 11, 12; Godart, Enc. M. ix. p. 709 (*Urania*, S.); Guenée, Sp. Gén. ix. p. 9; Boisduval, Rev. Zool. 1874, p. 15.

*Papilio leilus*, var.  $\beta$ , Gmelin, i. pp. 5, 2, 237; Fabricius, Ent. Syst. iii. p. 122.

*Urania sloanaria*, Hübner, Verz. p. 289.

*Leilus occidentalis*, Swainson, Zool. Ill. 2nd ser. pl. 129.

*Hab.* Jamaica.

## Genus 2. CHRYSIRIDIA, Dalm.

(Details, Plate LXXXV. figs. 15, 16.)

*Chrysiridia*, Hübner (Verz.).

*Urania*, Boisduval, Rev. Zool. 1874, p. 7; Guenée, Sp. Gén. ix. p. 11<sup>1</sup>.

*Urania* (pars ult.), Walker, List B. M. Lep. Het. p. 4.

*Cydimon* (pars prima), Dalm. 1825.

*Thaliura*, Duncan in Jardine, Nat. Lib. Lep. p. 195 (1837).

*Leilus* (pars), Swainson, Zool. Ill. n. ser. pl. 130.

*Rhipheus*, Swainson, Zool. Ill. n. ser. pl. 131.

## Sp. 1 (9). CHRYSIRIDIA RHIPHEUS.

*Papilio rhipheus*, Drury, ii. pl. 23. f. 1, 2, Index, col. 2; Cramer, Pap. Exot. iv. pl. 385. f. A, B; Godart, Enc. M. ix. p. 709 (*Urania rh.*); Boisduval, Faune Ent. Madagascar, Lép., pl. 14. f. 1, 2, and Rev. Zool. 1874, p. 8; Crochard's edit. R. An. Atlas Ins. pl. 144. f. 3; Guenée, Sp. Gén. ix. p. 12.

*Urania prometheus*, Drapiez, Dict. Class. d'Hist. Nat. iii. pl. 8. f. 1, 2.

*Leilus orientalis*, Swainson, Zool. Ill. 2nd ser. pl. 130.

<sup>1</sup> Fabricius does not mention *U. rhipheus* amongst his types of *Urania*.



*Rhipheus dasycephalus*, Swainson, op. cit. pl. 131.

*Urania druryi*, Boisduval, Rev. Zool. 1874, p. 8.

*Urania rhipheus*, var., Guenée, Sp. Gén. ix. p. 12.

*Chrysiridia rhiphearia*, Hübner, Verz. p. 289.

*Urania madagascariensis*, Lesson, Illustr. d. Zool. pl. xxxiii.

*Hab.* Madagascar; China? (*Drury*<sup>1</sup>); Bengal? (*Cramer*); Coromandel?; St. Helena? (*Bory de St. Vincent*).

I am quite satisfied that the figure given by Drury was taken from a specimen which had the hind wings mutilated, and the head replaced by that of a *Papilio*. Drury gave China as the locality of his specimen, which is also clearly erroneous; but whether the specimen had been brought from Madagascar or from some part of the eastern coast of Africa is uncertain. In the latter case his insect may be geographically distinct from the Madagascar individuals; and this would enable us to account for the variations in the markings of the wings pointed out by Swainson, Guenée, and Boisduval. Until, however, we receive individuals agreeing with Drury's figure, I should be inclined to think that the variations pointed out resulted from the evidently imperfect and partially rubbed condition of Drury's insect.

According to M. Sganzin, who captured numbers of *C. rhipheus* in Madagascar, the small neighbouring island of Sainte-Marie possesses a smaller species, thus noticed by him in his communication to M. Boisduval:—"Il existe aussi une petite espèce que je crois très-différente de la première (*U. rhipheus*). On ne l'a pas rencontré à la même époque, et je ne crois pas qu'on la trouve à la grande terre; je ne l'ai jamais vue qu'à Sainte-Marie; elle paraît en mars et avril," the true *U. rhipheus* appearing in the winged state in September.

Sp. 2 (10). CHRYSIRIDIA MACLEAYII.

*Urania macleayii*, Montrouzier, Ann. Sci. Phys. et Nat. Lyon, sér. 2, viii. p. 410.

*Hab.* Woodlark Island.

Sp. 3? (11?). CHRYSIRIDIA CRÆSUS.

*Thaliura cræsus*, Gerstaecker, in Archiv f. Naturg. xxxvii. p. 361, and V. d. Decken, Reisen in Ost-Afrika, Ins. p. 383, tab. xvi. f. 4.

"A *Thal. rhipheo*, Cr., differt alarum anticarum fascia media smaragdina latiore, marginem externum versus furcatim divisa, strigis dimidii apicalis densioribus, posticarum area smaragdina et igneo-cuprea uberius nigro conspersa et fasciata, appendiculis 3 posticis brevioribus, alis anticis infra ubique subæqualiter viridi-undulatis, posticarum area basali obscurius cæruleo-viridi." Exp. alar. mill. 78 ♂, 92 ♀.

*Hab.* Ins. Zanzibar.

I examined specimens of this supposed species in the hands of M. Deyrolle in Paris,

<sup>1</sup> On the supposed Asiatic locality of this species see Trimen in Journ. Linn. Soc. Zool. xi. p. 284.



which did not, however, appear to me to be specifically distinct from *C. rhipheus*. Such is also the opinion of M. Lucas, who states that all the transitional forms occur between *U. rhipheus* and *U. cræsus*. Bull. Soc. Ent. Fr. [5] vi. pp. cxxvii, cxxviii.

Genus 3. ALCIDIA, Westw.

(Details, Plate LXXXV. figs. 17, 18.)

*Alcidis*, Hübner (Verz. 1816); Guenée, Sp. Gén. ix. p. 13 (nec *Alcides*, Dalm. 1826, Gen. Curcul.).  
*Nyctalemon* (pars prior), Dalman, Walker, List B.M. Lep. Het. i. p. 7; Boisduval, Rev. Zool. 1874, p. 17.

Sp. 1 (12). ALCIDIA ORONTES.

*Papilio orontes*, Linn. Syst. Nat. ii. p. 750; Clerck, Icon. pl. 26. f. 1; Cramer, Pap. Exot. i. pl. 83. figs. A, B; Godart, Enc. M. ix. p. 710 (*Urania o.*); Hopffer, Neue Schm. Heft 2, tab. 11, figs. 1, 2.

*Alcidis orontiaria*, Hübner, Samml. exot. Schm., Lar., B. her. 3, f. 3, 4.

*Hab.* Amboina, Ceram, Gilolo, New Guinea, Cape Grafton, north-east coast of New Holland.

Sp. 2 (13). ALCIDIA LIRIS.

*Alcidis liris*, Felder, Wiener ent. Monatschr. Bd. iv. p. 250; Reise d. Novara, Lep. pl. cxxi. fig. 2.

*Hab.* Batchian (*Wallace*).

Sp. 3 (14). ALCIDIA ARNUS.

*Alcidis arnus*, Felder, Reise d. Novara, Lep. pl. cxxi. fig. 1.

*Hab.* Insula Aru? (*Lorquin*). In Mus. Brit. &c.

Sp. 4 (15). ALCIDIA CYDNUS.

*Nyctalemon cydnus*, Felder, in Wiener ent. Monatsch. iii. pl. 3. f. 1, p. 179.

*Var.* With band of hind wings very broad, extending nearly to the anal angle (Aru).  
An *N. metaurus*, Hopff.?

*Hab.* Dorey, New Guinea (*Mus. Brit.*); Polynesia? (*Felder*).

Sp. 5 (16). ALCIDIA ZODAICA.

*Nyctalemon zodaica*, Butler, in Entom. M. Mag. vol. v. p. 273.

“♂ ♀. Alæ supra nigræ, ad basin virescentes, fascia media communi lata aureo-viridi; anticæ fascia altera lineolari subapicali, pallidiore striolisque costalibus ad basin aureo-albidis; posticæ cauda cæruleo-alba, ciliis albis; macula squamisque submarginalibus analibus, corpus virescens abdomine pallidiori. Alæ subtus pallide virescentes, fasciis fere velut in *N. orontiaria*, Hübner (*orontes*, Linn.), maculis autem posticis subapicalibus in margine subrotundatis viridibus; corpus thorace albido, abdomine aurantiaco, cirris maris perlongis ochreis. Expans. alar. unc. 4, lin. 7.”



Except in being more bronzed in the colour of the wings, this species scarcely differs from *A. agathysus*.

*Hab.* North China (*Fortune*). In Brit. Mus.

Sp. 6 (17). *ALCIDIA AGATHYSUS*.

*Nyctalemon agathysus*, Kirsch, Mittheil. zool. Mus. Dresden, Heft ii. p. 129, pl. vii. figs. 8, 8a.

*Hab.* New Guinea. In Mus. Dresden.

