A GENERIC REVIEW OF
THE ITHOMIINAE
(LEPIDOPTERA: NYMPHALIDAE)

BY
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The lepidopterous subfamily Ithomiinae is a compact group of genera confined exclusively to the American tropics. It belongs to the family Nymphalidae and is related to the holotropical subfamily Danainae. This paper recognizes thirty-five genera, two of which are new, and groups the genera into three tribes. The generic synonymy is summarized and each of the genera is defined with particular emphasis on the venation of the hind wings. The present paper is intended to serve as a study preliminary to a series of papers dealing comprehensively with the species.

An extensive examination of visible external characters of possible generic value has led to the conclusion that in the case of the Ithomiinae the scale patch of the males and the venation of the hind wings in both sexes offer characters sufficient for distinguishing each genus. It is not to be assumed, however, that venation is regarded as the only criterion. Venation is used here because it seems to be consistently and reliably correlated with other characters, thus fortunately affording a convenient uniform basis for generic determination and for keying. The venation of the fore wings appears to be somewhat less satisfactory for separating these genera. The male genitalia can be used usually to separate both species and genera, but must be employed judici-

1 See Forbes, "Revisional Notes on the Danainae", Ent. Amer. xix, pp. 101-140, (1939). I concur with the introductory discussion on pp. 101-105 expounding the general problem. Referring to the genealogy map on p. 103 Dr. Forbes recently told me that he would derive Ithomiinae as a twig branching from the main trunk earlier than Clothida.
ously and are not adequate alone; they are not discussed in this paper. Other characters of merit are to be found in the antennae and legs, but these are of assistance chiefly in dividing the genera into tribes. Wing color and pattern are virtually worthless for generic identification, due to that remarkable phenomenon, exemplified in the Ithominae, which has been called " mimicry ".

The synonymy of the genera has been exhaustively explored. It is intended in this paper to account for every generic name proposed in Ithominae and to identify the genotypes correctly. No attempt is made to follow the many misapplications, especially of the older generic names, through the literature.

Genotypes are regarded as important only from the viewpoint of nomenclature. As defined here the genera by no means are based on genotypes alone. Certain genera, especially large ones, have considerable range of variation among the species with respect to any given character. An attempt has been made to diagnose genera for associating species on the basis of all pertinent characters, although the conclusions are summarized in terms of a comparatively few, though significant, features.

In more than one instance in the Ithominae two species, on which are based different generic names, can be separated easily with respect to normally generic elements, but a survey of other species demonstrates gradual intergradation and requires that the two be placed in the same genus in order to avoid artificial and arbitrary generic delineation. It is believed that the genera recognized here are all homogeneous. The conclusions are based on a study of the species available in the collections of the Academy of Natural Sciences of Philadelphia, the American Museum of Natural History, the United States National Museum, and the Cornell University collection; statistically, more than four-fifths of the named forms have been examined.

It is felt that this paper defines the genera more positively than has been done in any single study since Doubleday, Hewitson, and Westwood's work in nearly a century ago, Godman and Salvin's Central American work, and Schatz's summary. In certain cases the result is the shifting of species from traditional generic associations; those who may have occasion to use the keys here are warned that not all species will fit in the genera to which they were referred by Haensch, Blyth, and other workers.

In order to more adequately reflect the present author's conceptions of generic scope, a list of species and subspecies follows each description of generic characters. These lists, in many cases, follow the specific synonymy found in Blyth's and intentionally represent nothing new in the way of species identifications; variations from Blyth's list occur in a few cases where recent studies or my own observations indicate the necessity. All species and subspecies listed have been examined by me where marked with the dagger (†); those not so marked are included tentatively as probably belonging to the genus under which they are found. As previously noted, it is hoped that this paper will be followed by a series of studies dealing with the species of each genus.

With the introduction of tribes, largely based on leg characters, an attempt is made to offer a generic sequence which will reflect phylogenetic relationship.

The primitive tribe, Titliocerini, is easily separable by the well-developed tibia and tarsus of the male fore-legs. The female fore-tarsus is five-jointed. The venation is generalized, with no hint of reduction and is rather similar in both sexes. Godman and Salvin first recognized these genera as being the most primitive. It is characteristic to find the species of most of these genera confined to the mountains and represented by only a few forms each; supposedly such genera are survival groups, probably isolated by glaciation.

The proper separation of the remaining genera is problematic and no set character seems available. All have reduced or vestigial tibia and tarsus on the fore-legs of the males.

In general the Ithomini have four joints in the tarsus of the female fore-leg, while in the Olerini there are five. A single but important exception is Dirceuna, which has four female fore-tarsal joints, but which certainly should be associated with Corbalis and Oleria.

In Seitz, Grosses, Erde, & Ithominae, (1909).
6 Catalogus Lepidopteronum, pars 80, Ithominae, (1877).
In the Ithomini two main lines may be recognized. The series from Xanthocera to Scada is rather homogeneous, shares a tendency for the subcostal vein in the females to shorten and then to coalesce basad with the radius. The male hair patch and the discocellulars likewise exhibit kinship. Accra and Velamysia are added to this series tentatively. The other line runs through Ithomia and Hypothyris to Napeodes. These share the peculiar convexity of the radial vein near the base and exhibit the steps of development toward the festoon-arranged discocellulars of Napeodes.

The Oleriini often show considerable difference between the venation of the males and of the females. There is a marked tendency for atrophy and vein reduction in the wings, yet all but one of these genera retain the primitive number of tarsal segments in the female. Direenna must be regarded as having undergone leg reduction independently of the genera of the tribe Ithomini.

It seems desirable not to subject the familiar names for larger categories to any change until the International Commission on Zoological Nomenclature sets up procedure for uniform practice, consequently the name Ithominae is here retained because of its wide acceptance.

While a number of familiar generic names are synonymized under less familiar but prior names, only one familiar name has been shifted from one group of species to another: Sonders' designation of a genotype for Ceratinia Hubner requires the usage employed by Bryk's* and followed herein, by which the mistaken application used by some German authors is corrected.

VENATION CHARACTERS

The veins near the proximal part and the posterior part of the hind wing are more constant, those near the cell apex and the wing apex are quite variable.

The humeral vein (hum) is found in six different forms: It may be simple and unstalked as in Acra, Oleria, Eutresis, Episcada, Direenna, Scada, Pseudocera, Corbalis, Creto, Heterosila; it may be bifid, but the distal arm so weakly developed as to be a mere lobe, as in Pteronymia, Ceratinia, and Callichroma; it may be bifid with both arms weakly developed, as in Placidia, Elusa, Tithorea, Althyrhys and Olerys; it may be bifid, both arms rather equally developed, as in Thyridia, Hyposecia, Miletaria, Hypothyris, Parthenia, Xantholessis, Mechanitis, Not, Velamysia, Napeodes, Ithomia, Godyris, Mecynus and Hypothyris; in Hypothyris the distal arm of the bifid humeral is unusually long; in Medeinae, the humeral is bifid, the distal arm normally developed, but the proximal arm a little short. The humeral is found to be consistent to both sexes and throughout any given genus. Its importance first was noticed by Kremky who recognized two types, bifid and non-bifid.

A hair patch unique to and characteristic of the Ithominae is found in the males at the costal side of the cell of the hind wing; in one genus only, Thyridia, it is found in the females as well. The hair patch is constant within a genus and represents a good character. In most of the genera there is one long patch which extends from the base to the cell apex, the hair scales arising just posterior of the radial vein and forming a tuft normally laid in a proximo-distal direction. Sometimes the wing directly under this tuft and between the subcostal and radial is raised ventrad, as in Ithomia. In a few genera there are two hair patches, always of unequal size, one at the base and one at the apex of the cell. In some the basal patch is large and brush-like, while the distal patch is fine and pencil-like; in other genera the reverse is true.

The anal veins (1A and 2A) and the cubital veins (Cu1 and Cu2) exhibit too slight variation to be of much value. In this paper, however, the cubitalis are used as points of reference in locating positions of curvature on the radial vein.

In the Ithominae the subcostal (Sc) and the radial (R) veins usually are closely associated near the base. In one or two presumably primitive genera (for example Elusa) Sc and R separate proximal of hum, but usually Sc and R coalesce at least as far as hum. Often Sc and R do not separate for some distance distal of hum; proximal of their separation they are either wholly coalesced or they run side by side. By "coalesced" is meant merged and combined into one.

