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## NOTES ON CERTAIN SPECIES OF GRAPTOLITHA.

BY HENRY H. LYMAN, M. A., MONTREAL.

In 1868 Grote & Robinson, in Trans. Amer. Ent. Soc., I, used the generic title *Xylina* Ochs. in describing *Bethunei* and *capax*, Guenée and Walker having previously used the same term, but in 1875 Grote in his check list adopted instead the name *Lithophane* Hubn., which he continued to use, but Dr. J. B. Smith in his check list of 1891 reverted to the name *Xylina*, and in his catalogue of 1893 wrote: "I use this name in preference to *Lithophane* because both are catalogue names and *Xylina* has priority." Dr. Dyar used the same name in his catalogue, but Sir George Hampson has adopted the name *Grapholitha* from Hubner's Verzeichniss, which he dates 1827, the year following Hubner's death.

In my paper on Entomological Errors, published in the last Annual Report of the Society, I said the origin of these errors could in most cases only be surmised, but I have no doubt that a large proportion of them arose from entomologists naming specimens from memory, as such a practice in closely allied forms is certain to cause errors.

In 1874 Grote described *Lithophane petulca* in the 6th Annual Report of the Peabody Academy of Sciences of Salem, Mass., and also gave a description of *signosa* Walk., but in his paper on *Lithophane* in the Bulletin of the United States Geological and Geographical Survey, Vol. V, No. 2, 1879, he wrote: "In my own visit to the British Museum in 1867, I had no North American *Xylinas* to compare," and he was therefore compelled to trust entirely to his memory. In Smith's catalogue of *Noctuide* of 1893, that author wrote:

"*X. signosa* Wlk.  
*petulca* Grt.

"The types are both in the British Museum, and refer to the same species. Mr. Grote has misidentified Walker's species, the *signosa* Grote remaining unnamed."

"*X. innominata* non nov.  
*signosa* † Grote.

"The new name is intended to apply to that species identified and labelled as *signosa* by Mr. Grote, and has no type specimen."

Dyar admitted the name *innominata* to his catalogue of 1902, but retained both the other names, but I have recently ascertained that what he had under the name *signosa* Walk., was not that species.

Hampson described and illustrated three species under these names in his Volume VI, the illustrations being Nos. 7, 13, 14 on plate CII, but the illustrations in that work are not always satisfactory, and in some cases are quite misleading, and for closely-allied species where the markings are not very distinct, I think that the three-colour photographic process gives better results.

My examination of these types at the British Museum in July last would seem to confirm the fact that Grote did misidentify the species afterwards named *innominata* by Smith, as what Hampson has adopted as the type of Smith's species is a specimen from the Grote collection bearing a written label on blue paper, with the name "*Signosa* Walk.," but it also established the fact that Smith was in error in saying that *petulca* Grote was the same as *signosa* Walk.

Grote's error was doubtless due to his not having any specimens for comparison, as stated above, but Smith had the two types before him. Whether he failed to notice the differences between them or considered them merely varietal, I do not know.

*Signosa* Walk., is a more evenly brown species, without the lighter shades of *petulca*, but it is much nearer to *petulca* than to *innominata*.

There are three specimens of *signosa*. The type is labelled :

U. S. America.

E. Doubleday.

46-110.

The second : U. S. America.

Grote collection.

82-54.

The third : Grote collection.

82-54.

Schenectady, N. Y.,

Sept. 29, 1875.

Lintner collection.

*Hemina* Grt., is a species which has been practically lost on this continent, various other species having been misidentified with it. I have

had for some years in my collection three gray specimens received from Mr. Heath, of Cartwright, Man., under this name, which were subsequently shown to Dr. Smith and confirmed by him as correctly named. Mr. Wolley Dod pronounced them *disposita*, which I was inclined to question, as all my other specimens of that species were decidedly browner, but Sir George Hampson concurred in Mr. Dod's determination.

Mr. Dod had, however, been mistaken about *hemina* until I showed him a specimen received from Mr. Horace Dawson, which beautifully fitted Grote's description. The correctness of this determination I was able to absolutely verify by comparison with the type, which, however, is a less fresh specimen, and somewhat lighter in colour. Hampson's illustration is too light and too brown, the species is grayer.

As the original description, published in United States Geological and Geographical Survey, is inaccessible to many entomologists, I transcribe it as follows :

"Lithophane *hemina*, n. s.

♂.—Allied to *disposita*, *petulca*, *signosa*, etc. Darker than *disposita*, longer-winged, and allied to that species in having a black basal dash, but more obscurely colored—dirty wood-brown—resembling *Hadena vulgaris* in this respect, but less warmly tinted. A black stain on submedian fold, where the median lines approximate, as in *signosa*. Terminally, the wing is twice stained with blackish. Spots and lines less distinctly limited than in *disposita*, and more as in *petulca*; orbicular irregular, oblique; reniform wide above. Hind wings fuscous, with fine black terminal line and paler fringes. Beneath the wings are paler, with distinct black discal spots, subirrorate; the under surface is much like *disposita*; there is a faint irregular line on secondaries, and the discal field of primaries is shaded with fuscous. Thorax a little darker than fore wings; abdomen dusky, with reduced tufts on the dorsum. Expanse, 40 mil."