Sp. 7 (18). *ALCIDIA BOOPS*, sp. nov. (Plate LXXXVII. fig. 1.)

Alis supra cyaneo-nigris, anticarum dimidio basali costæ striolis, fascia submedia postice intus incurva, fasciolaque subapicali cæruleo-viridibus; posticis fascia media dilatata ejusdem coloris, cauda cæruleo-alba, ciliis albis. Capite maximo, ano maris fulvo barbato. Expans. alar. antic. unc.  $4\frac{3}{4}$ .

*Hab.* Aru (*Wallace*). In Mus. Hopeiano Oxoniæ.

This insect agrees so entirely with *A. agathysus* that I should have had no hesitation in so naming it; but the extraordinary size of the head and eyes, far exceeding those of any other males of the genus which I have examined, seems a sufficient character to allow it a distinctive specific rank, although I am aware that in certain insects which are distinguished by the large size of their heads there is much difference in the extent of this character. I know no such instance, however, amongst Lepidopterous insects.

Sp. 8 (19). *ALCIDIA METAURUS*. (Plate LXXXVII. fig. 2.)

*Nyctalemon metaurus*, Hopffer, Neue od. wen. bek. Schmett. 11. Heft, pl. 2. figs. 3, 4; Boisduval, Rev. Zool. 1874, p. 18.

*Alcides orontes*, Guenée, Sp. Gén. ix. p. 14.

*Note.*—The figure given by Hopffer is far too highly coloured. I have therefore given a new representation of it. It may be distinguished by the very broad conical central fascia of the fore wings.

*Hab.* New Guinea and north of Australasia. In Mus. Hop. Oxoniæ.

Sp. 9 (20). *ALCIDIA AURORA*.

*Alcides aurora*, Salvin & Godman, Proc. Zool. Soc. 1877, p. 150, pl. xxiii. figs. 5, 6.

*Hab.* New Ireland, Duke-of-York Island. In Brit. Mus.

#### Genus 4. *LYSSIDIA*, Westw.

(Details, Plate LXXXV. figs. 19, 20.)

*Lyssa*, Hübner (Verz. 1816), nec *Lissa*, Leach, Gen. Crust. (1815).

*Nyctalemon*, pars ult., Dalman, Boisduval, Rev. Zool. 1874, p. 16.

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*Nyctalemon*, pars med., Walker, List B.M. Lep. Het. p. 7.

*Nyctalemon*, Guenée, Sp. Gén. ix. p. 14.

Sp. 1 (21). LYSSIDIA PATROCLUS.

*Papilio patroclus*, Linn. Mus. Reg. 204; Syst. Nat. ii. 749; Clerck, Icon. pl. 37. fig. 1; God. Enc.

M. ix. 710; (*Urania p.*) Guenée, Sp. Gén. ix. p. 15.

*Lyssa patroclaria*, Hübner, Verz. p. 289.

*Note*.—The fascia of the fore wing is broader, white, and extends nearly to the anal angle of the fore wing.

*Hab.* Amboina, Sylhet, Java, Duke-of-York Island.

Sp. 2 (22). LYSSIDIA MENÆTIUS.

*Papilio patroclus*, Cramer, Pap. pl. 109. figs. A, B; Drury, Ins. i. pl. 7, 8; Guenée, Sp. Gén. ix. p. 15 (*Nyctal. patr.*), nec Linn., Clerck.

*Nyctalemon menætius*, Hopffer, Neue od. wen. bek. Schmett. 11. Heft, pl. 3. fig. 1 (1856); Boisduval, Rev. Zool. 1874, p. 20.

*Nyctalemon zampa*, Butler, Ent. M. Mag. vol. v. p. 273 (1869).

*Nyctalemon crameri*, Boisduval, Rev. Zool. 1874, p. 19.

*Lyssa achillaria*, Hübner, Verz. p. 289.

*Nyctalemon achillaria*, Guenée, Sp. Gén. ix. p. 15.

*Papilio patroclus*, var., Cramer, Pap. pl. 198. figs. A, B.

*Note*.—The fascia is narrow, white, and does not reach near to the anal angle of the fore wings.

*Hab.* China, India, Singapore.

Sp. 3 (23). LYSSIDIA HECTOR.

*Nyctalemon hector*, White, MS.; Walker, List Brit.-Mus. Lep. Het. vii. p. 1771.

*Nyctalemon longicaudus*, Schauff. Nunq. Otios. i. p. 13 (Manilla).

*L. fuscilo-cinerea*, alis anticis posticisque fascia recta obliqua alba; alis anticis margine basali nigro, albo subundulato; alis posticis ad apicem externum nigro plagiatis vel subfasciatis.

*Hab.* Borneo and Philippine Islands. In Mus. Brit.

Smaller than *N. patroclus*, inner tail of hind wings proportionally longer.

Sp. 4 (24). LYSSIDIA NAJABULA.

*Nyctalemon najabula*, F. Moore, Proc. Zool. Soc. 1877, p. 620.

*Hab.* Andaman Islands. In Mus. Brit.

Smaller and of a much darker fuliginous-brown colour both above and below than the Indian *L. menætius* and the Malayan *L. docilis*, and has a narrower median trans-



verse pale band on both wings above than the former species; and on the underside these bands are well defined and narrow. Expanse 5 inches. S. Andamans (Port Blair). In Coll. F. Moore.

Sp. 5 (25). *LYSSIDIA DOCILIS*.

*Nyctalemon docile*, Butler, Journ. Linn. Soc. (Zool.) xiii. p. 197; Druce, P. Z. S. 1878, p. 642.

*Hab.* Malacca. In Mus. Brit.

Genus 5. *MANIDIA*, Westw.

(Details, Plate LXXXV. figs. 10–12.)

*Mania*, Hübner (Verz.).

*Sematura*, Dalman, Act. Holm. 1824, p. 407; Guenée, Sp. Gén. ix. p. 17.

*Nyctalemon*, pars ult., Walker, List B. M. Lep. Het. p. 8.

———, Guenée, H. N. Léop. ix.

Sp. 1 (26). *MANIDIA LUNUS*.

*Phalæna lunus*, Linn. Syst. Nat. ii. 810; Clerck, Icon. pl. 52. figs. 3, 4; Godart, Enc. Méth. ix. 711.

*Sematura actæon*, Felder, Novara, pl. cxxi. fig. 5 (= "*Lunus Clerck*," Felder, in text).

Fœm.? *Papilio empedocles* (Fabricius, Mant. Ins. ii. 10?), Cramer, Pap. Exot. iii. pl. 199. figs. A, B;

Godart, Enc. Méth. ix. 711; (*Urania emp.*) Guenée, Sp. Gén. ix. p. 19.

*Mania empedoclaria*, Hübner, Verz. p. 290; Samml. exot. Schm. Lar., B. her. B, f. 314.

*Hab.* Brasilia, Honduras.

*Note.*—Cramer's figures B, C, plate 220, named *cunigeraria* by Hübner, Verz. p. 290, have been referred to this species; but they represent a different insect, having undulating, not straight, fasciæ on the wings.

Sp. 2 (27). *MANIDIA SELENE*.

*Sematura selene*, Guenée, Sp. Gén. ix. p. 18; an *Nyct. ægistus*, Wlk.?

*Hab.* Para.

Sp. 3 (28). *MANIDIA DIANA*.

*Sematura diana*, Guenée, Sp. Gén. ix. p. 18.

*Hab.* —?

Sp. 4 (29). *MANIDIA PHŒBE*.

*Sematura phæbe*, Guenée, Sp. Gén. ix. p. 19, Ann. Soc. Ent. France (5), v. pp. 117, 118 (♀).

*Hab.* —?

Sp. 5 (30). *MANIDIA CAUDILUNARIA*.

*Papilio lunus* ♀, Cramer, Pap. pl. 200. fig. A.

*Sematura caudilunaria*, Hübner, Verz. p. 290.



*Sematura phæbe* ♂, Guenée, Ann. Soc. Ent. France (5), v. p. 117 (1874).

*Hab.* Brasilia, Cayenna, Guiana. In Mus. Hopeiano Oxoniæ.

Sp. 6 (31). *MANIDIA EXCAVATA*.

*Nyctalemon excavatus*, Walker, List Brit.-Mus. Lep. Het. p. 9; Butler, Ill. Lep. Het. B. M. pl. 1. fig. 1.

*Hab.* St. Domingo, Haiti, and Jamaica. In Mus. Brit. et Hopeiano Oxoniæ.

Sp. 7? (32). *MANIDIA ÆGISTUS*.

*Papilio ægistus*? Fabr. Mant. Ins. ii. p. 10.

*Nyctalemon ægistus*, Walker, List B.M. Lep. Het. i. p. 9; an *S. selene*, Guenée?

*Hab.* Jamaica (*Gosse*). In Mus. Brit.

Sp. 8? (33). *MANIDIA*? *LAVINIA*.

