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The Canadian Entomologist.

VOL. VIII. LONDON, ONT., AUGUST, 1876. No. 8

INQUIRIES CONCERNING THE GENERA OF MR. SCUDDER'S "SYSTEMATIC REVISION."

BY S. H. PEABODY, CHICAGO, ILL.

Soon after the issue of the "Systematic Revision," and while I was trying to master the intricacies of its analysis, it occurred to me to tabulate the generic descriptions in some family, if, haply, I might thus discover the exact points of discrimination. By chance I took first the tribe Adolescentes, producing the table which accompanies this paper. In this table, if any expression or word which could distort the obvious meaning of the author, has been omitted or wrested from its proper connection, such change has been through inadvertence or mistake. In like manner I have tabulated the Dryades, the Hamadryades, the Equites, the Voracia, the Fugacia; I confess that when I came to the work of comparing phrase by phrase the five page descriptions of the genera Papilio and Aglais, my heart failed me. I resolved to wait until my unfledged pinions were equal to these lower and briefer flights of the scientific imagination before attempting this more extended journey.

In view of the introductory passages of the "Revision" which promised to remove "the reproach of Lepidopterists," it was with no little concern that I found my tables "insufficient"; that I was unable to distinguish the differences between the genera grouped in the Adolescentes, or the Equites, or the rest. I have waited now nearly four years for some Philip to say "understandest thou what thou readest?" and to give such elucidation that I could go on in joyful belief. No such apostle of the new-antique has appeared, and I venture to offer this table, with a few thoughts, to my entomological brethren.

The analyses of these generic descriptions show two items: First, that many of the differences expressed exist only in the phraseology, either indicating no differences, whatever, in fact, or differences so slight as to be purely opinionative; second, that other differences are such that they

may be positively formulated, often numerically stated. For the present, we will admit that these differences, thus accurately expressed, do really exist, and depend upon measurements which may be repeatedly verified.

With the first of these items we need do little more than present a few illustrations; the array in parallel columns will usually bring them into sufficient prominence. The second is of more consequence, for it raises the important question upon which this whole discussion will turn—Are these differences of such a character as will warrant the erection of distinct genera? Mr. Scudder has already answered this question in the affirmative; for us to answer blankly in the negative would be to pit our opinion against his, in which case the weight of authority would very largely and very properly lie on his side.

We must, therefore, briefly inquire into the distinctions which exist between genera and species, as found in law and in usage.

Probably we can appeal to no higher authority upon the law than that of Agassiz, and accordingly we quote his definitions as found in the "Essay on Classification."

"Genera are most closely allied groups of animals differing neither in form nor in complication of structure, but simply in the ultimate structural peculiarities of some of the parts." Eng. Ed., p. 249.

"Genera [are] characterized by ultimate peculiarities of structure in the parts of the body.

"Species [are] characterized by relations and proportions of parts among themselves, and of the individuals to one another and to the surrounding mediums." P. 265.

Here the question turns upon the force of the words "ultimate structural peculiarities." Can they mean that any difference which can be formulated in the ratio of length to breadth in the same part, or of length of one part to length of another part, is a difference of ultimate structure? If one insect has its fore-tibia five-sixths the length of its fore-femur, while another has the same parts in the ratio of four-sixths, or six-sixths, are they for this cause of different genera? Does this principle extend through zoology? Is Gen. Sheridan, who is short and stout, and who, according to Pres. Lincoln, can scratch his ancle without stooping, generically different from Gen. Sherman, who is tall and slender, and whose ancles are evidently out of his reach? Can any one safely affirm of any individual of any species of any genus in the whole realm of nature, that all its ratios of measurement in all its members are identical

with the corresponding ratios of any other individual existing? There must be a limit to the meaning of these words, or we shall find a genus wherever we find the slightest variation in ultimate structure, that is, a genus for every species, not to say for each individual. An examination of the "Revision" would lead us to suppose that the classification of Butterflies is rapidly drawing to such a condition. When it comes to that, and when each species is the "type" of a distinct genus, what office will remain for genera?

But the other or co-ordinate section of the law distinctly bars this manifestly absurd interpretation of the first section, by making species depend, so far as difference of parts is concerned, upon such differences as involve only the "relations and proportions of parts among themselves." The femero-tibial ratios of five-sixths and six-sixths, for example, are clearly differences of proportion of parts among themselves, and therefore under the law, these differences are not of generic, but only of specific, value.