"I have seen specimens in Mr. Hill's collection, collected in Lewis County, New York, in September. I am indebted to Mr. Hill's kindness for the type. The species seems to me to stand between *disposita* and *petulca*. There is a curious general resemblance in ornamentation and color between this species and the wider-winged *Hadena vulgaris*, while they are structurally easily distinguished."

Folsom's "Entomology" has just been published in the Japanese language from a translation made by Miyake and Uchida.

A SECOND PAPER ON THE GENERA IN THE SUBFAMILY  
CALLIPTERINÆ

(CONTAINING THE TRIBES PTEROCOMMINI, CHAITOPHORINI AND VACUINI.)

BY H. F. WILSON, CORVALLIS, OR.

The first paper on the genera of this subfamily was published in the September issue of the CANADIAN ENTOMOLOGIST, and contained only the genera in the tribe *Callipterini*. The following generic descriptions are given in detail from the type species of each genus. Necessarily some of the characters thus given are specific.

Tribe PTEROCOMMINI.

This tribe contains those species which in general resemble the *Lachnus* group, and yet have more in common with the *Chaitophorini*. Antennæ variable in length, six segmented and not on antennal tubercles. Wing venation as in *Aphidini*, nectaries variable but larger and distinct from those of the *Chaitophorus* group. Cauda short, thick and broadly rounded as in *Lachnus*. Antennæ, body and legs with numerous fine short hairs, and the known species of this group have a row of spiracles or dentate-like processes along the sides of the abdomen. Some species have both.

Key to Genera.

Nectaries swollen or vasiform . . . . . *Melanoxantherium*.  
Nectaries cylindrical . . . . . *Pterocomma*.

*Melanoxantherium* Schouteden.<sup>1</sup>

Syn. *Melanoxanthus* Buckton (preoccupied).

*A. Salicis* Linn.

Antennæ six-segmented and longer than the body, spur of sixth segment longer than segment; third segment the longest. Wing venation regular, nectaries variable in length and size, but always vasiform or clavate. Cauda short and broadly rounded, anal plate broadly rounded. Body, legs and antennæ with fine tubercles, each one bearing a fine hair.

*Pterocomma* Buckton.<sup>2</sup>

Syn. *Cladobius* Koch.

*Aphioides* Passerini.

*Aristaphis* Kirkaldy.

type *pilosa* Buckton.

Antennæ six segmented, and about one-half the length of the body, spur of sixth segment longer than the segment; third segment longer than

1. Ann. Belg. Ent. Soc., Vol. 45, p. 113.

2. Monograph of the British Aphides, Vol. II, p. 143.  
December, 1910

spur and segment. Head broadly rounded, wing venation regular. Nectaries short and cylindrical, flanged at the end. Cauda broad and very short; antennæ, body and legs with many small tubercles, each one bearing a fine short hair.

## CHAITOPHORINI.

Antennæ except in (*Sipha*) always six-segmented; in *Sipha* there are but five. Length variable, antennal tubercles wanting; antennæ, legs and body covered with hair-like bristles. Fore wings with two oblique veins and cubitus always twice forked; hind pair with two cross-veins. Nectaries variable in length and size, but never longer than one-tenth the length of the body. The genera in this tribe are somewhat similar to those in the tribe CALLIPTERINI, but are easily distinguished by the shorter and heavier antennæ and legs, as well as by the finer and more hair-like bristles.

## Key to Genera.

1. Antennæ six segmented . . . . . 2.  
    Antennæ five-segmented . . . . . 5.
2. Spur of sixth segment at least three times as long as the segment, and cauda knobbed at the tip . . . . . 3.  
    Spur of sixth segment not three times as long as the segment, and cauda broadly rounded and without a knobbed tip . . . . . 4.
3. Spur of sixth segment not more than five times as long as the segment, nectaries not longer than the sixth segment, and cauda constricted . . . . . *Arctaphis*.  
    Spur of sixth segment more than five times as long as the segment, nectaries longer than the sixth segment, and cauda not constricted at base of knob . . . . . *Chaitophorus*.
4. Antennæ nearly as long as the body, and spur of sixth segment shorter than sixth segment . . . . . *Syndobius*.  
    Antennæ about one-half the length of the body, and spur of sixth segment longer than the segment . . . . . *Thomasia*.
5. Antennæ with but five segments and shorter than the body, nectaries very short and tapering, with a flanged mouth . . . . . *Sipha*.

*Arctaphis* Walker.<sup>3</sup>

type *A. populi* Linn.

Antennæ six-segmented, shorter than the body, and without antennal tubercles; spur of sixth segment as long or longer than the third and

3. The Zoologist, 1870, p. 2000.

about five times as long as the sixth. Forehead broad and flat, body short and stout; wings long and slender. Nectaries very short and tapering, cauda a knob on quadrangular base. Anal plate broadly rounded.

*Chaitophorus* Koch.<sup>4</sup>

Syn. *Phyllophorus* Thornton.

*Phyllophora* Fernie.

*Chelymorpha* Lane Clark.

*Periphyllus* Van der Hoeven.

type *A. aceris* Linn.