*Papilio lavinia*, Fabricius, Ent. Syst. iii. p. 22. An hujus generis? an *Papilio*?

*Hab.* America.

#### Genus 6. *CORONIDIA*, Westw.

(Details, Plate LXXXV. figs. 1-9.)

*Coronis*, Latreille et alior.; nec *Coronis*, Hübner (Verz. Gen. Noctuidarum); nec *Coronis*, Latr. (Gen. Crust.); nec *Coronis*, Glog. (Gen. Avium).

*Larunda*, Hübner (Verz.), Felder; nec *Larunda*, Leach (Crust.).

#### Section 1. Alis posticis cæruleo fasciatis.

Sp. 1 (34). *CORONIDIA ORITHEA*. (Plate LXXXVII. fig. 3.)

Alis brunneo-nigris, anticis fasciis duabus albido-carneis rectis parallelis distantibus, secunda e costa ad angulum internum extensa intus dentata; alis posticis macula magna discoidali semilunari cæruleo-azurea in lineam curvatam ad marginem analem prope angulum analem extensa; lunulis tribus nigris supra violaceis inter angulum et caudam, hujus apice subalbido.

*Phalæna orithea*, Cramer, Pap. Exot. iii. pl. 262. fig. C; (*Larunda or.*) Hübner, Verz. no. 2807; (*Coronis or.*) Walker, List Lep. Het. Brit. Mus. i. 37; Guenée, Sp. Gén. ix. p. 21.

*Coronis d'urvillei*, Boisduval, in Règne An. 2nd edit. iii. p. 440, & v. p. 389, pl. xx. fig. 4; Godart, Enc. Méth. ix. p. 803; Guenée, Sp. Gén. ix. p. 21.

*Hab.* Surinam, Cayenne, Brazil (Espírito Santo), Guiana.

The original figure of this species given by Cramer exhibits the large semioval violet-coloured patch extending more than halfway from the costa of the hind wings,



and reaching in a fine curved line to the anal margin just above the anal angle, with several dark lunules between it and the tail. M. Boisduval, evidently overlooking Cramer's figure, described and figured the same species in Latreille's Appendix to the second edition of the 'Règne Animal' under the name of *C. d'urvillii*, with the following description, which is stated to be from his pen:—

“CORONIS D'URVILLII.—Dessus des premières ailes d'un brun olivâtre, ayant près de la base et vers le milieu une bande oblique dentée en scie blanchâtre, celle de la base plus ou moins violâtre, celle du milieu un peu lavée d'olivâtre sur son côté interne qui seul est denté, l'extrémité offre près de la frange une double ligne grisâtre, dont la plie externe denticulée: ailes postérieures se terminant par une queue médiocre, un peu spatulée et offrant sur le milieu une bande d'un bleu violet vif, très-large près de la côté et finissant en pointe près de l'angle anal. Dessous des quatres d'un brun olivâtre pâle, avec une bande blanche sur le milieu de chacune, et l'extrémité d'un gris jaunâtre. Cayenne; de la collection de M. Boisduval.”

Notwithstanding the statement of M. Boisduval that the type was in his collection, M. Guenée, who was allowed by him the unlimited use of his collection, overlooking Boisduval's description, says that he only knew *C. d'urvillii* by Latreille's figure, and that he could not, therefore, describe its colours; whilst he describes *C. orithea* from “Cayenne, un ♂ Coll. Bdv. Cette magnifique espèce est toujours très rare.” It is evident, therefore, that M. Boisduval had altered the name of the specimen in his collection from *d'urvillii* to *orithea*, probably in consequence of the observation of M. Blanchard in the Crochard edition of the 'Règne Animal,' that the two insects were synonymous.

The insect which I have represented in Pl. LXXXVII. fig. 3, appears to me to be sufficiently similar to Cramer's figure of the species to allow it to be described as the male thereof, the figures both of Cramer and Boisduval above referred to evidently representing female insects, whilst the two specimens in the Hopeian Collection, one from Columbia (collected by Chesterton) and one from Papagaya (collected by Rogers), are males, having a triangular patch of luteous hairs on the underside of the fore wings near the middle of the posterior margin nearly concealed by the costal portion of the hind wings (and hence overlooked by all writers on these insects), whilst the hind wings have a patch of rough black scales on the upperside between the base and the blue spot.

The fore wings above are of a very rich maroon-brown colour, the basal fourth part of the wing varied with very slender purplish white lines, forming several more or less oval dark patches. The outermost of these lines is slightly waved at its junction with the principal veins. At a slight distance beyond the middle the wing is traversed by a distinct, nearly straight, narrow, whitish fascia, extending from the costa, where it is a little dilated, to the anal angle, where its inner margin is a little incurved. This fascia is marked on the costa with two short brown marks, the inner one of which extends in a much more slender condition along the inner edge of the fascia. The



apical margin of the wing is marked with two very slender pale lines, which unite together about half the distance from the apical angle. The first of these lines is angulated near the angle; and the outer one is scalloped. The rich purple oval spot occupying the whole of the outer angle, and a great portion of the disk of the wing, terminates in a narrow flesh-coloured line extending to the anal angle, from which upwards the anal margin of the wing is marked with several short, obscure, transverse marks, whilst between the anal angle and the tail there are three rather large semioval black spots.

On the underside of the Columbian specimen the fore wings are uniform brown, the basal third portion as far as the vein closing the discoidal cell being luteous; the costa is narrowly luteous with three small black dots between the end of the cell and the pale fascia, and six similar dots between the fascia and apical mark. A fascia of clear, pale buffish white occupies the place of the band of the upperside, with both its margins slightly scalloped or waved at the veins; the apical margin is pale luteous buff, dilated a little at the apex, and marked with very minute black transverse lines; this pale border vanishes between the first and second median branches. The hind wings have the basal half luteous and the apical half brown, the former colour extending to within two lines of the anal angle. In the Columbian specimen the pale basal portion terminates in a slight curve, the middle of which is towards the base of the wing; it is not defined by a distinct paler streak; and the longitudinal veins in the middle of the wing are marked with three or four small luteo-fulvous spots on each. The apical margin of the hind wings is narrowly luteous buff between the tail and outer angle, and bears a somewhat triangular spot between the tail and anal angle.

There is considerable difference between the two specimens in the Hopeian Collection. The Columbian one is more elegant in its form, the fore wings of the Papagayan individual are more ovate, and the hind wings shorter. The dark central portion of the fore wings is relatively very much broader in the Columbian specimen, in which the costal margin of the fore wing is unspotted beyond the middle, whereas it bears four pale dots in the other; the blue patch on the hind wings is of a whiter blue in the Papagayan specimen, and the pale basal portion of the hind wings terminates in a narrow waved paler fascia preceded by a darker and more distinct waved line, this pale fascia slightly curving outwards in the middle, whilst the pale fascia of the fore wings on the underside is nearly straight and rather broader than in the other.

Sp. 2 (35). *CORONIDIA ERECTHEA*, sp. nov. (Plate LXXXVII. fig. 4.)

Præcedenti similis; differt margine lato apicali fusco-luteo alarum anticarum, maculaque multo minore elongato-trigona cæruleo-purpurea posticarum, cauda spatulata alba nigro bipunctata. Expans. alar antic. unc. 2.

*Hab.* Brasilia. In Mus. Hopeiano Oxoniæ et Mus. Brit.



In its general character this species closely resembles *C. orithea*. The specimen in the Hopeian Collection is a male, having the fore wings triangular and pointed at the tip, and the oval patch of rough black scales on the upperside of the base of the hind wing, and the tuft of luteous hairs on the hind margin of the underside of the fore wing, whilst two individuals in the British Museum, from Espirito Santo, want these characteristic sexual markings. In these two specimens, however, the antennæ are slightly bipectinated, proving the anomalous fact that simple antennæ may be characteristic of the males of a species of which the female has those organs more or less pectinated.

In the Hopeian specimen the coloured patch of the hind wings is elongate-conic, broadest at the costa, with its sides nearly even and straight, and terminating in a somewhat flesh-coloured streak extending nearly to the anal angle; but in the British-Museum specimens the outer margin of this blue patch is somewhat more scalloped. The terminal joint of the palpi is very short and clavate. On the underside the wings are brown, the basal portion being only slightly tinted with ochreous buff; the fore wings without the pale marks at the base, the central one entire and white with a pearly tinge, the apical margin nearly as on the upper side. The under wings beneath have a slightly defined, central, oblique, waved fascia of palish lilac, preceded towards the base by two slender, brown, dentated, waved lines. The patch of luteous hairs on the underside of the fore wings is covered by the costal margin of the hind wing, and forms a triangular patch lying flat on the wing, and reaching to the first branch of the median vein. Beyond the fascia the hind wing is uniform brown with a small pale triangular patch between the anal angle and the tail, which is brown and tipped with white.