That this view accords with usage may be abundantly illustrated in every department of Entomology; not forgetting the writings of Mr. Scudder. In a single genus of Coleoptera, lately revised by Dr. Horn, we find assembled species with "thorax broader than long" and "thorax longer than broad"; with antennæ "short" and antennæ "longer than head and thorax"; form "slender," form "broadly oval"; "with wings" and "without wings." In a single genus of Orthoptera Mr. Thomas includes species "with elytra" and "without elytra"; pronotum cylindrical or carinated; antennæ very long or of ordinary length; wings absent or present. In Mr. Scudder's Revision of Crickets will be found tables of measurements of individuals of the same species, in which the ratios differ much more than those in the table of Adolescentes, upon which he bases distinctions of genera. In Dr. Packard's Monograph of the Phalænidæ he includes in the genus Thamnonoma species which have the palpi very long, and palpi short; in Aplodes species which have the first median venule remote from second, and which have the first and second median and posterior discal venules co-originating; in Tephrosia species which have hind tarsi longer than tibia, and hind tarsi shorter than tibia. In the "Revision" itself, Mr. Scudder admits a variation of 41 to 49 joints in the antennæ of different species of the genus Argynnis; it seems, however, that the elastic band which stretches so far would not endure three degrees more of straining to include the antennæ of Speyeria with their 52 joints.

ANALYSIS OF GENERIC DESCRIPTIONS OF THE TRIBE ADOLESCENTES.

Genus.	LYCÆIDES.	GLAUCOPSYCHE.	CYANIRIS.	EVERES.
Head	Small.	Small.	Small.	Small.
Front	Flat. Very slightly tumid beneath; scarcely surpassing front of eyes, fully as broad as they. Scarcely half as high again as broad.	Nearly flat. Below considerably tumid; as broad as the front view of the eyes. Scarcely half as high again as broad.	Flat. Very slightly fullest below; barely surpassing the front of eyes. Scarcely twice as high as broad.	Nearly flat. A very little bulbous below; barely protruding beyond front of eyes. Scarcely ⅔ as broad, &c. Twice as high as broad.
Eyes	Naked.	Delicately and sparsely pilose with very short hairs.	Delicately and sparsely pilose with short hairs.	Naked.
Antennæ	Scarcely longer than abdomen.	Considerably longer than abdomen.	Slightly longer than abdomen.	Barely longer than abdomen.
No. joints in	About 32.	About 31.	About 34.	About 32.
Do. in club.	12 or 13.	12.	12 or 13.	12.

Palpi	Slender. Nearly or quite twice as long as eye.	Slender, compressed. Scarcely more than half as long again as eye.	Slender. Scarcely more than half as long again as eye.	Slender. Less than twice as long as eye.
(as the Nos.	2—	1½ +	1½ +	2—)
Ratio of fore tibia to hind	A little more than ⅝.	⅔	A little more than ⅔.	¾
(as the Nos.	.6¼	.6⅔	.6 +	.7½)
Ratio of mid tibia to hind	Scarcely ⅘	⅘	Nearly ⅘	A little shorter.
(as the Nos.	.8—	.8⅓	.8⅓—	.9 or 1.0)
1st Sup'r Br. of subcostal nervure of fore wings arising	In the middle of the outer two-thirds of the upper border of the cell.	Somewhat beyond middle of upper border of the cell.	At scarcely two-thirds the distance from the base to the apex of cell.	A little beyond the middle of the upper border of the cell.
2nd do.	Midway between it and the origin of 1st inferior subcostal nervure.	Midway between this & the origin of first inferior branch.	At less than half way between.	About one-fourth the distance from origin of first to apex of cell.
Cell	Somewhat more than ½ as long as wing.	Somewhat more than ½ as long as wing.	½ as long as wing.	Scarcely ½ as long as wing.

Let us now examine the table of the Adolescentes, searching for these ultimate peculiarities of structure, not simply differences in the proportions of parts among themselves, which furnish the authority for constructing four genera where entomologists have usually found but one.

After observing the sameness in size of head and flatness of front, we meet at once differences which seem to consist in merely varied forms of phraseology. For what else can we make of these? "Front very slightly tumid beneath"; "below considerably tumid," "very slightly fullest below"; "a very little bulbous below." "Scarcely surpassing, barely surpassing, barely protruding beyond the front of the eyes." What may be the relative weight of the four discriminating words "scarcely, considerably, slightly" and "barely," which state how much the antennæ are longer than the abdomen? Does the ascending scale begin with barely and end with considerably? If so, how do we grade the slightly and scarcely? If these words do not express differences, why use them? If they do, is the difference more than a very small difference in the proportion of parts? What shall we say of these phrases which ring the changes upon the devoted fronts of the Equites? They are said to be "scarcely higher than broad," "fully as broad as high," "scarcely broader than high," "of about equal height and breadth," "fully as high as broad." In the Hamadryades we find yet other variations: "Scarcely as broad as," "somewhat narrower than," "not nearly as broad as," "about three-fourths as broad as." Whoever will take the trouble to develop one of these analytical tables will find abundant illustrations of this nature; we believe that Mr. Scudder himself would be surprised at the marvellous facility with which he has escaped saying the same thing twice in the same way.