Antennæ nearly as long as the body and on indistinct antennal tubercles, spur of sixth segment longer than the third, and about six times as long as the sixth segment. Head flat in front, eyes prominent; wing venation regular. Nectaries six times the length of the cauda, and constricted in the middle. Cauda very short, being but a knob. Antennæ, legs and body with long hair-like bristles.

*Syndobius* Mordwilko.<sup>5</sup>

type *A. oblongus* Heyden.

Antennæ nearly as long as the body, and not on antennal tubercles, spur of sixth segment shorter than segment, and much shorter than the third segment. Forehead flat, slightly elevated; body short and stout, wings long and slender. Nectaries not much longer than the cauda, tapering and slightly constricted in the middle. Cauda short and broadly rounded, anal plate indistinct. Tip of abdomen broadly rounded; legs, body and antennæ set with very fine hairs.

*Thomasia*, n. gen.

type *C. populicola* Thomas.

Antennæ much shorter than the body, and not placed on antennal tubercles. Spur of sixth segment longer than the segment, the third segment being longer than both together. Forehead broad, body short and robust. Wings long and slender; nectaries tapering and placed on a broad base, nectaries slightly longer than the sixth segment. Cauda short, thick and broadly rounded. Anal plate if present obscure; tip of abdomen broadly rounded, but with tip slightly flattened.

*Sipha* Passerini.<sup>6</sup>

type *A. glyceriæ* Kalt.

Antennæ with five segments, shorter than the body and not placed on antennal tubercles. Spur of fifth segment not longer than the segment,

4. Die Pflanzenläuse Aphiden, p. 1, 1854.

5. Rab. Lab. Zool. Kab. Imp., Varch. Univ., 1894 (K. Fauna and Anat. Sem. Aphid, p. 54).

6. Gli Afidi, p. 28, 1860.

and both together shorter than the third segment. Body somewhat slender, wing venation regular. Nectaries are but wide raised bases, with a flange at the opening, cauda slightly longer than broad, with a wide elliptical tip. Body with many small tubercles, each one of which bears a stout tapering bristle. At this time there is but a single American species placed in this genus (*Sipha flavus* Forbes), which differs somewhat from the above. Above description taken from European specimens of the type species.

#### Tribe VACUNINI.

There are but two species belonging to this group, and while closely allied to one another, are separated from other groups by distinct characters. They are, however, distinct enough from each other to belong to separate genera, and have accordingly been separated, and their characters are very misleading. In general they seem to come closer to the Callipterus group, but the undeveloped antennæ and eyes seem to place them on a lower plane of organization. The apterous forms have dentate processes on the sides of the abdomen, and with the bristle-like hairs must belong close to *Sipha*, which seems to be the next step beyond. The antennæ are five-segmented, and not on antennal tubercles. The spur of the fifth segment is but a short nail-like process, the wings are undeveloped, and the nectaries are similar to *Sipha*. The apterous forms have undeveloped eyes, composed of but three ocelli to each one, and the ocelli are but red spots.

The two genera are distinguished as follows :

Cauda with a knob at the tip and longer than broad . . . . . *Glyphina*.  
Cauda blunt, broader than long, and not constricted . . . . . *Vacuna*.

*Glyphina* Koch.<sup>7</sup>

Syn. *Thelexes* Buckton, p.<sup>o</sup>p.

type *A. alni* Schrank.

Antennæ five-segmented, and shorter than one-half the length of the body. Spur of fifth but a small thumb-like process. Third segment the longest. Wings short and broad, veins heavy, and the median vein of the fore wing but once forked. Hind wing with but a single cross-vein. Nectaries slightly raised and shaped as in *Lachnus*. Cauda short, broad and rounded at the tip. Antennæ, legs and body set with short fine hairs. Apterous forms have numerous stout spicules, and the eyes are rudimentary.

7. Die Pflanzenläuse Aphiden, p. 259, 1854.

*Vacuna* Heyden.<sup>8</sup>

Syn. *Thelaxes* Buckton, p. p.

*Cinara* Mosley.

Antennæ five-segmented, and shorter than one-half the body length. Spur of sixth a thumb-like process, third segment the longest. Wings longer than in preceding genus, fore wings with median vein once forked, hind wing with but a single cross-vein. Nectaries like those of *Lachnus*, being cone-shaped, with a flange at the apex. Cauda short but longer than broad, and constricted into a knob at the tip. Antennæ, body and legs set with fine hairs.

Apterous forms with rudimentary eyes, and with a row of dentated processes along the sides of the abdomen.

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#### TWENTY-THIRD ANNUAL MEETING AMERICAN ASSOCIATION OF ECONOMIC ENTOMOLOGISTS.

The twenty-third annual meeting of the American Association of Economic Entomologists will be held in Minneapolis, Minnesota, December 28 and 29, 1910, in connection with the annual meeting of the American Association for the Advancement of Science. The exact time and place of holding the sessions, information concerning hotel headquarters, railroad rates, etc., will be forwarded to members as soon as the programme is made up.

The Association is assured a cordial welcome in Minneapolis, and the members are urged to be present and assist in making the meeting a pronounced success.

E. D. SANDERSON, *President*,

Morgantown, W. Va.