In the distal portion of the wing Sc and R offer valuable characters which need careful evaluation. As noted below in describing the venation of the various genera, Sc is found in several degrees of atrophy. The most marked reduction is found in *Pseudoseada* where Sc in males of some of the species is only a vestigial protuberance or a thread-like spur on R. More commonly Sc is reduced near the cell apex so that it fails to reach the margin. Mostly the degree of reduction of Sc may be taken as a consistent generic characteristic, but this is not always so; in the genera where Sc nearly but not quite reaches the margin, individuals are found in which Sc is complete, usually sharply up-curved in the part missing in more typical examples.

In the females Sc and R more frequently coalesce beyond hum than in the males. In the two closely related genera, *Mechanitis* and *Sais*, as well as in *Velia mygna*, Sc and R are wholly merged in the basal part, separating only near the cell apex, where Sc angles off steeply to the costal margin. To a less degree this same kind of tendency is found in such genera as *Calithonitis*, *Xanthothrix* and *Greta*. But terminal atrophy is not found in females at all and Sc invariably reaches the margin.

In the genera related to *Hypothyris*, R curves down into the cell near the base, making to the cell a convex arch opposite the cubital. It also undergoes various modifications at and beyond the cell apex. In some genera, *Thyridia* for example, it angles forward at the discocellulars. In *Goya* it recurses into the first median and is coalesced with it from there to the margin. In *Mechanitis*, described in this paper as new, the terminal segment of R is entirely wanting. In a few other cases it is reduced so that it fails to reach the margin.

The first discocellular (1d) is often a generic character in its angle with R and in its length. When 1d is wanting, it tends in both sexes to be wanting in many individuals. The phrase "anterior side of the cell" refers to the distance from the base of the cell to the cell apex, which always is taken to be the point where R meets the discocellulars.

The second discocellular (2d) usually is present, but its angle and curvature are often only of specific value. In the females of *Greta* it is wanting. In males of *Heteroaia* 2d has no posterior connection and the cell is open.

The third discocellular (3d) usually is long and well developed, but in males of several presumably specialized genera (*Goya*, *Greta*, *Hypothyris*, *Pseudoseada*) it is reduced at its anterior end and the cell is open.

Two recurrent veins appear in *Ithomiinae*, as for example in *Eustriga*, but commonly it is the median recurrent (Mr) only which is present. This varies considerably in position and size and may or may not be of generic value. The position of Mr usually is constant in a genus in relation to its distance from R and Cu, but without varying this relative position, may arise on 2d, on 3d or opposite M, when it is emitted by a discocellular, it usually is placed on the apex of an angle of that discocellular. While the length of Mr often is characteristic of a genus (as in *Mechanitis*, *Corbula*), in such genera as *Ithomia*, both the length and position are matters of individual variation.

The first median vein (M,) tends to merge with R. When this occurs, 1d is wanting. In many genera it is characteristic, especially in females, for M, to stalk with R at the cell apex. In females of *Goya* and *Hypothyris* Mr is normally stalked with R midway between cell apex and margin. In males of *Pteronyxia* Mr is typically wholly merged with R; some species of that genus have a minute Mr branching from R at the margin. They are wholly merged in both sexes of *Heteroaia*.

The second median (M,) is commonly present and arises at the discocellulars. In females of *Greta* M, and Cu, are stalked beyond the cell. In males of *Hypothyris* M, is reduced distally and fails to reach the margin. In males of *Greta* M, is reduced at its proximal end and is not connected with any other vein.

The third median (M,) is rather constant, never undergoes reduction and exhibits little variation. When the phrase "posterior side of cell" is used, it refers to the distance from the base of the cell to the proximal end of M,.

For convenience the proximal portion of Cu, which bounds part of the cell, is called the fourth discocellular (4d).
PREPARATION OF WING MOUNTS AND PLATES

For comparison and for the preparation of some of these plates, wings were bleached and mounted as slides. A word on the method may be of interest: the steps of preparation:

1. Detach wings on right side; label pinned reminder with a serial number to appear later on the slide label.
2. Wet detached wings in 95% alcohol.
3. Bleach in Labaraque's solution (NaClO) until the desired transparency is reached, but not so long that the wing tissue becomes too soft for easy manipulation.
4. Dehydrate in alcohols (a few minutes each in 50%, 70%, and 95%).
5. Clear in xylene.

For wings too large for ordinary microscopic slips, the thin glass oblongs manufactured for covers for lantern slides serve very well. Care must be taken to avoid tears or folds in the wings when mounting. Such mounts are convenient for study and often reveal venation details otherwise difficult to observe or to evaluate.

The venation figures with this paper all were drawn from enlarged projections, either of the prepared wing, or of undetached, unbleached wings through which very strong light was passed. The hair patch of the males is indicated diagrammatically by transverse lines.

ACKNOWLEDGEMENTS

For the specimens studies in preparing this paper I am indebted to several institutions and individuals: The basic material is in the collection of the Academy of Natural Sciences of Philadelphia, which includes an excellent Ecuador representation collected by Mr. Judson Coxey, and material acquired through exchange with Senhor d'Almeida of Rio de Janeiro; important loans were received from the American Museum of Natural History, and from the United States National Museum. The unfailing cooperativeness of the staffs of these museums is appreciated. During my recent visit to Cornell University, Dr. W. T. M. RICHARD M. FOX

Forbes kindly reviewed my notes, and made available his own notes, as well as the Cornell collection.

Part of the preparation of this paper was done as undergraduate research at the University of Pennsylvania. To Dr. A. Glenn Richards, Jr., of the Zoological faculty at the University, I am indebted for numerous suggestions and helpful criticisms. To him and to Mr. James A. C. Rehm, of the Academy staff, I am grateful for reading my manuscript. Particular mention must be made of the friendly helpfulness of Mr. Ezra T. Cresson, Jr., throughout my association with the Academy.

KEY TO THE GENERA

The key which follows is based on characters of the hind wings. While it is intended to cover all usual variations in venation, it is inevitable that abnormal specimens will occur which the key fails to cover. The great difference with respect to venation frequently found between the sexes of Libythea requires the use of separate sections of the key for males and females. These keys are artificial.

MALES

1. Two hair patches at the costal margin................. 2
2. Cell open........................................ 3
3. Cell closed..................................... 4
4. M1 and 2d wanting; Id pointing based, free at its posterior end, or represented by a slight projection below R1; So atrophied at or before the apex of cell; 3d complete. Heterocodina Godman & Salvin (p. 204)
M1 present though often not reaching margin; Id and 2d present, complete; So atrophied well beyond cell apex; 3d atrophied at its anterior end, not reaching M1. Hypoloba Godman & Salvin (p. 196)
M1 atrophied before reaching margin; terminal segment of R wanting; Id present; My short, arising opposite M2; So atrophied near end of cell, strongly down-curved near its termination. Habdonia new genus (p. 231)

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5. Anterior side of cell shorter than posterior side; 1d longer than 2d.

6. Anterior and posterior sides of cell nearly the same length; 1c and R.

7. Sc atrophied before reaching margin; 2d straight; Mr arising from

8. Cell open, 3d atrophied anteriorly; 2c1 straight; Mr arising from

9. Cell open, 3d atrophied anteriorly; 2c1 straight; Mr arising from

10. Bifid hum; 2d atrophied near end of cell, not reaching margin; 3d more than twice the length of 1d; Mr on 2d, 3d, or opposite M.

11. Sc atrophied near cell apex; 11 atrophied near margin or recurring into

12. Flap patch raised ventrad, compactly ovate; 13.

13. Hair patch over cell formed between Sc and R and closed (Bead with


15. Non-bifid hum; 2d atrophied near cell apex; 2c1 straight; Mr arising from posterior extremity of 2d; R inseminating with M.

16. Mr arising from the angle of 3d, the anterior arm of which is as long as 1d; 21 strongly convex to cell.

17. So atrophied proximal of cell apex; cell nearly reaches margin; Mr always on the angle of M.

18. So atrophied near end of cell.

19. Mr very long, placed as a continuation of M, or arising from the acute angle of 3d which is at the extreme anterior end of 3d; 2d nearly straight.

20. Anterior and posterior sides of cell about the same length, or posterior side slightly longer.

21. 1d twice the length of 1d.

22. 2d straight; distal segment of R shorter than the greatest width of the cell; Mr quite short.

23. R angled upward at 1d.

24. R not atrophied at 1d.

25. 2d strongly convex to cell; distal segment of R longer than the greatest width of the cell; Mr longer.