The numbers of joints in the antennæ scale like a flight of steps. "About 32" must include as possible at least 31 and 33, unless we reckon like that Massachusetts pauper, who being asked how many were there in the poor house, answered "Between eight and nine of us!" Then we have this ladder:

Cyaniris,	33, 34, 35.
Lycæides and Everes,	31, 32, 33.
Glaucopsyche,	30, 31, 32.

The whole range has but four usual and six possible terms.

The palpi are "scarcely more than half as long again as the eye," "less than twice as long as the eye," or "nearly or quite twice as long as the

eye." Is the difference between the first and second of these as great as that between sharp six and flat seven of the musical scale?

The ratios said to exist between the lengths of fore, middle and hind tibiæ, are expressed definitely in numbers. If we reduce the fractions to common denominators in the usual way, that we may compare their numerators, we find the terms so large as to be unweildy. Let us change the fractions to tenths; the resulting numbers are, for ratios of fore tibiæ to hind tibiæ, .6¼+, .6⅔, .6+, and .7½; for middle tibiæ to hind tibiæ, they are .8, .8⅓, .8⅓—, .9 or 1.0—. The entire range of variation is less than one and one-half tenths in the first case, less than two-tenths in the second case. The difference between first and third, first series, is one-fortieth; between first and second is one-twenty-fourth. Are these differences, or even the sum of them, ultimate peculiarities of structure?

One item remains, the venation of the wings. The first superior branch of the subcostal nervure arises "in the middle of the outer two-thirds of the upper border of the cell"—is there any circumlocution in this?—"somewhat beyond the middle of the upper border of the cell," "at scarcely two-thirds the distance from the base to the apex of the cell," "a little beyond the middle of the upper border of the cell. In fractions, ⅔, ½+, ⅔—, ½+.

How, then, does Lycæides differ from another, Glaucopsyche, for instance? 1. Its eyes are naked rather than delicately and sparsely pilose with very short hairs. 2. It has about 32 rather than about 31 joints in its antennae. 3. Its palpi are a little less than twice, rather than a little more than one and a half times, as long as the eye. 4. The ratio of fore tibiae to hind tibiae is $\frac{15}{24}$ rather than $\frac{16}{24}$. 5. That of middle tibiae to hind tibiae is $\frac{24}{30}$ rather than $\frac{25}{30}$. 6. The 1st sup. branch of subcostal nervure arises at $\frac{6}{12}$ rather than at $\frac{7}{12}$ the length of the cell. Upon which of these six points rests the distinction between these genera? Will the integration of all these differentials with whatever may be implied in the shades of meaning between scarcely and barely, considerably and slightly, suffice to make a gross sum which amounts to more than a difference in the proportions of parts properly accounted for as specific? Why may not these find ample room and exact determination in the same genus? Any other of the six pairs which these four names would make, if taken two by two, gives a series of differences of the same nature and of equal weight. The discussion of any other of the tables which lie before us leads to conclusions equally forcible and equally direct. In this resuscitation of

proposed and forgotten genera, this subdividing and limiting of the old and this erection of new, the same method seems to have been followed. There is the same microscopic search for minute differences, the same confusion arising from the use of fractions of different denominators, by which the real amount, or want, of difference evades the understanding, the same felicitous escape from repetition.

If the case is not as we have stated, will some one show wherein? If it is, ought these genera to stand?

Is any genus valid, until it has been substantiated by a full and competent description which shall clearly set forth the points of discrimination between it and other genera, particularly that from which it has been separated?

While the mention of some species in a genus as a type of that genus may be useful as giving a nucleus about which that genus may crystallize, thus providing for future definiteness and fixity, it seems to us that we ought most earnestly to protest against the establishment of a genus by the mere mention of its type. For example, admitting that there is ground for the use of Hübner's name Epargyreus, what is the distinction between it and the proposed new genus Achalarus? It is not enough to answer, perhaps no one is disposed to say, "One skilled in this branch of Entomology will know." The question should be answered for the benefit of the unskilled, the learner. Nor is it enough to say—"We have no space to answer now; we want time for investigation; we will answer hereafter." We believe there are no pre-emption laws in Entomology; that no caveats can be filed at this Patent Office. The laws of priority can cover only so much as one has wrought out and published, not what he gives notice that he expects to find, or intends to publish in the future.

No. of Broods of Danais Archippus.—There positively are three broods of *archippus* here, at *least*. The second is now giving butterflies. I set a female last week and she laid eggs. I saw a chrysalis last week and for several days have seen newly emerged butterflies. The first brood emerged early in June. Very late in the season is a third brood, Sept. or Oct., and these hybernate as butterflies.—W. H. Edwards, W. Virginia.