A. F. BURGESS, *Secretary*,

Melrose Highlands, Mass.

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#### ENTOMOLOGICAL SOCIETY OF AMERICA, ANNUAL MEETING.

The fifth annual meeting of the Entomological Society of America will be held at Minneapolis on Tuesday and Wednesday, December 27th and 28th, in connection with the meeting of the American Association for the Advancement of Sciences. It is proposed to hold a joint session with American Association of Economic Entomologists on the afternoon of Wednesday, December 28, and an interesting programme is assured. The annual address will be given by Prof. F. L. Washburn on Wednesday evening, on "The Typhoid Fly on the Minnesota Iron Range."

C. R. CROSBY, *Secretary-Treasurer*.

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8. Museum Senkenberg, II, p. 289, 1837.



THE GENERIC AND SUBGENERIC TYPES OF THE *LYTTIDÆ*  
(*MELOIDÆ S. CANTHARIDÆ* AUCT.), (COL.)

BY CREIGHTON WELLMAN, B.A., M.D., F.E.S., OAKLAND, CALIFORNIA.

It is not the writer's intention in proposing generic types for the blister beetles to engage in a general discussion of the laws of zoological nomenclature, but a brief outline of the principles which have been followed is not out of place.

Types have been justly called the "anchors" of genera. In order to avoid unnecessary changes in nomenclature and to obviate irritating doubt as to the limits of groups, it is necessary that types for existing zoological genera be fixed as rapidly as possible, and that authors of new genera should clearly designate type species of the same. It is to be hoped that systematic workers in special groups will speedily publish the types of all the genera familiar to them.

In my study of the genera of the Coleopterous family Lyttidæ, I have been able, by applying the rules laid down in the International Code,<sup>1</sup> to name type species for many of the genera and subgenera thus far proposed. For various reasons I decline at present to name types for several genera, but subsequent study may render this possible.

Regarding the spelling of generic names, I should perhaps say that I do not at present admit the duty or privilege of a succeeding writer to "correct" the orthography or etymology of the author of a genus. I also regard misprints as having a nomenclatorial status, and believe that they should be listed as synonyms.

In designating generic types, it is necessary to include discarded genera and those existing only in synonymy, as well as those adopted by zoologists, because a species once used as a type cannot subsequently be made to serve for a different genus.

In the earlier literature especially, it is extremely difficult always to determine whether an author intends to indicate a type species or not, but it is important to endeavour to decide this before naming the type, because a type once properly designated in the literature cannot be subsequently changed. It, of course, follows from this that if a type be selected for a genus which has previously had its type species properly named (either by the proposer of the genus or by a subsequent author), the last designation, unless it coincide with the original and valid one, is not to be regarded. I

1. The International Code of Zoological Nomenclature, 1905.  
December, 1910

hope I have escaped such solecisms, but it is very hard to be entirely certain in a few instances, and I shall be grateful to any one who will point out such instances in my work.

The following quotations from Stiles and Hassall's interpretation of the International Code of Zoological Nomenclature<sup>2</sup> contain the axioms by which I have been principally guided in proposing types for the genera of Lyttidæ :

1. I regard "the practice of failing to designate the type species (of genera) as one of the most fruitful sources of confusion in systematic literature." (Page 10.)

2. "Types should be determined for all generic names as soon as possible, since a generic name without a definitely-established type is always an element of danger in both systematic and bibliographic zoology." (Page 11.)

3. "The adoption of a rule by the International Commission on Zoological Nomenclature, to the effect that no new generic name may demand recognition unless the author definitely fixes the type at its original publication is worthy of serious consideration." (Preface by Salmon.)

4. "When, in the original publication of a genus, one of the species is definitely designated as type, this species should be accepted (by the later author who is selecting types) as type, regardless of any other considerations." (Page 30.)

5. "If a genus, without designated type, contains among its original species one possessing the generic name as its specific or subspecific name, either as a valid name or synonym, that species or subspecies becomes *ipse facto* type of the genus." (Page 32.)

6. "If an author, in publishing a genus with more than one valid species, fails to designate or to indicate its type, any subsequent author may select the type, and such designation is not subject to change." (Page 52.)

7. "A genus proposed with a single original species takes that species as type." (Page 25.)

8. In selecting types not subject to the foregoing rules the following principles have been followed :

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2. The Determination of Generic Types, Washington, 1905.

(a). "In case of Linnæan genera, select as type the most common or the medicinal species." (Page 56.)

(b). "If the genus contains both exotic and nonexotic species from the standpoint of the original author, the type should be selected from the nonexotic species, unless such procedure is contraindicated by the original author's intentions." (Page 58.)

(c). "All other things being equal, page precedence should obtain in selecting a type." (Page 56.)

(d). "Show preference to the best described, best figured, best known, most easily obtainable species, or of which a type specimen can be obtained." (Page 56.)

9. I hold "for the adoption of the original published orthography (of generic names), be it good, bad or indifferent (and agree), in proposing that all names incorrectly written should be construed under Article 8k, of the International Code, as 'arbitrary combinations of letters.'" (Page 76.)