26. Proximal end of M more distal of proximal end of M; R and Sc stalked.

27. Proximal end of M, distal of proximal end of M.
27. Mr on angle of 2d or opposite M2; discocellular not fuscous-like...
28. Mr on angle of 3d; discocellular not fuscous-like...
29. R and Sc closely parallel to half the distance to cell apex...
30. R deeply convex to cell opposite enbitals...
31. Opposite cell apex Se separated from R by ...

22. ...R arisen from angled 3d, or Sc longer than greatest width of cell...
32. R arising from angle of 2d; discocellular not fuscous-like...
33. 2d twine the length of 1d; cell more than two thirds of wing length...

1. Non-bifid hum. ...2
2. Bifid hum, both arms short...
3. Bifid hum, distal arm shortened to a more lebe...
4. Bifid hum, both arms well developed...
5. Mr small, arising from angled 2d; Se shorter than the greatest width of the cell, arising near end of cell...
6. Mr arising from angled 3d, or Sc longer than greatest width of cell...
7. 2d wanting; Mr and Sc often connected at their point of separation by a short, perpendicular auxiliary vein...
8. Se and R separate at a point nearer apex than base of cell...
9. Mr longer than 2d, from the angle of which it arises, reaching into cell as far as 4d; R and Sc oft...
15. Sc shorter than the greatest width of the cell, separating from R beyond the middle of the cell.
16. Sc stalked from R about half way to cell apex; Mr an angle of 2d.
17. Sc longer than the greatest width of cell, distant from R from base.
18. Mr long, reaching into cell beyond anterior end of 4d.
19. Mr wanting or dissoecellulars arranged in a festoon on angle of 2d and 3d on a line perpendicular to 1l.
20. R convex to cell opposite cubital; Distal arm of burr, twice the length of its trunk.
21. R an angle from the origin of M 1 or terminus of Sc; posterior arm of 30 equal to or shorter than 4d.
22. Cell length (to apex) less than one-half wing length.
23. Cell length more than one-half wing length.

Tribes Tithorea

Since Tiritius has lacked genotype designation, Papilio harmonia Cramer is herewith designated for the sake of establishing the synonymy. Haensch divided the genus into two groups according to the color of the patagia, but the variation is uniform.

The males (Fig. 54) have two hair patches, the basal one large and brush-like, the distal one at the cell apex small and pencil-like. So and R branch at hum, which is bident with both arms weakly developed. Sc is more or less doubly curved (nearly straight in some species) and reaches the margin before the apex of the wing. Id is slightly longer than 2d, both short; the broad Id arises from the apex of 3d, the posterior arm of which is long and curved, the anterior arm short, sometimes vestigial, making the anterior side of the closed cell shorter than the posterior side.

The females differ in that 4d reaches the margin in an up-curve and never is doubly curved; 1d is shorter than 2d; R is un angles at 1d.

Genus Tithorea

T. Doubleday, Hewitson & Westwood


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ELEUNIA Bryk


When he separated brykowi and allies from harmonie and allies, Hauenac wrongly retained Tithorea for the present genus and placed in a new genus the genotype of Tithorea. Bryk noticed this while preparing the catalogue* and proposed Eleunia for the group which Hauenac correctly recognized as distinct.

The hair patch of the males and the position of the veins at the apex of the cell (Fig. 10) indicate a close relationship with Thrybiidae, although the shape of the wings is quite different—in Eleunia broader, less elongated.

Eleunia seems to be quite generalized.

Se and R stalk proximally of ham, which arises on 8e and is bifid, both arms vestigially developed. Se is well separated from R and runs close to the costal margin, resulting in its position the Pteridion. 3d and M, are placed on a line with the basal segments of R, while the terminal segment of R. is placed at an angle; 3d is short, straight; Mr arises from the angle of 3d, the posterior arm of which is long and curved; the anterior side of the closed cell is much shorter than the posterior side. The males have a single hair patch.

Females are similar.

brykowi (Gisin), b. demavendski (Staudinger), b. latreillei (Staudinger), b. johnii (Weymer), corynthia (Staudinger), b. baryticali (Latreille), b. demavendski (Fiebrig), p. staudingeri (Staudinger), c. latreillei (Hauenac), c. latreillei (Hauenac), p. staudingeri (Staudinger).

OLYRAS Doubleday, Hewitson & Westwood


This is a genus of a few relatively rare mountain forms with a maculation pattern similar to that found in Entrestia and Athesis.

The males (Fig. 41) bear two tufts near the costal margin of the hind wing; the proximal patch, located near the base of ham, is small and penile-like; the distal patch is broader and brush-like and is near the cell apex. Although another arm is well developed, ham is bifid at its end; it is placed perpendicular to Se. Se and R stalk at base and reach the margin close together at the wing apex; Se is doubly curved, shaped like a Cupid's bow; 1d and 2d are short and straight; Mr arises from the angle of 3d, the two arms of which are nearly the same length; the cell is closed.

The females differ in the following respects: Se reaches the margin with an uncurved apex; 1d is wanting, 2d and the terminal segment of R stalk at the margin of the cell.

The hind wings of the sexes are deeply sinuate.

*This genus is named for my small daughter.

ATHESIS Doubleday, Hewitson & Westwood


The males (Fig. 2) have a single hair patch on the hind wing, extending from ham to the apex of the cell along R. Se and R stalk at base, which is bifid, both arms vestigially developed. Se is doubly curved, shaped like a Cupid's bow, reaching the margin near the apex of the wing, with an upward curve. 1d is always present, short, straight. In olivera 2d is the same length and straight; 3d is slightly curved, the posterior arm slightly curved; Mr is short, arising from the angle of 3d, 1d is seen Doubleday 2d is shorter and slightly curved; Mr is short, emitted from the angle of 2d.

The females differ from the males mainly by the absence of 1d, with M, and R stalked at the cell apex; Se is evenly curved. The cell is closed in both sexes and is longer than half the wing length.

*This genus is named for my small daughter.

The other species, Hewitsoni, Sminka and obliqua Hewitson I place with dencyllidae Hewitson in a new genus, Patricia, (see below).

PATRICIA new genus*

This includes three species, dencyllidae Hewitson, Athesis heavensii Sminka, and Athesis obliqua Hewitson formerly placed in Athesis, from which the males differ by the presence of two hair patches rather than one, and by the reduced Se. In the females the wing is longer, narrower than in Athesis and the cell is proportionately shorter.

*This genus is named for my small daughter.
The proximal hair patch of the males (Fig. 43) is small, paddle-like and is located near hum; the distal patch is located near the cell apex and is broader, brush-like. Sc and R separate at hum, which is broad with both arms well developed. Sc is doubly curved, as in Atthis, but beyond the cell apex it is reduced and fails to reach the margin. 1d and 2d are short, straight; 2d is angled acutely, the posterior arm S-draped; the cell is closed. Mr is longer than 1d or 2d, arises on the angle of 3d.

In the females (Fig. 44) the apex of the base and wing apex (in Atthis the cell is two-thirds of the wing length). Sc is complete, simply curved; 1d is wanting, M1 and R stalked at the cell apex, or 1d is minute. Other veins placed as in the male.

**Genotype:** Dicerca doreylidae Hewitson.

doreylidae (Hewitson) (pl. VIII, figs. 43, 44), d. douglasii (Gedman & Salvini); hesiostola (Smith); oligastra (Hewitson).

**Melinae** Hübner


Unquestionably Krenchy's *Cernia* is a synonym for *Melinae*, to which *medioa* properly belongs. Sonhor d'Almeida believes that Krenchy's name was founded on a genitalia preparation from a *Tithorea* species wrongly attributed to a *medioa* specimen.

Melinae can be distinguished easily from Malacithina by the broader wings and especially by the fact that *Melinae* males bear two hair patches and that *Malachithina* females have a peculiar, short Sc. Superficially there is great similarity between species of the two genera.

The basal hair patch (Fig. 43, d) is small and paddle-like, the distal one broad and brush-like. Sc and R separate at or slightly proximal of hum, which is broad. In males Sc is long, reaching the margin at the apex near the teminalia of R, sometimes *tegulae* (Salvini, *Melinae* Hübner) is doubly curved; in females Sc is short, terminating with an up-curve and reaching the margin at a point beyond the cell apex. In other respects the venation of the hind wing is similar to the two sexes. 1d and 3d both are short; 2d is angled, usually the anterior arm somewhat longer than the posterior arm; Mr very long, arising from the angle of 2d and extending into the cell past the distal end of 4d; the cell is closed.