August 4th, 1876.

DESCRIPTION OF A NEW SATURNIAN.

BY JAMES BEHRENS, SAN FRANCISCO, CAL.

Saturnia (Aglia) Mendocino, n. sp.

The new species is somewhat related to *S. hera*, the brier-feeding Saturnia (*Eglanterina* Bdv.)

Habitat—The forests of Sequoia Sempervirens, of the Coast range of Mendocino County, Cal.

Time of Flight—June, July.

Description from a male—no females as yet taken.

Expanse of wings, 2½ inches; of body, ¾ inch.

Antennæ of ♂ broadly feathered, of same reddish brown colór as anterior wings.

Head darker than wings.

Prothorax with a narrow transversal white band, and this white band lined with an equally narrow black band. Thorax color of anteriors.

Thorax beneath, and legs and feet, of a beautiful cherry red.

Abdomen above dark, with yellow rings, corresponding with color of posterior wings; beneath colored like feet and thorax beneath.

Anteriors above smoky reddish chocolate. The usual eye, which is small, leans towards the base of wing on a squarish white field, which white does not appear on under side of wings; the eye itself is distinct below and fully as perfect as above, showing the yellow and blue and black iris. The apex of anteriors colored scarlet (not orange), narrowed in by a slight band of black, which black band is lined on both sides with a faint blue line. No signs of this apical ornament beneath.

Anteriors beneath ochre yellow, nearly as brilliant as posteriors above. Inner margin very dark; the eye as mentioned previously; the apex widely obfuscated.

Posteriors above of a bright yellow, marked by the usual eye, same as that of anteriors, but without any white disk or field. A dark obfuscation from the base. A distinct, comparatively broad, black band (with veins slightly marked) towards outer margin, leaving the margin bright yellow. Fringes somewhat deeper shaded, yellow.

Posteriors below unicolorous, of about same reddish fuscous as anteriors above, with but a reflection of the eye or band of upper surface.

SYNONYMY OF THE COLEOPTERA OF THE FAUNA BOREALI-AMERICANA, KIRBY.

BY GEO. H. HORN, M. D., PHILADELPHIA, PA.

(Continued).

92. Omophron SAYI Kby. is AMERICANUM Dej.
93. Haliplus impressus Latr., erroneously determined, is RUFICOLLIS De Geer.
94. Hydroporus nigrolineatus Steph. Not known to us. Is the identification correct? *
95. " parallelus Say.
96. " LAEVIS Kby. This and the preceding seem to me to be merely varieties of *catascopium* Say, which Crotch says is GRISEOSTRIATUS De Geer.
97. " PICATUS Kby.
98. " SIMILIS Kby. is IMPRESSOPUNCTATUS Schall. (fide Crotch).
99. Laccophilus BIGUTTATUS Kby. is PROXIMUS Say.
100. Colymbetes SEMIPUNCTATUS Kby. is a GAURODYTES.
101. " BICOLOR Kby. A GAURODYTES.
102. " PHAEOPTERUS Kby. is probably GAURODYTES *obliteratus* Lec.
103. " BIFARIUS Kby. Placed by Crotch in a new genus, ILYBIOSOMA.
104. " RETICULATUS Kby. is probably identical with GAURODYTES ARCTICUS Payk.
105. " PICIPES Kby. is an ILYBIUS.
106. " ASSIMILIS Kby.
107. " TRISERIATUS Kby. is SCULPTILIS Harris.
108. " RUGICOLLIS Kby. is GRAPHODERES LIBERUS Say.
109. " MACCULLOCHII Kby. is ACILIUS MEDIATUS Say.
110. Dytiscus OOLIGBUKII Kby. is CONFLUENS Say.
111. " HARRISII Kby.
112. " FRANKLINII Kby. is CONFLUENS Say, *var.*

* Dr. David Sharp, of Scotland, is now preparing a monograph of the DYTISCIDAE of this world; and by means of typical specimens from Dr, Leconte and myself, will settle definitely the synonymy of all of Kirby's species in this family.