10. It seems to me a just ruling that published misprints, etc., should be accorded a definite nomenclatorial status, "and are therefore subject to citation, and should be listed." (Page 78.)

Following is a list of the genera and subgenera of the blister beetles so far as I have been able to select their type species in harmony with the foregoing principles. In the first group I include the genera, unfortunately few, of which the type is unequivocally fixed by original designation (either direct or implied) by the author of the genus. (Rule 4, *suprd.*)

*Alosimus* Mulsant, 1857, type species *syriacus* Linné, 1758. In the original description of his genus the author mentions by name only one species as coming under it, namely, *syriacus* L., which therefore must be considered as the type of the genus.

*Cerocoma* Geoffroy, 1762, type species *schaefferi* Linné, 1758. Geoffroy definitely refers to the page and number of Linné's species.

*Cystodemus* LeConte, 1851, type species *armatus* LeConte, 1851, virtually designated by author of genus.

*Gynæcomeloe* Wellman, 1910, type species *opacus* G. H. Horn, 1867, formally designated by author of genus.

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3. Si genus receptum, secundum jus naturæ et artis, in plura dirima debet, tum nomen antea commune manebit vulgatissimæ et officinali plantæ." *Philosophia Botanica*, 1751, p. 197. This Linnæan rule for botanical names has, by common consent, been recognized as valid in zoology also. (Cf. page 12.)

*Iselma* Haag-Rutenberg, 1879, type species *ursus* Thunberg, 1791, virtually designated, as the species is named by the author in the title of the description of his genus.

*Megetra* LeConte, 1859, type species *cancellata* Brandt et Erichson, 1832, practically designated by author of genus, as he considered the only other species (*vittata*) as possibly only a variety of *cancellata*.

*Micromerus* Mulsant et Rey, 1858, type species *collaris* Fabricius, 1787, virtually designated by authors of genus.

*Pleuropasta* Wellman, 1909, type species *mirabilis* G. H. Horn, 1870, formally designated by author of genus.

*Sagitta* Escherich, 1894, type species *angusticollis* Haag-Rutenberg, 1880, virtually designated in original description as type of genus.

*Tricraniodes* Wellman, 1910, type species *stansburii* Haldeman, 1852, formally designated by author of genus.

In the second group, according to the principle of type by tautonomy (Rule 5 *suprà*), we may designate :

*Proscarabæus* Leach, 1832, type species *proscarabæus* Linné, 1758.

Under the next group are listed those cases falling under rule 6 (*Vide suprà*). It is a relief in more or less doubtful cases to find types designated by a writer subsequent to the original author of a genus. In the present family we find some such instances as :

*Cabalia* Mulsant et Rey, 1858, type species *segetum* Fabricius, 1792 (cf. Escherich Verh. k. k. zool.-bot. Gesell., Wien, 1894, p. 45).

*Cissites* Latreille, 1807, type species *maculata* Swederus, 1787. (Cf. Gahan, Ann. Mag. Nat. Hist., 1908, p. 199 f.)

*Euzonitis* Semenow, 1893, type species *sexmaculata* Olivier, 1791 (cf. Escherich Verh. naturf. Verh. Brünn., 1897, p. 103).

*Horia* Fabricius, 1787, type species *testacea* Fabricius, 1787. (Cf. Gahan, l. c.)

*Lagorina* Mulsant et Rey, 1858, type species *sericea* Waltl., 1835 (cf. Escherich, l. c., p. 20).

*Lydus* Megerle, 1829, type species *algiricus* Linné, 1758 (cf. Escherich Deutsch, Ent. Zeit., 1896, p. 193).

*Lytta* Fabricius, 1775, type species *vesicatoria* Linné, 1758. The Linnæan rule (8a *suprà*) would have fixed the type of this genus could the Linnæan name *Cantharis* have been retained. Still *vesicatoria* has by several authors (v. Escherich, Ver. k. k. zool.-bot. Gesell., 1894, p. 19) been designated as the type of the genus *Lytta* F.

*Enas* Latreille, 1802, type species *ofer* Linné, 1767 (c.f. Guérin-Ménéville, Dict. pitt. d'Hist. nat., v. 6, I, 1833, p. 224).

*Sitaris* Latreille, 1802, type species *humeralis* Fabricius, 1775 (= *muralis* Forster, 1771), (cf. Guérin-Ménéville, Dict. pitt. d'Hist. nat., v. 9, I, 1833, p. 69).

*Tricrania* LeConte, 1860, type species *sanguinipennis* Say, 1823 (cf. Wellman, Ent. News, XXI, 1910, p. 219).

*Zonitis* Fabricius, 1775, type species *præusta* Fabricius, 1792 (= *flava* Fabricius, 1775), (cf. Guérin-Ménéville, Dict. pitt. d'Hist. nat., v. 9, II, 1833, p. 593, vid also Escherich, Verh. Naturf. Ver. Brünn, 1897, p. 104).

A considerable number of monotypical genera (Rule 7 *suprà*) are to be recorded as follows:

*Anisarthrocera* Semenow, 1895, type species *batesi* Marseul, 1872.

*Apalus* Fabricius, 1775, type species *bimaculatus* Linné, 1746.

*Apterospasta* LeConte, 1866, type species *segmenta*, Say, 1823.