**Eutresidae** Doubleday, Hewitson & Westwood


The forms placed in this genus are superficially similar to *Ogram*, but the hind margins of the forewings are not deeply sinuate. The two genera may be readily distinguished by the hindwing venation.

In the males (Fig. 24) only one hair patch is present, which extends from hum to the apex of the cell along R. Sc and R staked at hum, which is broad. Sc is simply curved, reaching the margin near the apex of the wing. Dissections all present, straight; 2d and 3d about the same length, twice the length of 1d; cell closed. Mr is long, arising opposite M1 and extending into the cell at least as far as 4d; often a second recurent vein, small and vestigial, is placed at the middle of 3d.

The venation of the females is identical, except that 1d is minute or wanting.

ATHYRTIS Felder


This genus only a few rather scarce forms are referable. It resembles Mechanitis and Melitaea but the morphology is distinctive.

The males (Fig. 4) have a single hair patch extending from base to the apex of the cell along R; Sc and R branch at base, which is bilid, neither arm well developed; Sc reaches the margin with an upward curve at the apex of the wing; the interior side of the closed cell is much longer than the posterior side; 1d is short, 2d is long, both straight, the well developed Mr arises from the angle of 2d, both arms of which are straight and the anterior arm short, sometimes minute.

The venation of the females is similar to that of the males, except for Sc, which runs with R for several mm. beyond hum, and which reaches the costal margin opposite the cell apex with an up-curve.

distinctive Haensch; mechanismis Felder (Pl. V, fig. 4); m. avangus Haensch, m. obertleri Staudinger, m. salviensi Staudinger, m. simpliciter v. W. Mees.

THYRIDIA Hübner


This small genus of medium sized butterflies has generalized venation which is similar in both sexes. The male fore-legs hint to reduction. Probably ancient, this genus is remarkable in that the females bear a hair patch which is entirely similar to that of the males.

The hair patch (Fig. 55, 1) is along R extending from base to half hum half way to the apex of the cell. Sc and R stalk just beyond hum; Sc is complete, reaching the margin just above the apex of the wing. 1d is placed so that it seems to be rather a continuation of R, while the terminal segment of R angles anteriorly at the apex of the cell; 2d is the same length as 1d, while 3d is angled, the arms being of nearly equal length, emitting a short Mr; the cell is closed. Females the same.

*confusa* (Baker) (= pauli Cramer); c. demigrita Talbot, c. pauli Cramer (Godman & Salvin); c. euryphala (Weymer); mephista (Hübner); thamniata Hübner (Pl. VIII, fig. 50); l. meigina (Felder); simpliciter v. W. Mees.

XANTHOCLEIA Boisduval


The males (Fig. 57) have a single hair patch extending from base to apex of the cell along R; hum is strongly bifid; Sc and R branch at base, Sc reaches the margin at the apex of the wing near the terminus of the down-curved R; 1d and 2d are short, straight; 3d emits from its angle a short Mr; the arms of 3d are about equal in length.

The females have a similar venation, but 2d is short, reaching the margin with an up-curve at a point opposite or proximal of the cell apex.

*oreas* (Djol., How. & Westw.); *eurostria* (Felder); *mechanitis* (Bates); *melitaea* (Hübner); *sappho* (Fabricius); *poliota* (Godman & Salvin); *poilu* (Lienard) (Pl. VIII, fig. 57); l. poliota (Felder); *simplon* (Rüffer).

MECHANITIS Fabricius


The numerous and frequently common species in this genus exhibit modifications which occasionally show variations on the general pattern theme termed by Henschel in 1865 the "Lycaeninae" and are closely similar to Melitaea as a whole, and to random species in various genera; venation serves to separate specimens properly.

On the hind wings the males (Fig. 55) have a single hair patch extending from base to the apex of the cell along R. The hum is strongly bifid; Sc branches from R near hum, but runs closely parallel to R as far as one-
third to one-half the distance to the cell apex; 1d and 1d are straight; 
Mr arises from the angle of 2d and is short; the anterior arm of 2d tends 
to be longer than the posterior arm; the cell is closed.

In the females (Fig. 39), Se is completely concealed with R at least as 
far as the midpoint between the base and the cell apex; after striking 
from R, Sc runs steeply to the costal margin and never is as long as 
the greatest width of the cell. Although 1d usually is present, sometimes 
it is vestigial or wanting; nearly R and 1d branch beyond the cell apex.
In other respects the female venation is like that of the male.

Forbes pointed out that Seida and Sois should be associated with 
Mechanista. These three genera share many important 
characters, but perhaps their relationship is emphasized most 
急剧ly by the unique Se of the female hind wing.

In the females U. 26), Sc is coDiPietelY coalesced with B. as lease  as 
vesiAgial or saucing; rarely Rand 

The males (Fig. 41) have a hair patch located along R from ham to 
two-thirds of the distance of the cell apex. Sc and R stalk at the strongly 
bind hue, but run in parallel courses close together to the margin; 1d is 
straight, perpendicular to R; 2d is weakly angled and bears a short Mr; 
3d is straight. In both males and females Mr occasionally is found on the 
straight 3d, although 2d remains angled.

The most important venation difference in the females (Fig. 52) is that 
R and Se completely coalesce nearly to the cell apex. Usually the segment 
of R between Se and 1d is shorter than 2d. Beyond its separation from R, 
Se angles steeply to the margin and is shorter than the greatest width of 
the cell.

Saida (Cremer) R. bauta Haensch., R. canaHaensch. (PI. VIII, 
fig. 27, 28), S. mosebe (Reisli), R. canaHaensch., S. canaHaensch. 
Dewitz, flavicosta (Birg.), flavicosta (Birg.), flavicosta (Birg.); 

SCADA Kirby

aphis Bates, by designation of Kirby, Zool. Rec., 1871, p. 536.]

[Genotype: Heteroceros rana (Godart), by designation of Kyvel. 
Lep. Cat., pars 30, p. 526, (1871). (=Papilio aurota Hedd.)

Saida Haensch., Zetl. Unt. Schuetz., v. p. 25, fig. 529, 540, (1852). (pres- 
occupied Langermark, 1839). [Genotype: Saida phyllodes Haensch., 
by monotypy.]

In the Zoological Record for 1871 Kirby designated thecoaphis 
genotype for his genus Saida; this reference, heretofore overlooked, 
invalidates Scudder’s designation 10 of phylidesca, but 
does not affect the usage of the name, as the two species are 
congeneric. Godart’s gazeria was shown by d’Alracida. 11 to be 
synonymous with phylidesca, thus sinking the Schatz generic 
namen. 12

The males (Fig. 47) bear a single hair patch which does not extend 
distally to the apex of the cell. Se separates from R at ham, which is 
simple and unbranched, and runs close to R to the margin, which it reaches 
well beyond the cell apex. In the females, Se is completely merged with 
R at least as far as two-thirds of the distance to the cell apex; after striking 
from R, Sc runs steeply to the costal margin and never is as long as 
the greatest width of the cell. In this character and in the position of 
Mr, the venation of Saida resembles Mechanista. Mr is short or vestigial 
and is placed on the angle of 2d, the arms of which are nearly the same 
length; 2d is short, the cell is closed.

11 Lembilleux, 1855, p. 78.

In the same paper d’Alracia pointed out that the only other species 
referred to Heteroceros, fuscata Hewitson, belongs in Hypophyle. Having 
examined a female of "fuscata" in the American Museum collection, I am 
able to verify this. In his Mechanista paper Forbes (Jour. N. Y. Ent. Soc., 
Trans. Amer. Ent. Soc., LIXI, p. 147, (1924)) said "Heteroceros is synonymous with Saida, being 
based on males of Saida and females of Hypophyle."
In the females (Fig. 48) 1d is always present, usually about the same length as 3d, but in zebra Hewitson 1d is much longer than either 2d or 3d, and forms with the terminal segment of 1 R a Y-shaped lack of radius, the apical angle of which is not much greater than 14°.

Hibbert (Hewitson); c. antiqua (Hewitson); c. excellens (Bates); c. kuma (Hewitson); 

In the posterior arm of 3d is faintly S-shaped; M2 at its proximal end.

Perforata (Bates); v. excellens (Hewitson); r. hiberna (Hewitson); v. hiberna (Hewitson) (Pl. VIII, fig. 50), torquacile (Hewitson).