Sp. 3 (36). *CORONIDIA BOREADA*, sp. nov. (Plate LXXXVII. fig. 5.)

Præcedentibus similis, differt antennis fœminæ circiter 80-articulatis, articulis bipectinatis; fascia media alarum anticarum intus denticulata, extus recta, e costa ad angulum posticum extensa, et ibi intus curvata, costa parum lutescenti-guttata, margine apicali bilineato, linea interna prope angulum apicis angulata, linea externa bistrigulata et cum præcedente pone medium marginis apicalis confluyente; alis posticis macula anguste semi-ovata cærulea, in lineam augustiorem carneam ad angulum analem extensa, margine anali luteo-subfasciato, margine apicali inter angulum analem et caudam maculis duabus semiovalibus, et inter hanc et angulum externum margine tenui albido striolam nigram includente. Expans. alar. antic.  $2\frac{2}{3}$  unc.

*Hab.* Brasilia. In Mus. Hopeiano Oxoniæ et Britann.

The remarkable elongated and bipectinated antennæ of the female in this species distinguish it at once from all its congeners. As the wings do not exhibit the secondary sexual characters noticed in the males of the preceding species, I am compelled to



consider the specimens with these antennæ females. They are now for the first time noticed; and I know no other instance amongst Lepidopterous insects in which pectinations are developed in the female antennæ whilst those of the male are simple. On the underside the wings are brown, buff at the base, the fore wings without basal markings and with a central fascia shaped as on the upperside, white, very slightly tinged with luteous; the apical margin with a sharply marked pale buff edge, slightly scalloped within and finely irrorated with brown scales; the costa indistinctly marked with four dark spots beyond the fascia: the hind wings have a central, strongly scalloped, narrow, pale buff fascia, very oblique, preceded and followed by a slender black waved line, the veins beyond the fascia being dark brown, dotted with minute buff marks; between the anal angle and the tail, and between the tail and the outer angle, the margin of the hind wings is buff, irrorated with brown scales.

Sp. 4 (37). *CORONIDIA HYPHISIS*.

*C. alis fusco-nigris, fascia media continua anticarum recta alba, posticarum curvata albo-cærulea micante; subtus pallidioribus fascia communi angustiore alba lilacino micante (fem.).* Expans. alar. antic. unc. 2, lin. 2.

Antennæ in figura Hopfferi parum serratæ videntur.

*Coronis hyphisis*, Hopffer, Lep. nov. pl. lxxxvii. fig. 2, 3.

This species is distinguished by the middle band of the fore wings being more transverse, reaching considerably within the posterior angle of the wings, to which it is united by a short marginal extension, so that it is much more continuous with the band of the hind wings than in any of the other blue-banded species.

*Hab.* Mexico.

Sp. 5 (38). *CORONIDIA HYSUDRUS*.

*C. alis fusco-nigris, fascia media non continua anticarum obliqua alba, posticarum subcurvata, cyaneo micante; subtus fuscis, anticis fascia lilacino-alba, posticis testaceo irroratis (mas. et fem.).* Expans. alar. antic. lin. 24, 25.

*Coronis hysudrus*, Hopffer, Lep. nov. pl. lxxxvii. figs. 4, 5.

This species is closely allied to *C. boreada*, from which it differs in the form of the pale band of the hind wings, and in the structure of the antennæ. Hopffer figures a female, but states that specimens of both sexes are in the Berlin Museum. It is therefore evident that, had the antennæ in either or both sexes been pectinated, he would have represented or described them so.

*Hab.* Brasilia et Mexico.



Section 2. Alis posticis rufo fasciatis.

Sp. 6 (39). CORONIDIA EGINA.

“Ailes brunes ; les antérieures présentent alternativement des lignes ondulées plus obscures et plus pâles et en outre quatre bandes transversales d'un gris blanchâtre interrompues par des lignes brunes. La première de ces bandes est presque basilaire, la 4<sup>me</sup> presque terminale, la 2<sup>me</sup> en deçà et la 3<sup>me</sup> au delà du milieu. Les ailes postérieures, plus rembrunies dans leur moitié inférieure que vers la base, ont une large bande rouge atténuée avant d'arriver au côté interne de l'aile. En outre il existe près du bord terminal des stries transversales et 3 ou 4 taches noirâtres.”

*Coronis egina*, Boisduval, in R. An., Crochard edit., Atlas, Ins. pl. 165. fig. 4 ; Walker, List Lep. Het. B. M. i. 38 ; Chenu, Enc. Hist. n. Pap. p. 234, fig. 399 ; Guenée, Sp. Gén. Lép. ix. p. 21, pl. 1. fig. 3.

*Hab.* Brazil. In Mus. Brit.

CORONIDIA EGINA, var. ? (Plate LXXXVII. figs. 6, 7.)

I have represented in figs. 6 & 7 an insect from Sao Paulo, Brazil, in the Hopeian Collection, which agrees in nearly every respect with the figure given of this species in the Crochard edition of the 'Règne Animal ;' but the precise form of the markings of the fore wings is either incorrectly given in that figure, or we must regard the insect before us as distinct. The red band of the hind wings also is more ovate than in the Crochard figure, with its outer edge scalloped ; and it only extends to the middle of the wing instead of arriving in an attenuated form at the anal margin ; the tail also is very broadly spatulate in the Hopeian specimen ; the longitudinal lower discoidal vein of the fore wings is also white beyond the fascia, uniting with the white inner edge of the pale apical border, and enclosing therewith a broad dark patch, widest at the costa, which space on the underside of the wing is tinged with rosy. The underside of the wings of this insect is so beautiful that I have given a separate figure of it. If it should ultimately prove to be distinct from *C. egina*, I propose the name of *paulina* for it. The specimen measures  $2\frac{1}{8}$  inches in the expanse of the fore wings, which are rather sharply pointed at the tip, with the hind margin dilated and rounded. The characteristic sexual characters of the wings are wanting.

Sp. 7 (40). CORONIDIA CANACE.

*C. alis fuscis, subtus pallidioribus : anticis supra strigis obliquis luteo-albidis tribus, exteriore rectissima, subtus fascia media obliqua albida rectissima ; posticis supra fascia angulata sanguinea, subtus rubescenti-albida (mas et fem.).*



*C. eginæ* proxima.

*Coronis canace*, Hopffer, Lep. nov. pl. lxxxvii. fig. 6.

*Hab.* Brazil.

Sp. 8 (41). *CORONIDIA COLUMBIANA*, sp. nov. (Plate LXXXVIII. fig. 4.)

*C.* alis anticis magnis ovatis fuscis, strigis numerosissimis obscurioribus obliquis plus minusve undulatis fasciisque 4 subalbidis, 1ma angusta obliqua prope basin, 2nda ante medium, linea tenui fusca interna notata, 3tia pone medium marginibus ejus parum undulatis, ad angulum posticum extensa et ibi incurva, 4ta ante apicem et cum margine apicali, supra angulum posticum, confluenta, lunulis subapicalibus nigris; alis posticis fuscis, fascia curvata submedia extus lobulata, obscure punicea seu chermesina, e medio alæ ad angulum analem augustata, obscuriore et recurva, margine apicali inter caudam et angulum analem maculis magnis semiovalibus nigris, et inter caudam et angulum externum pallide fusco-lineato.

Alis anticis subtus basi pallidis, macula nigra ad apicem cellulæ discoidalis, fasciis duabus paginæ superioris oblitteratis, spatio inter fascias 3tiam et 4tam obscuriores fusco, haud undulato; alis posticis, basi pallidis, fascia media latiori et ad angulum analem late extensa, margineque postico etiam maculis continuis pallide chermesinis notato. Expans. alar. antic. unc.  $2\frac{1}{2}$ .

*Hab.* Columbia. In Mus. Hopeiano Oxoniæ.

The specimen in the Hopeian Collection, obtained from M. Depuiset, appears to be a female, being destitute of the patch of scales on the hind wings and the tuft of hairs on the fore wings. It is closely allied to *C. canace*, which inhabits Brazil.

Sp. 9 (42). *CORONIDIA NICARAGUANA*, sp. nov. (Plate LXXXVIII. fig. 3.)

*C.* alis supra fuscis, anticis acute trigonis, strigis numerosis plus minusve undulatis nigris, lineola tenui subbasali, fascia ante medium alteraque undulata pone medium obscure luteo-fuscis et lineolis undulate notatis, margine apicali paullo pallidiore, intus subundato; alis posticis fuscis, dimidio externo obscurioribus, longe pone medium fascia intus recta et extus triloba, sanguinea e margine costali ad medium alæ extensa, spatio inter medium et angulum analem obscurius undulato, margine postico inter caudam et angulum analem maculis semiovalibus nigris notato et inter caudam et angulum externum lineis fulvis nigrisque undulato, cauda spatulata macula ovali nigra notata. Expans. alar. unc.  $2\frac{1}{2}$ .