*Caloenas* Reitter, 1889, type *pulcher* Reitter, 1889.

*Calospasta* LeConte, 1866, type species *elegans* LeConte, 1851.

*Calydus* Reitter, 1896, type species *pulcher* Reitter, 1889.

*Causima* Lacordaire, 1859, type species *vidua* Klug, 1825.

*Cochliophorus* Escherich, 1891, type species *reitteri* Escherich, 1891.

*Ctenopus* Fischer de Waldheim, 1824, type species *melanogaster* Fischer de Waldheim, 1824.

*Cordylospasta* G. H. Horn, 1875, type species *fulleri* G. H. Horn, 1875.

*Corioligiton* Marseul, 1879, type *hilaris* Mars., 1879.

*Deratus* Motschulsky, 1872, type *tibialis* Motschulsky, 1872.

*Deridea* Westwood, 1875, type species *curculionides* Westwood, 1875.

*Diaphrocera* L. von Heyden, 1863, type species *Hemprichi* L. von Heyden, 1863.

*Eletica* Lacordaire, 1859, type species *rufa* Fabricius, 1801.

*Eupompha* LeConte, 1858, type species *fissiceps* LeConte, 1858.

*Goëtymes* Pascoe, 1863, type species *flavicornis* Pascoe, 1863.

*Gnathium* Kirby, 1818, type species *francilloni* Kirby, 1818.

*Gnathospasta* G. H. Horn, 1875, type species *mimetica* G. H. Horn, 1875.

*Gynapteryx* Fairmaire et Germain, 1863, type species *flavocinctus* Fairmaire et Germain, 1863.

- Henous* Haldeman, 1852, type species *confertus* Say, 1823.  
*Hoplozonitis* Blackburn, 1872, type species *mira* Blackburn, 1872.  
*Hornia* Riley, 1877, type species *minutipennis* Riley, 1877.  
*Iodema* Pascoe, 1860, type species *clarki* Pascoe, 1860.  
*Leonia* E. Duges, 1889, type species *rileyi* E. Duges, 1889.  
*Leptopalpus* Guérin-Ménéville, 1829, type species *rostratus* Fabricius, 1775.  
*Lydoceras* Marseul, 1870, type species *fasciata* Fabricius, 1775.  
*Lydomorphus* Fairmaire, 1882, type species *cinnamomeus* Fairmaire, 1882.  
*Lydulus* Semenow, 1893, type species *albopilosus* Semenow, 1893.  
*Lyttonyx* Marseul, 1876, type species *bilateralis* Marseul, 1876.  
*Meloctyphlus* C. O. Waterhouse, 1872, type species *fuscatus*, C. O. Waterhouse, 1872.  
*Mimesthes* Marseul, 1872, type species *maculicollis* Marseul, 1872.  
*Negalius* Casey, 1891, type species *marmoratus* Casey, 1891.  
*Nomaspis* LeConte, 1866, type species *parvula* Haldeman, 1852.  
*Onyctenus* Serville, 1825, type species *sonnerati* Serville, 1825.  
*Palaestra* Castelnau, 1840, type species *rubripennis* Castelnau, 1840.  
*Palastrida* White, 1846, type species *bicolor* White, 1846.  
*Paroenas* Kolbe, 1894, type species *limbata* Kolbe, 1894.  
*Picnoseus* Solier, 1851, type species *flavipennis* Guérin-Ménéville, 1844.  
*Phodaga* LeConte, 1858, type species *alticeps* LeConte, 1858.  
*Pleuropompha* LeConte, 1867, type species *costata* LeConte, 1867.  
*Foreospasta* G. H. Horn, 1867, type species *polita* G. H. Horn, 1867.  
*Pseudabris* Fairmaire, 1894, type species *tigriodera* Fairmaire, 1894.  
*Rampholyssa* Kraatz, 1863, type species *steveni* Fischer von Waldheim, 1824.  
*Sitarida* White, 1846, type species *hopei* White, 1846.  
*Sitarobrachys* Reitter, 1883, type species *brevipennis*, 1883.  
*Sitaromorpha* Dokhtoureff, 1890, type species *wilkinsi* Dokhtoureff, 1890.  
*Stenodera* Escholtz, 1818, type species *sexmaculata* Fabricius, 1794 (= *caucasica* Pallas, 1781).  
*Stenoria* Mulsant et Rey, 1857, type species *apicalis* Latreille, 1804.  
*Sybaris* Stephens 1832, type species *immunis* Stephens, 1832.

*Tegrodera* LeConte, 1851, type species *erosa* LeConte, 1851.

*Tetraonyx* Latreille, 1833, type species *octomaculatus* Latreille, 1833.

*Tmesidera* Westwood, 1841, type species *rufipennis* Westwood, 1841.

*Triodous* E. Duges, 1889, type species *cordilleræ* Chevrolat, 1843  
(= *lævis* Leach, 1815), 1829.

*Zonitoides* Fairmaire, 1883, type species *megalops* Fairmaire, 1883.

This name is a homonym of *Zonitoides* Lehm., 1862, a valid genus of Mollusca, and therefore must be changed. I propose the following in its stead:

*Zonitopsis* Wellm., 1810, nom. nov.