113. Cyclinus ASSIMILIS Kby. is DINEUTUS AMERICANUS Linn.
114. Gyrinus IMPRESSICOLLIS Kby. I think the reference to BOREALIS Aubé is correct.
115. " aeneus Leach (Kby.) Kirby's determination is probably incorrect.
116. " VENTRALIS Kby.
117. " ANALIS Kby. Impossible to identify this species. The name is preoccupied. It is not Say's ANALIS.
118. " minutus Fab.
119. Paederus riparius Fab. (Kby.) is LITTORARIUS Grav.
120. Lathrobium PUNCTICOLLE Kby.
121. " GRAVENHORSTI Kby. is CRYPTOBIUM PALLIPES Nord.
122. " bicolor Grav. is a CRYPTOBIUM.
123. Gyrohypnus ASSIMILIS Kby. is XANTHOLINUS CEPHALUS Say.
124. Olophrum MARGINATUM Kby. is an OMALIUM.
125. Alaeochara PALLITARSIS Kby. is a HOMALOTA.
126. Tachyporus ACUDUCTUS Kby. is COPROPORUS VENTRICULUS Er.
127. " AFFINIS Kby.
128. Philonthus politus Linn. (Kby.) is AENEUS Rossi.
129. " MANDIBULARIS Kby. Male of AENEUS.
130. " PICATUS Kby. is BRUNNEUS Grav.
131. " fulvipes? Grav.
132. Staphylinus CHRYSURUS Kby. LEISTOTROPHUS CINGULATUS Grav.
133. Creophilus villosus Grav.
134. Necrophorus velutinus Fab. N. TOMENTOSUS Weber is an older name.
135. " HEBES Kby. is a variety of VESPILLOIDES Herbst.
136. " OBSCURUS Kby. is the *Melsheimeri* ‡ Lec.
137. " MELSHEIMERI Kby. Occurs also in Alaska and is *maritima* Mann.
138. " HALLII Kby. is ORBICOLLIS Say.
139. " PYGMAEUS Kby. is VESPILLOIDES Hbst.
140. Necrodes surinamensis Fab. is SILPHA SURINAMENSIS.
141. Oiceoptoma marginale Fab. An older name is SILPHA NOVEBORACENSIS Voet.
142. " lapponicum Linn. is SILPHA LAPPONICA.
143. " TRITUBERCULATUM Kby. is a SILPHA.
144. " inaequale Fab. is SILPHA INAEQUALIS.

NOTES ON GEOMETRIDÆ.

BY A. R. GROTE,

Director of the Museum, Buffalo Society Natural Sciences.

Endropia serrata Grote & Robinson, Trans. Am. Ent. Soc., p. 88 (July, 1868).

Geometra serrata Drury, Ill., 1, 40, pl. 20, fig. 4 (1770).

Ennomos concisaria Walk., Part xxxv, 1551 (1866).

Endropia serrataria Pack., 517, pl. 12, fig. 25 (1876).

Northern Illinois, June 25, Dr. Wm. A. Nason. This species seems to range from the Eastern and Middle States to Nebraska, according to Dr. Packard.

Lythria chamaechrysaria.

Mellila chamaechrysaria Grote, Bull. Buff. Soc. Nat. Sci., 1, 13, pl. 1, figs. 1–3.

Lythria rilevaria Pack., p. 221, pl. 9, fig. 43.

I do not see any reason for not uniting these species; my illustration has apparently been overlooked by Dr. Packard.

Selenia Kentaria Grote & Robinson, Trans. Am. Ent. Soc., 1, 359, 1865.

Pericallia Kentaria G. & R., iv., 1, 12, figs. 5–6 ♀, 1867.

It is compared by us with the European *Selenia illunaria*, but our material of the latter was erroneously determined, hence the mistake in the generic name afterwards corrected by ourselves.

Tetracis lorata Grote, Proc. Ent. Soc. Phil., 3, 91, 1864.

Dr. Packard has overlooked the original citation to this species.

Lobophora fusifasciata Walk., C. B. M., Part 24, 1258 (1862).

Larentia longipennis Walk., Part 35, p. 1671 (1866).

Scotosia lobophorata Walk., 25, 1347 (1862).

Lobophora vernata Pack., 5th Rep. Peab. Acad. Sci., 57 (1873).

Lobophora vernata Pack., Phal., 183, pl. 8, fig. 13 (1876).

Eupithecia fusifasciata G. & R., Trans. Am. Ent. Soc., 2, 82 (1868).

On my visit to the British Museum specimens of this species were registered under different names, the first of which should, I think, stand for the species.

Lobophora atrolituratа Walk., C. B. M., 25, 1710 (1862).

Eupethecia geminata Grote, Proc. Ent. Soc. Phil., 6, 29, pl. 5, fig. 6 (1866).

Lobophora geminata Pack., Phal., 184, Plate 8, fig. 14 (1876).

Eupithecia atrolituratа G. & R., Trans. Am. Ent. Soc., 2, 83 (1868).

Fresh specimens are green tinted, when faded become yellow, then probably white as described by Professor Packard, who overlooks, apparently, our synonymical reference based on an examination of the British Museum collection.

Chocrodes Guenеé.

This generic name must, I think, stand. The type of *Eutrapela* is the European *lunaria*. The question as to the generic distinction of *clemitaria* does not interfere, for if it is ultimately separated, it must receive a distinct name. Guenеé used *Eutrapela* Hübn. ex. Verz.