*Hab.* Nicaragua (*Belt*). In Mus. Hopeiano Oxoniæ.

The fore wings are of a much more triangular and acute form than in *C. canace*. The tuft of hair and patch of scales are wanting; but the shape of the wings induces me to regard the Hopeian specimen as a male. The underside closely resembles that of



*C. paulina*, except that the central fascia is more elbowed and undulated towards the costa, the pale subapical margin is more irregular, and the middle fascia of the hind wings is light rosy ferruginous, with the veins crossing the fascia whitish, and a minute dot of white on each of the black spots of the tail.

Sp. 10 (43). *CORONIDIA ÆOLA*, sp. nov. (Plate LXXXVIII. figs. 1, 2.)

*C. testaceo-fusca*, alis anticis striolis obscuris numerosis transverse undulatis, fascia transversa albida tenuissima prope basin alarum, 2da ante medium paullo curvata angusta, 3tia pone medium fere recta e costa extus integra, intus denticulata, ad angulum posticum extensa et intus striola media fusca notata, inter fascias 2dam et 3tiam serie transversa ocellorum nigrorum; lineola abrupte angulata prope apicem alarum e fascia tertia ducta, serieque apicali lunularum nigrarum; alis posticis basi pallide fuscis, dimidio externo obscurioribus, fascia sanguinea e costa (ultra medium) in medio alæ recurva et ibi obscuriore et angustiore marginem analem attingente, spatio pone fasciam obscurius undulato, margine postico inter angulum analem et caudam nigro maculato, inter caudam et angulum externum albido anguste lunulato, cauda late spatulata nigro ocellata: alis infra basi pallidis, singula macula parva obscura in cellula discoidali, anticis fascia recta pone medium alba, dimidioque antico marginis apicalis pallido; alis posticis fascia submedia pallidiore sanguinea intus nigro marginata et antice et postice striolis obscuris undulatis numerosis notatis. Expans. alar. antic. unc.  $2\frac{2}{3}$ –3.

*Hab.* West Indies, Guatemala, Brazil. In Mus. Hopeiano Oxoniæ.

The four specimens of this species in the Hopeian Collection described above and illustrated in the accompanying figure, appear to be females, and are destitute of the patches of hair and scales distinctive of the males of some, at least, of the species of this genus.

The straight pale middle fascia of the fore wings separates it from *C. paulina*, *rosina*, and *nicaraguana*.

Sp. 11 (44). *CORONIDIA ROSINA*. (Plate LXXXVII. figs. 8, 9.)

*C. alis fuscis*, anticis strigis numerosis angustis transversis parum undulatis nigris, fascia tenui prope basin transversa, 2da ante medium recta integra et bilineata, 3tia pone medium subundulata atque etiam intus fusco-bilineata lineolaque subapicali albida, strigisque marginalibus subpallidis angustis; alis posticis fascia submedia dimidiata puniceo-rufa antice fere recta, postice undata, e costa ad medium alæ extensa et ibi anguste incurva multo obscuriore et retro directa, spatio pone fasciam ad angulum externum nigricante, ad angulum analem pallidiore et tenuissime undulato, maculis submarginalibus inter angulum analem et caudam nigris anguloque externo albido, cauda spatulata lutea macula ocellari nigra. Alis infra basi pallide luteo fuscis, anticis macula parva subocellata in cellula discoidali, fascia curvata paullo pone medium



alteraque cum margine apicali parallela albidis; alis posticis fascia rufa media magis continua alteraque minus distincta inter hanc et marginem posticum, cauda nigra apice albo. Expans. alar. antic. unc.  $2\frac{1}{2}$ .

*Larunda rosina*, Felder, Novara, tab. cxxxi. figs. 3, 4 (sine descriptione).

*Hab.* Bogota.

No description of this species has, I believe, hitherto been published by Dr. Felder; but his characteristic figure leads me to infer that the insect represented in my figure, from a specimen in the Hopeian Collection, obtained from M. Depuiset, is identical. This specimen does not exhibit the tuft of hairs or patch of scales, although from its general appearance I suppose it to be a male.

### Section 3. Alis posticis fulvo fasciatis.

Sp. 12 (45). CORONIDIA ECHENAIS.

*C.* alis utrinque fuscis, anticis supra lineis transversis undulatis obscurioribus et pallidioribus alternis, medio nigro-fusco subfasciatis, subtus testaceo-marginatis, medio albo-fasciatis; posticis supra fascia media antice flava postice brunnea, subtus tota rubenti-flava, nigro marginata (mas). Expans. alar. antic. unc. 2, lin. 4.

*Coronis echenais*, Hopffer, Lep. nov. pl. lxxxviii. fig. 1.

*Hab.* Mexico.

*C.* ECHENAIS, var.? (*C. granadina*, Westw., provis.) (Plate LXXXVIII. fig. 5.)

*C.* alis pallide fuscis, anticis supra fusco valde undulatis, fascia valde undulata media nigricante, pone medium pallidiore at sensim versus apicem obscuriore, margine apicali pallidiore, intus albido-denticulato; alis posticis in medio obscuris, fascia undulata pone medium læte fulva, inter medium et marginem analem fere oblitterata, maculis marginalibus nigris inter caudam et angulum analem, cauda etiam macula angulata nigra notata: alis anticis subtus basi pallide fuscis, puncto obscuro in cellula discoidali, fascia media undata albida, intus fusco late marginata, pone fasciam fuscis margine lutescenti intus undato; alis posticis subtus magis fulvescentibus, puncto in cellula, fascia fusca irregulari media, pone fasciam fulvis, extus magis brunneis in fuscum vergentibus, margine fulvo. Expans. alar. antic. fere unc.  $2\frac{3}{4}$ .

*Hab.* Nova Granada. In Mus. Hopeiano Oxoniæ.

The gradually dark subapical mark of the fore wings and the different shape of the fulvous fascia of the hind wings seem to separate this insect from the smaller Mexican species figured by Hopffer. The Hopeian specimen is, I presume, a female, having neither patches of hair nor of scales on the wings.



*C. ECHENAIS*, var. (*C. subpicta*, Wlk.)

*C. nigro-fusca*: alis anticis lineis transversis undulatis obscurioribus et pallidioribus alternis, puncto subcostali ante medium fasciaque nigro-fuscis, subtus basi testacea, fasciisque duabus albido-testaceis; alis posticis fascia brevi obliqua undulata lutea, postice ferrugineis lineis obliquis angulatis fuscis ocellisque caudalibus. Long. corp. lin. 11; expans. alar. antic. lin. 34.

*Coronis subpicta*, Walk. List Lep. Het. B. M. i. 39; Butler, Ill. Lep. Het. B. M. pl. 3. fig. 2.

*Hab.* Venezuela (*Dyson*). In Mus. Brit.

This variety of *C. echenais*, as I regard it, is much darker, and suffused with brown on the fore wings; the hind wings also are darker; and the fulvous band is obliterated, except in the middle of the wing; but the characteristic markings are identical in both.

Sp. 13 (46). *CORONIDIA BIBLINA*, sp. nov. (Plate LXXXVIII. fig. 7.)

*C.* alis anticis supra nigro-fuscis, obscurius valde undulatis, fascia alba pone medium alarum, e costa ad angulum posticum extensa, fere recta, ante medium alæ tamen extus paullo curvata, intus præsertim ad costam obscurius guttata, margine apicali lunulis fulvis obscuris notato; alis posticis fuscis fascia angusta læte aurantiaca extus castanea in medio valde curvata, pone medium notatis, puncto pallido ad angulum externum, cauda spatulata alba oculo nigro ad basin albo biguttato notata, lunulisque nigris inter caudam et angulum analem: alis anticis infra fuscis basi pallidioribus, puncto parvo obscuro discoidali, fascia alba ut in pagina superiore, margine pallido in dimidio antico alarum; alis posticis ut supra coloratis, fasciis præsertim castaneis magis distinctis. Expans. alar. antic. unc.  $2\frac{3}{4}$ .

*Hab.* Nicaragua, Venezuela. In Mus. Brit. et Hopeiano Oxoniæ.

The large rounded wings of this species, destitute of the sexual patches of hairs and scales, indicate the specimens I have hitherto seen to be females.

Sp. 14 (47). *CORONIDIA JAPET*. (Plate LXXXVIII. fig. 6.)

“Les quatre ailes d'un brun grisâtre; les antérieures présentent plusieurs lignes ondulées plus obscures, et deux bandes transversales blanchâtres, l'un près de la base, l'autre au delà du milieu. Les ailes postérieures, plus obscures, vers leur extrémité, ont une bande transversale ondulée d'un jaune orangé, et une rangée de taches noires circlées de grisâtre près du bord terminal.”

*Hab.* Brazil.

*Coronis japet*, Boisduval in 'Règne Animal,' ed. Crochard, Ins. pl. 145. fig. 3; Chenu, Enc. Hist. n. Pap. 234, p. 400; Walker, List Lep. Het. B. M. i. 38.