The only Linnæan genus may be fixed according to the Linnæan maxim (Rule 8a *suprà*), as follows:

*Meloë* Linné, 1758, type species *majalis* Linné, 1758. This is fortunate, as the only other Linnæan species of true *Meloë* was subsequently used by Leach as the type of his genus *Proscarabæus*. The winged insects listed by Linné under the 1758 description of the genus *Meloë* have also, with one exotic exception (*Mylabris cichorii*, since been used as types of the genera *Lytta*, *Alosimus*, *Lydus*, *Cerocoma* and *Mylabris*. Consequently, according to Stiles and Hassall's interpretation of the International code (page 58,<sup>4</sup> cf., also Rules 8a and 8b *suprà*), there is happily no doubt whatever regarding the type species of the genus *Meloë* Linné, 1758.

The remaining genera may have their types chosen or tentatively indicated mostly under rules 8b, 8c and 8d (*suprà*). Where I prefix a mark of interrogation the citation should be interpreted as only meaning that the species named is, according to my present knowledge, probably the one which should be taken as type. Thus, such genera remain for any author to select their types subsequently. I quote in this connection from Stiles and Hassall,<sup>5</sup> who say under similar circumstances: "The action on these cases in the present paper is not to be interpreted as *designation of type*, but simply as an indication of the species which, other things being equal, it seems best (so far as data are accessible at the present moment) to select." The few genera not discussed in this paper will be made the subject of a subsequent note.

4. "Any species of a genus which has been selected to serve as type for a later genus is excluded from consideration in selecting the type of the earlier genus."

5. *Op. cit.*, p. 11.

*Actenodia* Castelnau, 1840, type species ? *decimguttata* Billberg, 1813  
(= *guttata* Castelnau, 1840).

*Apalus* Fabricius, 1775, type species *bimaculatus* Fabricius, 1761.

*Ceroctis* Marseul, 1872, type species *serricornis* Gerstäcker, 1854.

*Coryna* Billberg, 1813, type species ? *hermanniae* Fabricius, 1775.

*Criolis* Mulsant, 1858, type species ? *guerini* Mulsant, 1858.

*Decatoma* Castelman, 1840, type species ? *lunata* Pallas, 1781.

*Epicauta* L. Redtenbacher, 1845, type species ? *erythrocephala*  
Pallas, 1771.

*Glasunovia* Semenow, 1895, type species *caspica* Semenow, 1895.

*Isopentra* Mulsant, 1858, type species ? *megalcephala* Gebler, 1817.

*Macrobasis* LeConte, 1862, type species *albida* Say, 1828.

*Mylabris* Fabricius 1775, type species ? *floralis* Pallas, 1781.

*Nemognatha* Illiger, 1807, type species *chrysomelina* Fabricius, 1775.

*Prionotus* Kollar et Redtenbacher, 1842, type species *praenustus*  
Kollar et Redtenbacher, 1842.

*Pseudomeloë* Fairmaire et Germain, 1863, type species ? *anthracinus*  
Fairmaire et Germain, 1863 (= *parvus* Gay, 1851).

*Spastica* Lacordaire, 1859, type species *flavicollis* Chevrolat, 1838.

*Teratolytta* Semenow, 1894, type species *dives* Brullé, 1832.

*Triodous* E. Duges, 1870, type ? *barranci* E. Duges, 1870 (= *laevis*  
Leach, 1815).

*Zonitides* Abeille de Perrin, 1880, type ? *oculifera* Abeille, 1880.

In conclusion, it may be said that there has been no need to mention pure nomenclatorial synonyms in the foregoing paper, as a *nomen novum* for a genus of course carries with it the name of the type of the genus for which the new name is proposed. It will also be noticed that the genera proposed in Dejean's Catalogues have been ignored except when such may be fairly attributed to a later author. In my forthcoming catalogue of the species of this family I am likewise dropping all citations of the works mentioned, as these names were not accompanied by descriptions. I cannot accord such a name any other status than that of a *nomen nudum*. While there is no objection to mentioning a published *nomen nudum* or a name *in literis* in connection with a description for the convenience of collectors in comparing their material similarly named, yet the conservation of these names in nomenclature serves only to perpetuate confusion.



## THE ENTOMOLOGICAL SOCIETY OF ONTARIO.

The forty-seventh annual meeting of the Society was held at the Ontario Agricultural College, Guelph, on Thursday and Friday, November 3rd and 4th. Professor Tennyson D. Jarvis, President of the Society, occupied the chair during the day meetings, and at the evening session the meeting was presided over by Mr. C. C. James, Deputy Minister of Agriculture for Ontario.

Amongst those present were Mr. H. H. Lyman, Montreal; Dr. C. G. Hewitt, Mr. Arthur Gibson and Mr. Groh, Central Experimental Farm, Ottawa; Prof. Swaine, Macdonald College, St. Anne's, P. Q.; Mr. John D. Evans and Miss Evans, Trenton; Mr. F. J. A. Morris, Trinity College School, Port Hope; Dr. E. M. Walker, and Messrs. C. W. Nash, J. B. Williams and A. Gummer, Toronto; Prof. Needham, Cornell University, Ithaca, N. Y.; President Creelman, Professors C. A. Zavitz, W. H. Day, S. F. Edwards, E. J. Zavitz, C. J. S. Bethune, Messrs. J. E. Howitt, J. W. Eastham, L. Cæsar, D. H. Jones, Morley Pettit, of the staff; and a number of the students of the Ontario Agricultural College.