The species not referred to *Choerodes* as yet are, apparently, *C. falcata* (Pack.) and *C. fusciferata* (Pack.)

Eutrapela Hübn., Tent.

The type of this genus being the European *lunaria*, our two North American species *Eutr. Kentaria* (G. & R.) and *Eutr. alciphearia* (Walk.) must be referred to it.

Ennomos Treits.

The term *Eugonia* Hübn. is pre-occupied in the butterflies. I had proposed *Eriplatymetra* for *coloradaria* and *angularia*. According to Dr. Packard (I have no specimens) my *coloradaria* is a *Tetracis*.

Eubyja pacnulataria (Grote), Proc. Ent. Soc. Phil., 2, 31, pl. 2, fig. 3 (1863).

This species is omitted by Dr. Packard. I think his specimen from Dr. Perley (p. 413) may belong here. I believed to identify the ♂ *E. quernaria* in coll. Mr. Saunders, but have now no specimens of this or *pacnulataria* or *cupidaria* to compare.

Endropia Warneri.

Endropia Warneri Harvey, Bull. Buff. Soc. Nat. Sci., 2, 121 (1874).

Endropia apiciaria Pack., Phal., 502, Plate 12, fig. 9 (1876).

It is doubtless by an unintentional oversight that Dr. Packard has re-described this species.

Brotis vulneraria Hübn., Zutr.

A drawing, which I recognize as of this species, has been shown me by Prof. Hinsdale, of Racine, Wis., where the original was taken. Hübner describes the species as from Bahia. I would not refer it to the Geometræ but to the Noctuæ (Fasciatæ).

Plagodis Kentzingi Grote.

Dr. Packard changes the termination of the specific name. I do not think that anything is gained by the addition of *aria* or *ata* to the specific names in this group; and I think there is every reason why the specific name should be left as written by the original author. And why, *in the same genus*, some names should stand with *aria* after them and some with *ata*, I cannot see (e. g. *Semiothisa*). If *Eud. serrata* should have a different termination on account of the pectinated antennae of the male, it should be *serraria*, one would think, and not *serrataria*. Since the limit between feathered and simple antennae is very difficult to draw, the correct application of these terminations is nearly impossible.

NEW NOCTUIDÆ.

BY LEON F. HARVEY, M. D., BUFFALO, N. Y.

Mamestra orobia, n. s.

Eyes hairy; antennæ pectinate. Thorax and wings grayish fuscous, color of *trifolii;* basal half line white, t. a. line geminate, widely separated; t. p. line consisting of a series of white points; subterminal irregular, terminal line black. Orbicular spot large, white ringed with dark centre; reniform constricted at the centre, white margined with a dark filling. Subterminal space shaded light. Beneath of a lighter shade, discal spot and a faint trace of the t. p. line. Secondaries shining fuscous, fringes whitish, beneath lighter, discal spot black, very evident. Expanse 20 m. m. Texas (O. Meske).

This species is allied to *trifolii*. The antennae are pectinate, whilst in *trifolii* they are simple. In *orobia* the darker costal edge shows the white dots distinctly.

Cortyna appassionata, n. s.

Antennæ simple, base white. Thorax and wings of a dark red color, thorax tufted, basal half line yellow, 3-shaped, enclosing one large and one small yellow spot; exterior to the line a white dot. T. a. line inaugurated by a yellow dot on the costa, irregular, broken yellow; t. p. line geminate, inaugurated same as t. a. line, regularly waved; s. t. line faintly marked. Orbicular nearly round, white; reniform ovate, broken into many white spots by the red stains on the veins, with two perpendicular lines making a centre filled with yellow. Claviform sub-quadrate, bi-lobed, white, red margined; median space between the spots concolorous, below bright yellow, broken into sub-quadrate spots by the narrow median shade line and the red stained veins; terminal space glistening red, subterminal space wide, concolorous purple. The ground color appears as yellow spots in the median space near the costa; fringes concolorous. Beneath lighter than above, glistening, the arcuated line apparent in both wings; inferior wings pale, fuscous stained, with purplish fringes concolorous. Expanse 35 m. m. London (E. B. Reed).

Perhaps the most brilliantly marked species of the genus. It is allied to *nitela*, differs from it by the wider, rounder reniform, the three larger superposed spots on the t. a. line, the wider concolorous subterminal space and the more regular lunulate t. p. line.

Homoptera stylobata, n. s.

Costal margin straight; wings slightly dentate. Fore wings blackish shaded with whitish on the t. a. line and on median space behind over the reniform. Lines black, distinct, perpendicular, t. p. line squarely exserted opposite the cell around the reniform. An interrupted black line before the margin. Fringes cut with whitish opposite the interspaces. Hind wings blackish with obsolete lines; the dotted line before the margin continued. Fringes mostly whitish. Beneath grayish with double distinct common blackish shade bands. Abdomen stout, tufted. Expanse 39-40 m. m. Texas (Belfrage, No. 170). Several examples.