Velia Hennemann


This is a genus of very scarce forms whose phylogenetic position is rather problematic. The females offer the best clues as to relationship, and on the basis of the mechanics-like Sc of the hindwing, and of the four-jointed fore tarsus, I am assigning the genus a place in the *Macelldina* series. However, since *Velamysta* is so specialized and so developed from whatever its true antecedents might have been, it may be possible that this genus should be placed elsewhere on the theory that the female Sc and fore tarsus evolved independently. The angle of Sc and the swollen veins at the cell apex in the males make a formation quite characteristic among the *Ithomiinae* and not to be confused with any other genus.

The males (Fig. 50) bear two hair patches, a smaller proximal one near the base of R, a larger one at the cell apex; hum is strongly bifid; Sc and R run closely parallel for a distance, then separate gradually. Opposite the cell apex, Sc is angulated and swollen, then diminishes in size as it reaches the margin near the wing apex. Paralleling the swelling of Sc, R and Id also are swollen. The terminal segment of R is strongly angulated and with Sc forms an open, somewhat rectangular cell-like space. 2d is straight; 3d is angled as its anterior end and ends a short Mr; Id and 1d form an angle less than 90°.

In the females Sc is colored with R to at least half way to the cell apex, and is shorter than the greatest width of the cell; 1d is wanting, with M1 stalked with R several mm. beyond the cell apex; 3d is straight, short; 2d is angled near its anterior end, where it emits a brief Mr, and the posterior arm of 3d is faintly S-shaped; M 2 at its proximal end is strongly curved.

**AERIA** Hubner


This is a genus of small delicate forms which resemble in color and pattern the species belonging to *Scada*. With that genus *Aeria* shares the peculiar foreleg reduction in the male in which the femur is shorter than the tibia.

The males (Fig. 1) bear a hair patch along R from hum to the cell apex, sometimes along 1d as well; hum is non-bifid; Sc in both sexes separates from R just distal of hum, and in the males reaches the margin well beyond the cell apex, in the females (Fig. 2) just beyond the cell apex. 1d is present in some specimens wanting in others; sometimes R and M 1 are stalked beyond the cell; 2d mostly is short and straight, but sometimes longer and angled, then emitting the brief Mr. Mostly Mr arises from the angle of 3d; 3d is straight when 2d is angled, as a rule Sc of the males is separated from R opposite the cell apex by a distance which is greater than the length of the shortest discocellular vein present; also the angle formed by 3d and 4d is acute. These two characters serve to separate this genus from *Scada*, with which some specimens might be confused. In the latter genus, the distance between Sc and R opposite the cell apex is shorter than the length of the shortest discocellular present, while the angle formed by 3d with 4d is obtuse.

*Hibbert* (Hewitson) c. elegans (Oberth.) c. obliqua (Staudinger) c. striatilla (Etcer.) c. adamsii (Cramer) c. aurita (Ehle, How. & Westw.) c. pacifica Godman & Salvin c. p. pulcherrima Hennemann c. c. elegans (Hewitson) c. c. p. pulcherrima (Hewitson) c. c. p. tenuissima Hubner.

**ITHOMIA** Hubner


This is a large genus distributed throughout the tropical American tropics, nearly every lot of tropical butterflies contains some examples. Many of the species are quite common.

The characteristic hair patch of the males (Fig. 31) in *Ithomia* is unique and serves to identify the genus. It is situated midway between hum and the cell apex; Sc and R completely coalesce as far as the patch, where Sc...
In Ischnias, Sc and R run side by side, nearly coalesced, as far as the patch, around which they arch; beyond the patch Sc runs to the margin which it reaches with a slight upward bend. In the females (Fig. 42) Sc runs closely parallel to R for a short distance, then separates evenly from it and reaches the margin a little distal of the cell apex. The discocellulars are similar in both sexes: 1d is short, always present, set at an angle of about 135° with 3d; 2d and 3d are on a line perpendicular to the costal margin, are straight or somewhat S-shaped; sometimes a vestigial 4d, a slight swelling, is to be found on either or both 2d and 3d.

ceratina (Hewitson) [= flavomaculata Haensch?; spirina (Hewitson)] (Pl. VII, figs. 33, 34), t. omata Haensch?

PLACIDULA d'Almeida

Placidula d'Almeida, Med. $€p., p. 67 (1922). [Genotype: Placidula curvansus (Felder), by original designation.]

Of numerous generic names proposed for separation from the rather composite genus Hypostrius as used by Bryk (Ceratinia of authors) d'Almeida's Placidula is most evidently separate. P. curvansus stands alone and unique, without any closely related form so far discovered.

The hair patch of the male (Fig. 40) is located along R from hum to a point about two-thirds of the distance to the cell apex; hum is broad, but weakly so, both arms being very brief; Sc and R run together closely for several mm. beyond hum before they separate; Sc usually is complete, though in one specimen in the Academy collection, it just fails to reach the margin; 1d is long, usually longer than 2d, and the angle it forms with R is obtuse toward the cell; both 1d and 2d are straight; Mr is straight, arises from the bluntly angled 3d; the point between 1d and 2d is the most distal part of the cell; M$ is slightly convex to M$; the cell is closed.

In the females hum is similar and offers an important distinguishing character. Likewise, Sc and R run parallel for a short distance beyond hum before separating. So reaches the margin with an upward curve just distal of the cell apex; 1d is placed so in the male; 2d is straight, but more nearly perpendicular to R than in the male; 3d is angled and emits a brief Mr.

curvansus (Felder?), (Pl. VIII, fig. 40).

HYALVRIS Boisduval


TRANS. AMER. ENT. SOC. LXVI.
Hypothris as resurrected by Bryk in the Catalogus Lepidopterorum (1837) included species properly associated with nominate in Hypothris, not with eupompe. A revised concept of Hypothris is introduced here and is founded largely on the unique construction of the humeral vein.

The males (Fig. 13) have a hair patch extending from hum to half the distance to the cell apex; hum is bivittall, the discal arm is usually long, more than twice the length of the unbranched trunk of hum; Sc and R separate at hum but run to the marginal parallel to each other; 1d is short, perpendicular to R; M, is concave to R or straight; 2d and 3d are long; 2d is somewhat convex to the cell. The apex of 2d, sometimes located at the extreme end of the vein, emits the Mr; the posterior arm is concave to the closed cell.

In both sexes the hind wings are unusually broad, the apexes rather blunt. In the females (Fig. 16) Sc separates from R just beyond the bivittall hum, where the distance between them increases evenly as far as the cell apex, where Sc recurves and reaches the margin near R. It is only slightly convex to the cell; 1d usually is wanting, with M, stilled at the cell apex; when present 1d is short, perpendicular to R, 2d and 3d are of equal length; 2d is in-curved and emits a longish Mr; 2d is obviously out-curved.

cosco (Dodd, How. & Wern.) (Pt. VI, figs. 13-10), c. labilissima (Weymer); excedent (Felder); c. discamata (Goddan & Salvin); lurida (Butler); I. triaen (Salvin); narvea (How.); n. nova (Hoescht); s. nova (Harvie-Brown); n. etatopha (Hassall).

**HYPOTHYSIS** Hübner

**Hypothysis Hübner,** Index, p. 5 (1821). [Genotype: Hypothysis nominata (Hübner), by monotypy.]


There is no predicting color and pattern among the Ithominae. Superficially eupompe shows little similarity with minuta; in venation, however, careful examination reveals not only certain differences, but also many fundamental similarities. Were genera based on genotypes only, Epityches would survive, but so many intergrades in venation are available that I am forced to recognize the two names as belonging to the same genus.

At first I was inclined to accept Rhodosus as a good genus, but when I recently examined females of pavata in the Cornell collection, I realized that this was only a slight variant of the normal Hypothysis venation; the females are not unusual. Then I compared again the genitalia, and now feel justified in placing Rhodosus in the synonymy.

Should Hübner's Index be given the same fate as the un函umented Tentamen, Hypothysis would be available under the next date of publication, which, as far as I can discover, is 1875, and would fall as a synonym to Rhodosus. The insect determined by Reakirt as Ithomia, iephanae, var. paramenusa Bates, if Omenning's recommendation is to be followed, is a synonym for Ithomia. However, if it becomes the practice to associate a generic name with the true identification where the author of a genus founds his name on a misidentification, what is to be done where the author of a generic name founds his genus on a heterogeneous series? Not only does it seem simpler, then, to associate a generic name with the insect which the author thought he had, but it seems to be the only practice which logically can avoid confusion.