*Coronis leachii* ♀, sec. Guenée, Sp. Gén. ix. p. 22.



The Hopeian Collection possesses five specimens which I regard as belonging to this species, apparently of both sexes, from Brazil and Parana (Papagaya), and Nicaragua (the latter collected by Mr. Belt). One of these, apparently a male (although destitute of the sexual patches of scales and hairs), is represented in fig. 6. The central fascia is nearly straight, being only curved a little outwardly rather in front of the middle of the wing; the apical margin is pale and very irregular, marked, however, below the middle with two large conical pale spots.

On the underside the basal half of the fore wings is pale greyish brown with a dark dot in the middle of the discoidal cell, the basal fascia is wanting, the middle very distinct and nearly white, the anterior half of the apical margin with a pale brown patch; the hind wings are rich brown, pale at the base, with the fascia of a pale rosy buff colour, preceded and followed by pale undulated lines, especially marked on the veins; the outer and anal angles are marked with white.

Although there is considerable general resemblance between this species and *C. leachii*, I cannot agree with M. Guenée in regarding these fulvous banded individuals as the females of the black *C. leachii*. The shape of the band of the fore wings is of itself quite sufficient (independent of the want of the band of the hind wings) to separate the two species.

Sp. 15 (48). *CORONIDIA BRISEIS*, sp. nov. (Plate LXXXVIII. fig. 9.)

*C. alis pallide fuscis, anticis prope basin lineolis 4 angulatis fuscis per paria dispositis, tunc fascia obliqua albida extus nigro marginata, spatio medio obscure fusco prope costam valde dilatato extus nigricante, tunc fascia lata albida, fusciscenti parum nebulosa, striolisque fuscis parum undulatis sequentibus, margine irregulari pallidioris pone medium in maculas tres conicas intus dilatato; alis posticis fuscis fascia submedia lata parum curvata flavida, angulo externo apiceque caudæ albo notatis, hac nigro bimaculata; alis infra coloribus magis uniformibus, fascia media anticarum magis distincta, venis posticarum punctis fuscis et albidis obscurius notatis. Expans. alar. antic. unc. 2.*

*Hab.* — ? In Mus. Hopeiano Oxoniæ.

Sp. 16 (49). *CORONIDIA INTERLINEATA*. (Plate LXXXVIII. fig. 8.)

*Fusca, subtus testacea; antennis fulvis; alis anticis lineis alternis obscurioribus et pallidioribus transversis undulatis, quatuorque distinctioribus albidis, duabus basalibus angulatis, 3tia undulata, 4ta subapicali angulata; alis posticis fascia obliqua undulata lutea, subtus fusco trifasciatis. Long. corp. lin. 10; expans. alar. antic. lin. 29.*

*Coronis interlineata*, Wlk. List Lep. Het. B. M. i. 38; Butler, Ill. Lep. Het. B. M. pl. 3. fig. 1.

*Hab.* — ? In Mus. Brit. Bogota vel Venezuela. In Mus. Hopeiano Oxoniæ.

The Hopeian Museum possesses a specimen of this species presented to me by the late Dr Kaden, from Bogota or Venezuela. The general colour of the upperside of



the fore wings is pale brown, very much varied with lighter and darker very undulating and angulated lines, which form several macular spots rather before the middle of the wings, and with a very much curved whitish line terminating the central darker part of the wing; the apical margin is pale and marked with darker lines, and with three prominent conical spots between the middle of the margin and the posterior angle, preceded by dark reversed-conical dots. The hind wings are pale brown at the base.

On the underside the fore wings have the base quite pale brown and uniform, with two square dark brown spots in the middle towards the costa, separated by a light fulvous one, and followed by the very much curved fulvous fascia; the apical margin also fulvous, with the conical spots strongly marked; the hind wings are fulvous, with a dark fuscous fascia in the middle. All the veins are marked with blackish dots. Expansion of the fore wings  $1\frac{3}{4}$  inch.

Sp. 17 (50). *CORONIDIA GENEVANA*, sp. nov. (Plate LXXXVIII. fig. 10.)

*C. alis supra fuscis, anticis puncto parvo nigro versus basin strigaeque transversa nigra ad apicem cellulæ discoidalis, pone medium lineis duabus approximatis gracilibus valde undatis, spatio sequente fulvescente, venis nigro punctatis, apice alarum obscuriore; alis posticis fuscis paullo obscurius variegatis, fascia luteo-fulva inter medium et angulum externum ad medium alæ tantum extensa, cauda brevi conica, ad basin oculo parvo nigro notata: alis anticis infra pallide fuscis, guttis quatuor nigris in medio costæ punctoque parvo stigmatali nigra extus, striga pallidior in medio alæ, fascia pallida luteo-fulva pone medium, spatio apicali pallide fusco obscurius undulato versus costam et undulis fasciam angustior em et obscurior em versus angulum posticum formantibus; alis posticis pallide luteo-albidis, costa lineis obscurioribus et curvatis, et fascia valde undulata medium alæ occupante e lineis fuscis formata, margine parum pallidior e guttis hastatis in venis notato. Expans. alar. unc. 2.*

*Hab.* Mexico. In Mus. Genevæ.

Sp. 18 (51). *CORONIDIA OCYLUS*, Boisduval, Consid. Lépid. Guatemala, p. 76.

“ Port et taille de notre *Coronis japet* figurée par M. Emile Blanchard. Dessus des ailes d’un brun clair, traversées au delà du milieu par une bande commune d’un blanc jaunâtre sur les supérieures et d’un jaune d’ocre sur les inférieures; de chaque côté de cette bande, la teinte générale est presque noirâtre et l’extrémité marginale d’un gris cendré. Les secondes ailes ont en outre un point noir à la base de leur appendice caudal; dessous grisâtre, celui des supérieures avec un point discoidal noir et deux bandes jaunâtres. Une seule femelle de Guatemala. Nous possédons un exemplaire un peu plus petit venant du Mexique. Il est possible que le mâle, que nous ne connaissons pas, diffère beaucoup de la femelle.”



## Sp. 19 (52). CORONIDIA DUCATRIX.

*Coronis ducatrix*, Schaufuss, Nunq. Otios. i. p. 12.

“Oben heller braun als *Evenus*, Oberflügel mit zwei fahlen, etwas gezackten, linirten Querbinden, welche nach aussen zu dunkel abschattirt sind; Rand mit heller Querwolken nach aufwärts, jede vorn mit dunklem irregulärem Strich begrenzt; Unterflügel mit querer eckig ausgebogener, gebuchteter orange-gelber Binde; Aussenrand mit gelber und schwarzer Binde umgeben, an die beiden ausseren Enden weiss gefranzt, nach unten mit vier runden oder halbmondförmigen schwarz brauen Flecken. Unten der *C. leachi*, God., ganz ähnlich, nur die Unterflügel mit weisslicher, rosa angeflogener Binde.” War mit dem Namen *Ingæ* Moritz bezeichnet. Lat. 43–56 mm.

*Hab.* Venezuela.

## Section 4. Alis posticis haud fasciatis.

## Sp. 20 (53). CORONIDIA LEACHII. (Plate LXXXVIII. fig. 11.)

*C. nigro-fusca*: alis anticis lineis transversis undulatis pallidioribus, fasciaque recta alba in anticis discoidali, in posticis marginali, anticis strigis anticis subapicalibus rufescentibus, subtus basim versus pallidioribus, gutta costali nigro-fusca; alis posticis ocellis caudalibus, subtus linea transversa valde undulata testacea apud venas albida.

*Coronis leachii*, Godart, Enc. Méth. ix. 803; Guérin, Icon. R. An. Ins. pl. 83. fig. 3; Griffith, Anim. Kingd. Ins. pl. 53. fig. 8; Boisduval, Spec. Gén. Lép. i. pl. 14 (10 B). fig. 2; Walk. List B.M. Lep. Het. i. 39; Guenée, Sp. Gén. ix. p. 22, pl. 1. fig. 2.

*Hab.* Mexico (*Hartweg*). Spirito Santo, Brasiliâ. In Mus. Brit. et Hopeiano, Oxoniæ.

M. Guenée considers this species to consist of males, of which *C. japed* are the females. Of four specimens in the Hopeian Collection, from Brazil and Guatemala, all are destitute of the sexual patches of hair and scales; the size of the abdomen nevertheless indicates them to be males. The dark-coloured central portion of the wings is much broader towards the hinder margin than in *C. japed*. Its outline also on both sides is much more irregular. The white patch at the outer angle of the hind wings is also much larger.

## Sp. 21 (54). CORONIDIA EVENUS.

“Ailes entièrement d’un brun assez foncé, les supérieures présentant dans toute leur étendue des lignes transversales ondulées, et dans leur milieu il en existe deux qui circonscrivent un espace plus foncé. Les ailes postérieures offrent au bord terminal des taches semilunaires et sur l’appendice cordiforme une autre tache arrondie. *Expans.* alar, antic. unc. 2, lin. 2·3.