Homoptera mima, n. s.

Allied to the preceding, but smaller, without the whitish shades on fore wings. Reniform with a few white scales. Lines black; sinuate

t. p. line distinct, even, exserted opposite the cell. Hind wings pale, ashen, with median line and ashen fringes; fore wings with blackish fringe, narrowly cut with pale. Beneath yellow, whitish, black speckled, with common line and black discal points. Expanse 33 m. m. Texas (Belfrage, No. 73). One specimen.

These two species differ by their nearly entire wings and by the obsolescent markings on hind wings, which do not agree with the primaries as strongly as usual. I do not see differences on which to separate them generically.

NEW PYRALIDES.

(II).

BY A. R. GROTE, BUFFALO, N. Y.

Emprepes novalis, n. s.

Fore wings whitish yellow and olive brown. The median field whitish yellow except a costal blotch of the darker tint. Base narrowly whitish yellow, succeeded by an oblique olive brown band. The outer line bordering the median space is nearly upright, a little irregular and slightly notched opposite the cell and again at internal margin. It is followed by the broad olive brown subterminal space. The subterminal line is yellowish, brought near the margin, flexuous, and the veinlets on the terminal space are marked with yellowish. Hind wings unicolorous fuscous. Beneath the terminal portion of both wings is fuscous, neatly and evenly limited from the pale basal portions. Legs pale; thorax somewhat yellowish. Expanse 16 mil. Texas (Belfrage, No. 403, Oct. 7); Bastrop Co. (Mr. Meske); Zeller, No. 385.

Botis octonalis.

Orobaena octonalis Zell., Beitr., 2, 11, Taf. iii, fig. 7.

Botis sexmaculalis Grote, Can. Ent., 8.

Texas (Boll in Mus. C. Z.) Kansas, Prof. Snow. The maxillary palpi are stated by Zeller to be probably wanting and the location of the species uncertain. I have only a single imperfect specimen before me.

The palpal structure is said by Prof. Zeller to be like that of *Orobaena*. I do not know any of the species which the Professor includes under that generic name.

Mesographe stramentalis Hübn., Zell. Beitr., 1, 74.

This species and its varieties are described by Prof. Zeller, l. c., who considers the European and American specimens to belong to one species. It is not rare in New York State. I have it from Long Island (Tepper); Albany (Lintner); Buffalo. Perhaps this is the *Pionea cunusalis* of Mr. Walker.

Mesographe rimosalis.

Pionea rimosalis Guen., 371.

Taken by myself in Alabama. One specimen (No. 2) sent me by Mr. Fred. Tepper, from Long Island.

Eurycreon sticticalis (Linn.)

Algonquin, Illinois, June 16, Dr. Wm. A. Nason. A specimen sent to Prof. Zeller could not be distinguished by him from the European species.

Zinckenia perspectalis (Hübn.)

New York State and Texas (Belfrage, No. 401, Nov. 22).

Mochlocera Zeller (n. g.)

♂. Eyes naked; antennæ ciliate beneath, brush-like; labial palpi curved upwards across the front, pointed; two very long, thickly scaled rigid processes extend from the base of the antennæ for about one-half the length of these latter, ascending from the inside of the scape and widening towards their tips, where they are heavily scaled. These processes might be taken for the labial palpi at first sight. The neuration has not been examined. I have seen three male specimens. The genus is allied to *Tetralopha* Zell.

Mochlocera Zelleri, n. s.

Fore wings divided into three fields by the median lines. Inner line defining outwardly the blackish basal space, black, with a slight median notch, nearly perpendicular, followed by a white shade. Median space shaded with white, with a short black discal streak. Outer line very finely denticulate, exserted opposite the cell, arising at apical third, black, run-

ning inwardly below median vein and narrowing the median space thence to internal margin. Terminally the wing is black. A broken black line at base of fringe. Hind wings blackish. Beneath pale blackish with common shade band and black point on disc of hind wings. Expanse 25 mil. Texas (Belfrage, No. 420, April 30); Zeller (*No. 378 mihi)*; Missouri (Prof. Riley, No. 69).

Zophodia dentata Grote.

I have described this species in a paper prepared for Prof. Hayden's Reports. It is larger than *Bollii* Zell., and is at once distinguished and sufficiently characterized by the very deeply and acutely dentate outer line of the fore wings, which arises near the apices and sweeps inwardly to the discal point, thence in a succession of acute and deep inflections accompanied by gray or whitish shades. The species is more blackish than the Texan, the interior line single and more widely produced. One specimen from Clear Creek Canon, Colorado.

TINEINA.

BY V. T. CHAMBERS, COVINGTON, KY.