The retention of Ceratinia to apply to this genus according to the mistaken usage perpetrated by Schatzi and Haeckel, would require the bulky mechanics of a "conservanda" ruling by the Commission. Ceratinia has been used in literature to denote
Papilio niveus C. & R. and allies by Hübner, Doubleday, Howitt, Bates, Kirby, Scudder, and Bryk. The alternative is for workers to ignore Hypoctya as well as Scudder’s generic designation for Ceratinia. This latter alternative denotes class, since it opens the door to workers of every sect to ignore names that do not happen to strike their fancies, and to preserve names for which they might have sentimental attachment.

The males (Fig. 21) bear a hair patch along R from hum to a point two-thirds of the distance to the cell apex; hum is black, the cell long and well developed; Sc and R branch at hum; R is strongly convex to the cell opposite the callus, complete, the terminal segment curved downward, usually reaching the margin somewhat above the wing apex. Sc, beyond its separation from R, is usually stout, its course not uniformly parallel to that of R, and reaches the margin quite near to R, 1d is always present, short, rather perpendicular to R; M is more or less concave to R; 2d is usually gently in-curved, longer than 1d; rarely (except for example) 2d is angled and exists Ms. Usually 2d is angled, emitting Mr, which varies in length but generally is rather short; posterior arm of 3d curved, mostly strongly so, away from the closed cell; anterior arm one third the length of the posterior arm, sometimes much shorter; when 2d is angled, 3d is a whole is curved away from the cell. The line formed by 2d and 3d points in the general direction of the terminus of Sc in most typical species.

The females (Fig. 22) exhibit many variations in venation, especially at the distal end of the cell. Sc and R separate at hum, as in the male; 3d curves away from R, then runs to the margin which it reaches well beyond the cell apex, usually not always well distant from R. In the majority of examples 1d is wanting, with M branching several mm beyond the cell apex; last many specimens have a short, perpendicular 1d; this variation is not specific and may be found in any long series of females of a given species. The line formed by 2d and 3d varies in its direction, in arista nearly perpendicular to R, in espousing its proximal angle with R about 45°; various angles between these extremes are to be found. 2d is straight or slightly convex to the cell, in a few individual cases outwardly angulated, giving rise to Mr; sometimes Mr arises opposite M; rarely it arises from 3d which then is angled, the posterior arm usually strongly convex to the cell, infrequently nearly straight. When Mr does not arise from 3d, the latter always is best concave to the cell.

**NAPEOGENES Bates**

*NAPEOGENES* Bates


It is possible that *Ceratonia* might be used for a subgenus, for in *Ceratonia* several minor differences from typical *NAPEOGENES* can be discovered, for example, the developed rearant and the shortened M₂; the female is rather typical of *NAPEOGENES*, however.

The venation of the hindwings in this genus is characteristic and readily recognizable by the festoon-like arrangement of the discocellulars.

The males (Fig. 27) bear a long hair patch extending from hum to 1d along R; Sc and R slant at the strongly bifid hum; R is convex to the cell opposite the cubicles; Sc is distinctly separate from R beyond their stalk and reaches the margin at the wing apex. The anterior arm of the cell is very long, extending nearly to the margin so that the terminal segment of R is shorter than the greatest width of the cell; 1d is perpendicular to R; 2d and 3d are not angled, often gently curved, and form with the cubicles a characteristic festoon; Mr is wanting in usual species, sometimes there is a vestigial Mr little more than a swelling of 3d, often found on the wing of one side and not on the other; in a very few species Mr is always present.

**ARTHUR M. FOX**
The venation of the females (Fig. 20) differs in several respects: Sc is somewhat more separate from R distal of their stalking, and reaches the margin with an upward curve; the anterior side of the cell is proportionately shorter than in the males, being about two-thirds of the wing length. The proximal portion of R is not so deeply concave to the cell and sometimes is nearly straight; id is sometimes present and short, often wanting, in which case R and M may be stalked beyond the cell apex. The festoon arrangement of the discocellulars is found also in females, but proportionately compressed and more closely together below the shorter female cell.

The males (Fig. 10) bear a hair patch along R from base to cell apex; Sc separates from R at hum, which is bifid, and reaches the margin at the wing apex with an upward curve. In the females (Fig. 20) this terminal curve is wanting on Sc, which is evenly arched. In other respects the venation is similar in both sexes. M1 and M2 are short, some length, the proximal angle formed by them about 135°. A well-developed M3 arises from the acute angle of M2, the posterior arm of which is concave to the closed cell.

I suspect that many of the species referred to Leucothyris in the past should be placed in this genus, but lacking complete material I have not attempted a shift. The key difference between Hyposcada and Oleria is to be found in the humeral vein of the hind wings.

**CERATINIA Hübner**


The males (Fig. 7) have a single hair patch extending from the base to the apex of the cell near X; hum is bifid, the distal arm not well developed; Sc and R run closely parallel to about half the distance to the cell apex, then separate gradually; Sc reaches the margin at the apex of the wing with an upward curve. In two specimens of *Elyflora* Salvin in the Academy's collection the terminal segment of R is angled upward and near with Sc just away from the margin. Id usually is present, although it may be wanting, in which case M, and R stalk beyond the apex of the cell; M3 is gently curved convex to the cell; a short M4 arises from the angle of M2, the posterior arm of which is concave to the cell.

The females (Fig. 8) are similar except Sc, which often is connected with R by their point of separation by a short auxiliary vein, a character also found in *Dorynea.***

**HYPOSACA Godman & Salvin**


The males (Fig. 10) bear a hair patch along R from base to cell apex; Sc separates from R at hum, which is bifid, and reaches the margin of the cell apex with an upward curve. In the females (Fig. 20) this terminal curve is wanting on Sc, which is evenly arched. In other respects the venation is similar in both sexes. M1 and M2 are short, some length, the proximal angle formed by them about 135°. A well-developed M3 arises from the acute angle of M2, the posterior arm of which is concave to the closed cell.

I suspect that many of the species referred to *Leucothyris* in the past should be placed in this genus, but lacking complete material I have not attempted a shift. The key difference between *Hyposcada* and *Oleria* is to be found in the humeral vein of the hind wings.

**OLERIA Hübner**


It seems regrettable, perhaps, that the familiar Boisdalaval name for this large genus must be sunk before the little known Hübner name, but there seems no point to perpetrating a usage contrary to priority.

The males (Fig. 20) bear a patch of long hairs arranged in a thin brush arising near the base of the wing above R; hum is non-bifid; Sc and R run side by side for a short distance beyond hum and never are the two veins much separated. The short id is close to the margin, so that the
distal segment of R is shorter than the width of the cell; 2d is long, tends to approximate being parallel to R; activity angled, gives rise to the short Mr; the posterior arm of 2d is reopened to the closed cell; the general shape of the cell is like a flat with index finger pointing toward the wing apex; the anterior side of the cell often reaches nearly to the margin. But in a small group of less characteristic species the cell is shorter, 1d being only a little distal to 2d, which is shorter; between these and the numerous long-celled forms there are many intermediates. It is possible that most of these short-celled forms should be referred to Hypocordia.

The females (Fig. 40) have a much shorter cell than the males, with 2d and 1d the same length; in other respects the sexes are alike in venation.

The males (Fig. 41) have a much shorter cell

**CALLOTHOMIA Bates**


There is considerable difference between the venation of the sexes in this genus. In both, however, is found the blind hub, the proximal arm of which is well developed, while the distal arm is short.

In the males (Fig. 3) 10 branches from R gradually, running closely parallel as far as a point opposite Cu, never much separated from R and finally atrophied proximal of 1d; anterior side of cell very long, reaching nearly to the margin; 1d short, separate from Mr; Mr well developed, its proximal end nearer than the distal end to R and arises from naturally angled 2d; entrance arm of 2d more than three times the length of posterior arm; 2d short; cell closed. The hair patch is small although the hair scales are long, and is located at the base of the cell on R, never extending distally beyond a point opposite Cu.

In the females (Fig. 6) Sc is complete, running closely parallel with R for a distance as in the males, but distal of their separation, it angles to the costal margin which it reaches with an up-curve; anterior side of cell little if any longer than the posterior side, cell apex being less than two thirds of the distance to the wing apex; 1d wanting; 3d straight; Mr from the angle of 2d, the arms of which are nearly the same length; Mr parallel to R. At the cell apex R is angled.

**CORBYLLUS Boidinnav**


Kirby's designation of *epitypina* as genotype for *Corbylla* was overlooked by Bryk, who incorrectly designated *gaphesia* Howison.24 Bryk's application of the name must be corrected and Godman and Salvin's familiar *Epithonia* must be relegated to the synonymy.