*C. evenus*, Boisduval in Cuv. R. An. ed. Crochard, Ins. pl. 145. fig. 2; Chenu, Enc. Hist. n. Pap. 234, fig. 401; Walker, List Lep. Het. B. M. i. 40; Guenée, Sp. Gén. ix. p. 23.

"*C. leachii*, var.?" Walker, *l. c.*

*Hab.* Venezuela (*Dyson*). In Mus. Brit. et Hopeiano, Oxoniæ.

This species differs from *C. leachii* in the uniform nearly black colour of the hind wings, without any white patch at the outer angle, and by the more distinct pale apical margin of the fore wings, dilated into two or three conical pale patches towards the posterior angle. The space preceding the pale apical margin is also much darker than in *C. leachii*. A specimen in the Hopeian Museum is either from Venezuela or New Granada.

NOTE.—Of *C. ducalis*, Schaufuss (*Nunquam Otiosus*, i. p. 12), from Venezuela, and *C. dutreuxii*, E. Deyrolle, in *Rev. Zool.*, from Costa Rica, no descriptions have been published.

## EXPLANATION OF THE PLATES.

### PLATE LXXXV.

Fig. 1. Larva of *Coronidia* (sp. allied to *C. orithea*), pp. 521, 528.

Fig. 2. Pupa of ditto.

Fig. 3. Palpus of *Coronidia æola*.

Fig. 4. Fore leg of ditto.

Fig. 5. Middle leg of ditto.

Fig. 6. Hind leg of ditto.

Fig. 7. Fore wing of ditto.

Fig. 8. Hind wing of ditto.

Fig. 9. Head and antennæ of *Coronidia boreada*.

Fig. 10. Head and antennæ of *Manidia lunus*, p. 521.

Fig. 11. Fore wing of ditto.

Fig. 12. Hind wing of ditto.

Fig. 13. Fore wing of *Uranidia sloanus*, pp. 520, 521.

Fig. 14. Hind wing of ditto.

Fig. 15. Fore wing of *Chrysidia rhipheus*, pp. 520, 522.

Fig. 16. Hind wing of ditto.

Fig. 17. Fore wing of *Alcidia orontes*, pp. 520, 524.

Fig. 18. Hind wing of ditto.

Fig. 19. Fore wing of *Lyssidia patroclus*, pp. 520, 525.

Fig. 20. Hind wing of ditto.



## PLATE LXXXVI.

- Fig. 1. Fore wing of *Erebus (Patula) macrops*, p. 512.  
Fig. 2. Hind wing of ditto (male).  
Fig. 3. Hind wing of ditto (female).  
Fig. 4. Head of ditto.  
Fig. 5. Fore wing of *Urapteryx sambucaria*, p. 514.  
Fig. 6. Hind wing of ditto.  
Fig. 7. Fore wing of *Hydria undulata* (from Packard), p. 513.  
Fig. 8. Fore wing of *Strophidia vollenhovii*, p. 514.  
Fig. 9. Hind wing of ditto.  
Fig. 10. Wings of *Asthenidia podaliriaria*, p. 515.  
Fig. 11. Fore wing of *Attacus pavonia minor*, p. 517.  
Fig. 12. Fore wing of *Endromis versicolor*, p. 517.  
Fig. 13. Hind wing of *Eudæmonia semiramis*, p. 517.  
Fig. 14. Fore wing of *Aglaia tau*, p. 517.  
Fig. 15. Fore wing of *Actias luna*, p. 517.  
Fig. 16. Hind wing of ditto.  
Fig. 17. Fore wing of *Gastropacha quercifolia*, p. 518.  
Fig. 18. Wings of *Epicopeia polydora*, p. 518.

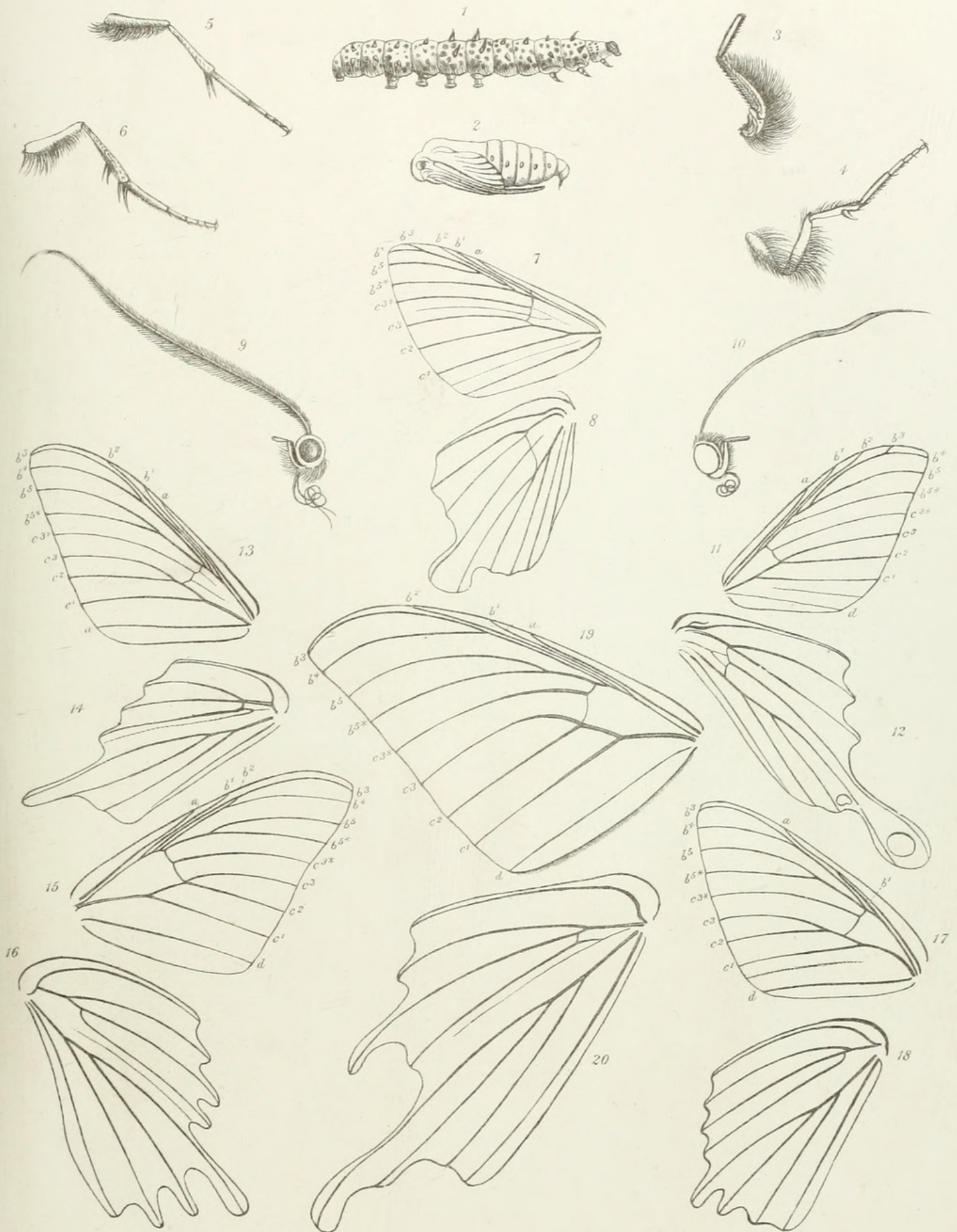
## PLATE LXXXVII.