LAVERNA.

L. bifasciella. N. sp.

Palpi with the outer surface of the second joint dark bluish brown or blackish, dusted sparsely with white, the inner surface being white dusted with blackish scales; third joint blackish. Head and tongue white, the vertex with a faint purplish tinge, and dusted with dark brown. Thorax very pale ochreous and white, dusted with blackish scales, and with the anterior margin shining black. Antennae dark brown, the basal joint somewhat silvery towards the tip. Primaries dark brown, in some lights bluish black dusted with white, and the dorsal margin with some dark dusting, from the base to the last fascia, which is just before the ciliae; the base is white faintly tinged with pale ochreous; a little before the

middle is a rather wide fascia of white and dark brown scales mixed, the dark brown hue prevailing near the costa, where the white is very narrow, while the white prevails towards the white dorsal margin; there is an obliquely transverse spot or ridge of raised dark scales about the middle of the wing, beginning on the costa and margined before with white, and before the ciliae is an oblique white fascia nearest the base on the costal margin. Ciliae of a sordid hue, dusted with white. *Al. ex.* ⅞ inch. Received from Mr. Behrens, of San Francisco, Cal.

L. unifasciella. N. sp.

Allied to *L. Murtfeldtella* Chamb. and the preceding species, and to *L. propinquella* Stainton, but still more nearly to *L. decorella* Steph. The single specimen before me has the palpi broken off.

Head white dusted with purplish brown scales on the vertex, and all the brown parts of the insect have something of a bluish or purplish gloss. Antennæ brown. Upper surface of the thorax brown anteriorly, passing backwards into white at the apex. Fore wings brown dusted with white scales, the white increasing in quantity in the apical part of the wing. There is a large white spot on the base of the dorsal margin, as in *Murtfeldtella* and *propinquella*, not quite crossing the wing, and separated, as in those species, from the white spot placed a little further back, which in *decorella* is connected with the spot at the base; this and the absence of the white spot within the costal margin, are the most obvious points in which this species differs from *decorella*. Behind the basal white spot in this species is an ochreous streak in the brown and which ends at the second white spot or patch, which, as just stated, is continuous with the basal one in *decorella;* this white spot nearly crosses the wing in this species, but does not quite reach the costa, and is dusted with brown and contains on the fold a short dark brown line of raised scales, as in *decorella,* and which is bordered on the costal side by a small ochreous spot; thence to the fascia the wing is dusted with white scales and streaked about the fold with ochreous. The white fascia is placed just before the ciliæ as in *decorella,* and is oblique, being nearer to the base on the dorsal than on the costal margin, and before it the wing is more dusted with white and not so strongly marked with ochreous as in *decorella,* and so it likewise is behind the fascia, though both before and behind the fascia there is a distinct small ochreous spot or streak within the dorsal margin. There is a row of dark brown spots around the apex. (This *may* represent a hinder marginal line, as the ciliæ are injured.)

Abdomen brown on the upper surface, the under surface and tuft silvery whitish. Legs brown, tarsi annulate with white. *Al. ex.* ⅜ inch. Behrens, San Francisco.

NEPTICULA.

N. badiocapitella. N. sp.

Vertex rusty or reddish brown; face a little paler or more reddish; palpi silvery; eye caps silvery white; antennae brown. Thorax and patagia white. Fore wings dark iron gray with a white fascia about the middle, the fascia irregularly outlined and wider on the dorsal than on the costal margin; at about the apical fourth are a costal and opposite dorsal white spot, distinct and rather large, which are sometimes faintly connected or nearly so, forming a linear fascia deeply concave towards the base; ciliae white; legs yellowish, except the anterior surface of the first pair, and the outer surface of the hind tibiae; abdomen bluish fuscous. *Al. ex.* ⅓ inch. Kentucky in June. It is a rather coarsely scaled and distinctly marked species.

(To be Continued.)

CORRESPONDENCE.

DEAR SIR,—

I enclose a few words from Prof. P. O. Zeller, to whom I had sent a copy of my paper on the Tentamen, showing his utter condemnation of the present effort of a few of our lepidopterists to resuscitate Hübner. His letter is dated Grünhoff, 23 June, 1876. . . . "I know Scudder's work concerning the Generic Names of Butterflies, and I could not say wherein I do not agree with your verdict upon the same. Since that miserable, worthless Tentamen is such a foundation for Scudder's theory, he will consider himself unfortunate in having mistaken the date of its publication. . . . The Tentamen was printed, not in 1806, but in 1805. . . . Why not leave Hübner's birds and butterflies to sleep quietly in the grave? Since he has disturbed them, they will be shoo'd around for a while, let us hope as uselessly as the Tentamen."

Yours,

W. H EDWARDS.

Coalburgh, 21 July, 1876.