The males (Fig. 9) have a hair patch along the basal half of R; ham is simple, not bifid; 3c and R run closely parallel for a short distance beyond ham, then separate gradually; proximal of the cell apex Sc is atrophied; the short 1d is near the margin, so that the distal segment of R is shorter than the greatest width of the cell; 2d is curved around to R, 2d is nearly straight; Mr is very long, reaching into the cell beyond the anterior end of Cu, and usually is located opposite the discocellularis; 2d is straight or, when Mr arises from the anterior part, is angled.

In the females Sc and R are closely parallel, nearly merged, for two thirds of the distance to the cell apex; beyond the separation from R, Sc curves in the margin which it reaches nearly opposite the discocellularis; 1d is wanting; 3d stria; 3d the cell; the long Mr arises from the angle of 2d; 2d is rather straight.

*epitypina* (Hew.); a. femorata (Hausch); alpina (Bodley); a. vitula (Hausch); venata (Bodley); pl. V, fig. 9; a. hubi (Bodley); a. methoxiella (Weymer);

In the females (Fig. 11) the cell is proportionately shorter, the terminal segment of R longer than the greatest width of the cell. If present it is short, often absent and M₃ branches from R beyond the cell; 2d straight; 3d and M₄ similar to the analogous structures of the males; Sc runs closely parallel to R to a point opposite the submarginal, then angles toward the margin which it reaches beyond the cell apex. At the point where Sc and R separate there is a short auxiliary vein connecting them, a vein analogous to that found in females of *Ceratina*.

Between (Hibberd), *S. rhodes Felder;* enatado (Emden); *Kuenethi* (Kuenne), *Haustra* (Geyser), *Baldelli* (Rehdenti), *R. cratynus* (Felder), (P.L. v. 16, 11), *klugii* (Geyser & Hübner); *k. chiricagua* (Haustra); *lees* (Cramer); *lofeta* (Haustra); *lorica* (Weymer); *aeonita* (Hew., *Ephrastia* (Felder), *m. steinkell* (Staudt); *obfuscata* Butler; *phagacea* (Hew.); *Pluta* Butler & Drury; *r. lustrum* Butler & Drury; *r. olanea* (Felder); *s. lacunaria* (Haustra); *convergens* Haustra; *conversa* (Haustra); *verona* (Hew.); *velata* Haustra; *zanthophora* Haustra; *zeta* (Geyser), *z. ceylonica* Bates.

**PTERONYMIA** Butler & Drury

Pteronymia Butler & Drury, Cat. Ent., p. 46, (1872). [Genotype: *Ther-

*ia neleus* Hew., by original designation.]


Parapteronymia was proposed as a subgenus, is synonymous with Pteronymia and was founded on trifling variation of the genitalia. *Epinema* appeared without diagnosis in a list of Brazilian butterflies and included two species, one of which, *Papilio euride Cramer*, is herewith designated genotype.

Both sexes of *Pteronymia* may be separated from *Episcada* by the structure of the humeral vein which in *Pteronymia* is vestigially bident, having a lobe on its distal side; in *Episcada* hum is clearly non-bident. Great confusion exists in literature regarding the proper association of the species in these two genera. Godmann & Salvin pointed out that in *Pteronymia* the female fore-tarsus bears setae on the first, second and third joints, while in *Episcada* the setae are only on the second and third joints, not on the first.

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Footnotes:

The males (Fig. 23) have a single hair patch along R from the base to the cell apex; aum is vestigially broad, the distal arm a mere lobe; Se and R run side by side for a short distance beyond hum, then separate gradually; Se reaches the costal margin near the wing apex with an up-curve. In the venation and in most of the species properly referable to this genus, 1d and M1 are entirely wanting; however a few forms must be included which have M1 very short, branching from R near the margin; 2d is nearly straight; 3d on the short Mr from its acute angle, the posterior arm of which is about as long as 2d.

The females (Fig. 51) the venation is the same, except for hum, as in females of Episcada. However, Se has a tendency to be slightly longer in Pteronoma reaching the margin nearer the wing apex; also 1d is almost never present and M1 tends to stalk with R more distal of the cell apex. These two tendencies in no way serve for separating females as individuals into their proper genera; the structure of hum is the only reliable venational character I have found.

*adlia* (How.); *agulla* (Godman & Salvin); *admeena* (Godman & Salvin); a. *tiganae* Godman & Salvin; *alalia* (How.); *alae* (How.); a. *admeena* Henniesh.; a. *alea* Godman & Salvin; *alatus* (Bates.); artens (Hemson); *astilla* (Henniesh.); asterla Henniesh.; *astilla* (Henniesh.); *astilla* (Henniesh.); asterla Henniesh.; asterla Cleman.; *aslanesca* Godman & Salvin; *aslanesca* Butler & Drury; *astilla* (How.); *aslanesca* (Staud.); *aslanesca* (Borriesch.); *astilla* (Henniesh.); *astilla* (How.); *astilla* (Gahnia); *astilla* (Gahnia); *astilla* (Gahnia); *astilla* (Gahnia); *astilla* (Gahnia); *astilla* (Gahnia); *astilla* (Gahnia); *astilla* (Gahnia); *astilla* (Gahnia).
in the females (Fig. 18) Sc is complete, reaching the margin somewhat distal beyond the cell apex; after running close to R beyond the cell; 1d is invariably wanting, with M, branching from R beyond the cell, 2d is short, straight; 2d is angled, emitting the short M; the posterior arm of 3d is curved, almost S-shaped, the posterior end of which is much more distal than the cell apex and the terminus of Sc, though proximal of the branching of M, and R.

cassius (Oates), c. thou (Godman & Salvin); r. regina Haensch; ocellata (Hewitson); c. chirrophora (Oates); c. kranzei Haensch; c. linnaeus (Hewitson); c. phryne (Hewitson); c. wisse (Hewitson), (PI. VI, figs. 17, 18). m. nigrita Haensch; c. olivacea (Doubleday, Hewitson & Westwood); quadrata Haensch; porphyrana Weymer; prionia (Hewitson); o. jamica Haensch; c. ocellata Haensch; c. indica (Herrich-Schaffer); o. lustra Godman & Salvin; c. unicolor Weymer; c. virginia (Hewitson); c. unicolor (d'Almeida).

GODYRIS Boisduval


The males (Fig. 28) bear a single hair patch along R from base to apex of the cell; hum is bifid; Sc and R virtually are connected as far as an point opposite Cu, beyond which Sc runs evenly toward the apex, which it fails to reach, being atrophied opposite the cell apex; R and M, reach the wing apex as a single vein, making near the margin to form with the short, straight 1d an auxiliary cell; 2d is slightly longer than 1d and nearly at a right angle to it; Mr when present, may be as a continuation of M, or may be as distant as 2d; 3d is curved, atrophied at its anterior end so that the cell is open.

In the female (Fig. 30) Sc reaches the margin just distal of the cell apex; the posterior side of the cell is longer than the anterior side, but the posterior end of 3d is not distal as the terminus of Sc or the branch of M, and R; 1d is wanting invariably; Mr arises from the angle of 3d, the posterior arm of which is S-shaped.

coremica (Hewitson); c. nigripennis (How); c. discorsa (Felder); c. nitraria (Wehrer); c. diversicolora (d'Almeida); c. elatio (How); c. ovata (How); c. paturelli (Oates); c. hemitonia (Haensch); pseudogeremia (d'Almeida); tanaagra (Riskt); (PI. VII, figs. 29, 30). c. nigripennis (Godman & Salvin); c. teudalia (Hewitson); c. zahana (Hewitson); c. unicolor (How); c. unicolor (d'Almeida); c. leucocera (Haensch).

MCCLUNGIA new genus*

Males may be distinguished from Pseudosaca, in which salomona formerly was placed, by the bifid hum, by the two hair patches, and by the absence of the terminal segment of R; distinguished from Hypoleia by the shorter Sc and by the absence of the terminal segment of R, this last a remarkable character unique among the Ithomiinae. The females differ from Pseudosaca in the veination at the end of the cell and by the humeral vein. I do not possess enough material to make a satisfactory key difference from Hypoleia, which the only McLungia female in the Academy collection closely resembles. However, the anterior arm of 3d seems longer in proportion to 2d, and 3r seems longer; in the forewing both recurrents are present and well developed, while in Hypoleia only one is generally present.