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| Fig. 1. <i>Alcidia boops</i> , male, p. 525.     | Fig. 7. <i>Coronidia egina</i> , underside, p. 533. |
| Fig. 2. <i>Alcidia metaurus</i> , p. 525.        | Fig. 8. <i>Coronidia rosina</i> , p. 535.           |
| Fig. 3. <i>Coronidia orithea</i> , var., p. 528. | Fig. 9. <i>Coronidia rosina</i> , underside.        |
| Fig. 4. <i>Coronidia erecthea</i> , p. 530.      |   |
| Fig. 5. <i>Coronidia boreada</i> , p. 531.       |   |
| Fig. 6. <i>Coronidia paulina</i> , p. 533.       |   |

## PLATE LXXXVIII.

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|--|---|
| Fig. 1. <i>Coronidia æola</i> , p. 535.            | Fig. 7. <i>Coronidia biblina</i> , p. 537.      |
| Fig. 2. <i>Coronidia æola</i> , underside, p. 535. | Fig. 8. <i>Coronidia interlineata</i> , p. 538. |
| Fig. 3. <i>Coronidia nicaraguana</i> , p. 534.     | Fig. 9. <i>Coronidia briseis</i> , p. 538.      |
| Fig. 4. <i>Coronidia columbiana</i> , p. 534.      | Fig. 10. <i>Coronidia genevana</i> , p. 539.    |
| Fig. 5. <i>Coronidia granadina</i> , p. 536.       | Fig. 11. <i>Coronidia leachii</i> , p. 540.     |
| Fig. 6. <i>Coronidia japet</i> , p. 537.           |   |



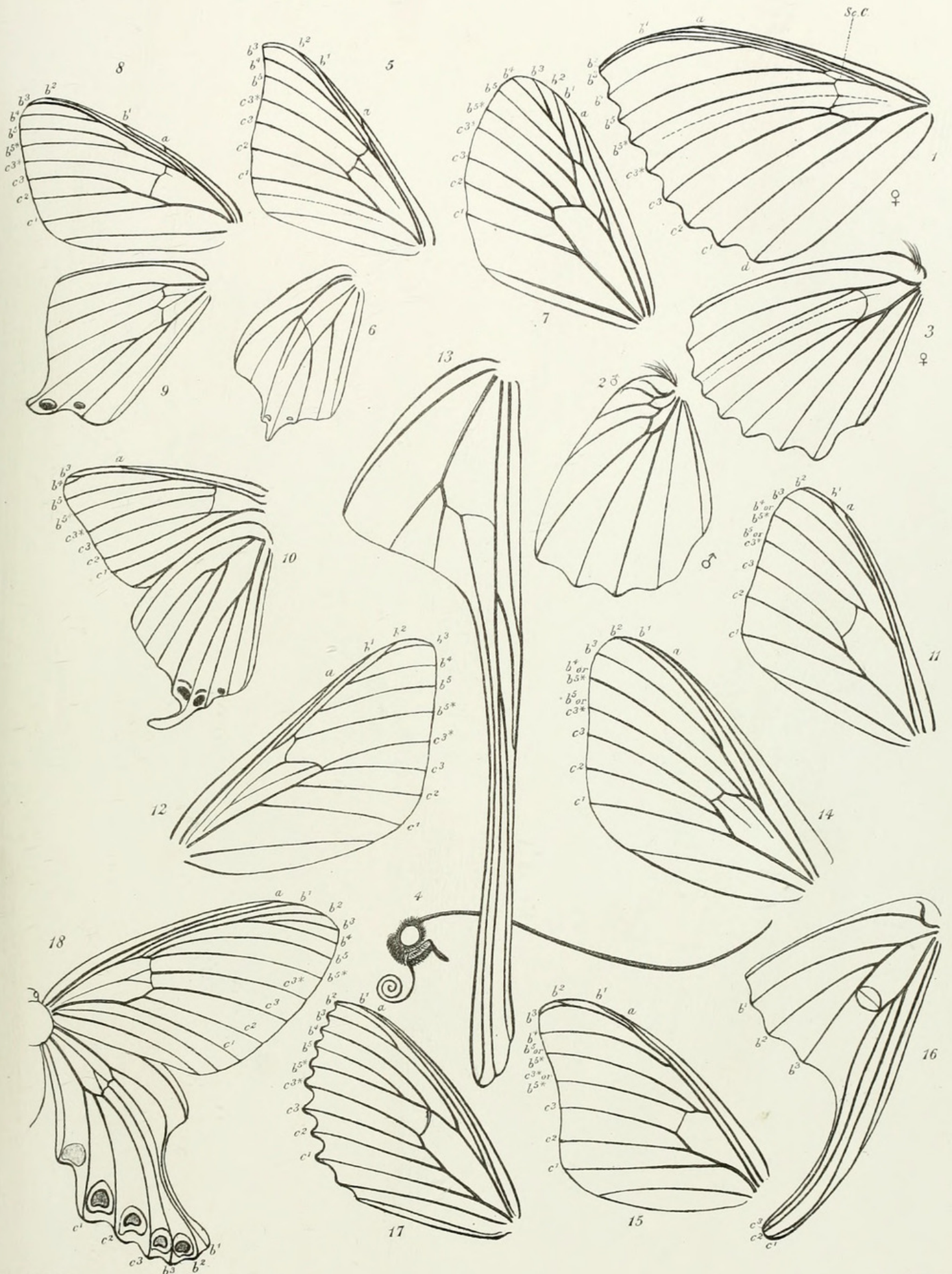


JOW del  
RHF Rippon lith.

Hanhart imp.

SYNOPSIS OF THE URANIIDÆ.

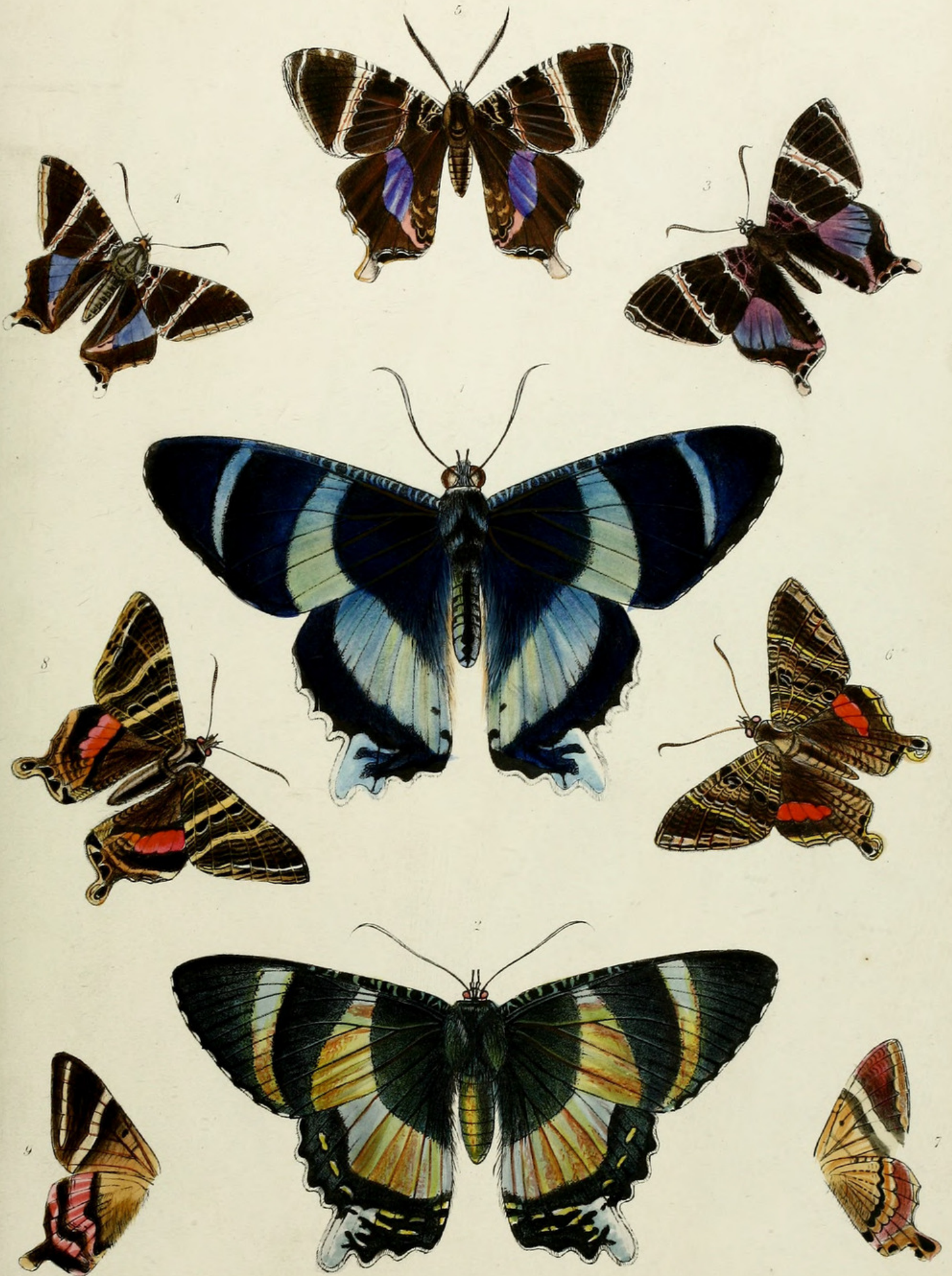




JOW del.  
RHR Rippon lith.

Hanhart imp.





JOWael.  
R.H.F. Rippon lith.

Hanhart imp.

SYNOPSIS OF THE URANIIDÆ.





J.W. del.  
R.H. Rippon. lith.

Hanhart imp.

SYNOPSIS OF THE URANIIDÆ.





Westwood, J. O. 1879. "Observations on the Uraniidae, a family of Lepidopterous Insects, with a Synopsis of the family, and a Monograph of *Coronidia*, one of the genera into which it is divided." *Transactions of the Zoological Society of London* 10, 507–542.

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