Male (Fig. 28) have two hair patches, one from the bifid hum to half way to the cell apex, the other at the cell apex, small and minutilike; Sc runs closely parallel to R for a distance, then arches away and is atrophied just beyond the cell apex; the rounded, acute place under the basal hair patch around which Sc detours in Hypoleia is wanting in McLungia. The terminal segment of R is wanting, vestigially present in some examples as a slight thickening at the juncture of R and 1d; in one specimen examined it is present, 3 mm. AS long; 1d and 2d both shorter than the same length; Mr, atrophied short of the margin; M, and M, complete; Mr short, opposite M,; 3d nearly straight, its anterior half wanting; cell open.

Females with bifid hum; Sc and R closely parallel to a point opposite Cu, where Sc angles sharply away and reaches the margin just beyond the cell apex; 1d wanting, M, stalked 3 to 4 mm. beyond the cell; 2d very short, less than half the length of the anterior arm of 3d; Mr long, from the angle of 3d, the posterior arm of which is "S"-shaped.


Mcclungia salomona praeceptrix new subspecies

Male: Both wings transparent with a yellowish tinge, borders brown-black. On the dorsal surface of the forewing the dark marginal color extends between R and the costal margin from base to cell apex; a thin yellow-black triangular half-band covers the discocellular; an opaque yellow spot, about 3 x 1 mm, indicates the marginal stripe just distal of the cell apex. This spot forms the anterior end of a yellow band which extends down to M, with its margin the veins M, and M, are yellow, while the band between the veins is faintly and transparently yellow.

TRAM. AM. ENT. SOC., LXXVI.
marginal band is wider at the apex of the wing, gradually narrowing toward the anal angle. The area between Cu₁ and the anal margin is black-brown. The inner side of the marginal band is even, except for three short, faint streaks from the margin running proximal, respectively between M₁-M₂, M₂-M₃, M₃-Cu₁. Except where they are crossed by the yellow discal band, the veins all are dark. Additional yellow-transparent areas are between Cu₁-Cu₂ and Cu₂-Cu₃. The eyes are about 1.5x1.5 mm. and are bordered with fine black lines. A third spot, similar in color but much smaller and not well defined is between Cu₂ and Cu₃.

Ventrally the hind wing has the band at the costal margin anterior of 50 brown-orange. Under the hair patch the band is black. The rest of the marginal band is brown-orange edged strongly on the distal side with black, faintly so on the proximal side. The discocellular band and the opaque yellow costal spat are repeated from above. At the apex against the distal side of the brown-orange band are two silver-white oblong spots between R₂-R₃, R₃-R₄. These spots are about 1x0.5 mm. and are bordered with fine black lines. The male (Fig. 15) bear a single brush-like hair patch along R, base to cell apex; term simple, non-hind; 3d as conical with R as far as a point opposite Cu₂ beyond which it is immediately amplified; in some specimens it is a mere prominence on R; usually R is a few millimeters long, but very slender and weakly developed; in no case does it reach the margin; 1d and 2d are short, straight; in some examples 2d is reduced posterior and fails to reach M₂; 2d is long, curved, atrophied anterior so that the cell is open; 1d is present.

The hind wing venation of his genotypy, and I agree with the suggestion contained in his letter to me that Languida ought to be a synonym for Pseudoscada.

The males (Fig. 15) bear a single brush-like hair patch along R, base to cell apex; term simple, non-hind; 3d as conical with R as far as a point opposite Cu₂ beyond which it is immediately amplified; in some specimens it is a mere prominence on R; usually R is a few millimeters long, but very slender and weakly developed; in no case does it reach the margin; 1d and 2d are short, straight; in some examples 2d is reduced posterior and fails to reach M₂; 2d is long, curved, atrophied anterior so that the cell is open; 1d is present. The female (Fig. 16) bears a complete, S₁ and R run side by side, touching but not conflated, as far as a point opposite Cu₂ beyond which it is immediately amplified; in some specimens it is a mere prominence on R; usually R is a few millimeters long, but very slender and weakly developed; in no case does it reach the margin; 1d and 2d are short, straight; in some examples 2d is reduced posterior and fails to reach M₂; 2d is long, curved, atrophied anterior so that the cell is open; 1d is present. The venation in the female (Fig. 16) all arecomplete. S₁ and R run side by side, touching but not conflated, as far as a point opposite Cu₂ beyond which it is immediately amplified; in some specimens it is a mere prominence on R; usually R is a few millimeters long, but very slender and weakly developed; in no case does it reach the margin; 1d and 2d are short, straight; in some examples 2d is reduced posterior and fails to reach M₂; 2d is long, curved, atrophied anterior so that the cell is open; 1d is present.

Type.—Male; “Upper Rio Marañon, Peru; Nov. 19, 1924; H. Bassler Col.” [American Museum of Natural History; type No. 28,700.]

Two male paratypes: One with data as in the type, in collection of the Academy of Natural Sciences of Philadelphia. The other paratype: “2°-4° S 78° W, xii, 1924, altitude 875 M. Ecuador, W. Von Hagen”, in collection American Museum of Natural History.

*This genus and this subspecies are named in honor of Dr. Clarence E. McClung, Professor of Zoology at the University of Pennsylvania.

**Richard M. Fox**

PSEUDOSCADAS Godman & Salvin


Senhor d'Almeida kindly supplied me with a sketch of the hindwing venation of his genotypy, and I agree with the suggestion contained in his letter to me that Languida ought to be a synonym for Pseudoscada.

The male (Fig. 15) bear a single brush-like hair patch along R, base to cell apex; term simple, non-hind; 3d as conical with R as far as a point opposite Cu₂ beyond which it is immediately amplified; in some specimens it is a mere prominence on R; usually R is a few millimeters long, but very slender and weakly developed; in no case does it reach the margin; 1d and 2d are short, straight; in some examples 2d is reduced posterior and fails to reach M₂; 2d is long, curved, atrophied anterior so that the cell is open; 1d is present.

The female (Fig. 16) all are complete. S₁ and R run side by side, touching but not conflated, as far as a point opposite Cu₂ beyond which it is immediately amplified; in some specimens it is a mere prominence on R; usually R is a few millimeters long, but very slender and weakly developed; in no case does it reach the margin; 1d and 2d are short, straight; in some examples 2d is reduced posterior and fails to reach M₂; 2d is long, curved, atrophied anterior so that the cell is open; 1d is present.

The venation in the female (Fig. 16) all complete. S₁ and R run side by side, touching but not conflated, as far as a point opposite Cu₂ beyond which it is immediately amplified; in some specimens it is a mere prominence on R; usually R is a few millimeters long, but very slender and weakly developed; in no case does it reach the margin; 1d and 2d are short, straight; in some examples 2d is reduced posterior and fails to reach M₂; 2d is long, curved, atrophied anterior so that the cell is open; 1d is present.

**Greta Hemming**


The male (Fig. 13) has two hair patches, the basal one extending from the stalk of Sc and R to about two-thirds of the distance to the cell apex, and is raised ventrally; the distal patch is small, pencil-like, and is located at the apex of the cell; hum simple, non-bifid; Sc and R run side by side just distal of hum, then stalk; distal of their separation, Sc curves away, then returns to be atrophied proximal of the cell apex; R is strongly convex in the cell along the proximal hair patch; 2d is short, unconnected with M1; 1d entirely wanting; cell open; M1 and 3d complete, the latter sharply angled near its anterior end, and bearing a short Mr.

In the females (Fig. 14) Sc and R run side by side to half the distance to the cell apex, then Sc gradually runs to the costal margin which it reaches just distal of the cell apex; 2d is short, straight; 1d and M1 wanting; 3d angled, enabling a short Mr. A specimen of H. codia Godman & Salvin in the Academy collection has a small loop like a needle's eye on R beyond the cell; the posterior part of this loop probably is a vestige of M1.

**HETEROSAIS Godman & Salvin**


EXPLANATION OF FIGURES

Variation of hind wing

(All specimens from the collection of the Academy of Natural Sciences of Philadelphia, except where noted.)

PLATE V

Figure 1—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 2—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 3—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 4—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 5—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 6—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 7—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 8—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 9—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 10—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 11—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 12—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 13—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 14—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 15—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 16—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 17—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 18—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 19—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 20—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 21—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 22—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 23—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 24—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 25—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 26—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 27—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 28—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 29—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 30—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 31—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 32—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 33—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 34—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 35—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 36—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 37—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 38—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 39—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 40—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 41—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 42—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 43—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 44—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 45—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 46—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 47—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 48—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 49—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 50—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 51—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 52—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 53—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 54—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 55—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 56—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
Figure 57—Asina eurimcha Gmn. & Slv. 6. Guanoles, Costa Rica.
FOX—GENERA OF THE ITHOMIINAE

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