On Thursday morning a meeting of the Council was held, at which the report of the proceedings during the past year was drawn up, and several questions concerning the welfare of the Society were discussed. Amongst others, was the consideration of a proposal to hold the next annual meeting at either Macdonald College, P. Q., or the Experimental Farm at Ottawa. This was referred to the Executive Committee for further action. Dr. Bethune was elected a Life Member in recognition of his services to the Society since its inception 47 years ago.

In the afternoon the proceedings began with the reading of reports by the following Directors on the insects observed in their respective districts during the year: Mr. A. Gibson, Ottawa; Mr. C. E. Grant, Orillia; Mr. J. B. Williams, Toronto; Mr. F. J. A. Morris, Port Hope; Mr. R. S. Hamilton, Galt; and Mr. R. C. Treherne, Grimsby. Mr. L. Cæsar gave a paper on "The Insects of the Year in Ontario," and was followed by Dr. Hewitt, who gave an account of the "Most Injurious Insects in Canada during the Year 1910." These papers were discussed in an interesting manner by a number of those present. The reports of the Montreal and Toronto Branches, and of the Treasurer, Curator and Librarian of the Society were read and accepted.

In the evening a public meeting was held in Massey Hall auditorium, which was well attended by students of the College, as well as members of the Society. Professor Needham gave a particularly interesting and

instructive address, illustrated by a series of beautiful lantern pictures, on "The Role of Insects in Water Life." Mr. James, who presided, expressed the pleasure that he and all present had derived from the address, and the surprise that all shared in at the importance of aquatic insects as regards the provision of food for fishes. President Creelman moved a vote of thanks to the lecturer, which was seconded by Dr. Hewitt. The enjoyment of the evening was much enhanced by several musical selections given by students of the College.

During the second day, Friday, November 4th, a meeting was held during the morning in the Museum of the Biological Department, where members exhibited and examined a large number of interesting specimens which were contributed from various quarters.

In the afternoon a large number of papers were read and discussed: "The Spread of Diseases amongst Plants, Animals and Man by Acarids," by Professor Jarvis; a delightful paper on "Leaf-eating Beetles," by Mr. F. J. A. Morris; "Collecting in the White Mountains," by Mr. H. H. Lyman; "The Bean Maggot in Ontario in 1910," by Mr. J. E. Howitt; "Notes on Some Insects of 1910," and a charming paper on "The Pool," by Dr. T. W. Fyles; "The Horse-radish Flea-beetle," by Mr. A. F. Winn; "Further Notes on Basswood Insects," and "The Entomological Record for 1910," by Mr. A. Gibson; "Some Observations on the Practical Importance of Parasitic Insects," and "Parthenogenesis among Bees," by Dr. Hewitt; "Notes on the Breeding of *Tropidopria conica*," by Mr. G. E. Sanders, of Ottawa; "Scolytid Beetles attacking the Larch and other Forest Trees," by Prof. Swaine; "The Migration of some Native Locusts in Manitoba," by Mr. Norman Criddle. These papers were discussed by many of those present, and will be published in full in the forthcoming annual report.

The election of officers for the ensuing year resulted as follows:

*President*—Dr. Edmund M. Walker, Lecturer in Biology, University of Toronto.

*Vice-President*—Dr. C. Gordon Hewitt, Dominion Entomologist, Central Experimental Farm, Ottawa.

*Secretary-Treasurer*—Mr. J. Eaton Howitt, M. S. A., Lecturer in Botany, O. A. College, Guelph.

*Curator*—Mr. Lawson Caesar, B. A., B. S. A., Lecturer in Entomology and Plant Diseases, O. A. College.

*Librarian*—Rev. C. J. S. Bethune, M. A., D. C. L., F. R. S. C., Professor of Entomology and Zoology, O. A. College.

*Directors*—Division No. 1, Mr. Arthur Gibson, Dept. of Entomology, Central Experimental Farm, Ottawa; Division No. 2, Mr. C. E. Grant, Orillia; Division No. 3, Mr. A. Cosens, Parkdale Collegiate Institute, Toronto; Division No. 4, Mr. C. W. Nash, East Toronto; Division No. 5, Mr. F. J. A. Morris, Trinity College School, Port Hope; Division No. 6, Mr. R. S. Hamilton, Collegiate Institute, Galt; Division No. 7, Mr. R. C. Treherne, Grimsby.

*Delegate to the Royal Society*—Prof. J. M. Swaine, Macdonald College, P. Q.

*Auditors*—Professors S. B. McCready and J. W. Crow, O. A. College, Guelph. C. J. S. B.

ON PROFESSOR SMITH'S TREATMENT OF THE FORMS OF  
GRAPHIPHORA (TÆNIOCAMPA) ALLIED TO  
HIBISCI, GUENEE.

BY HARRISON G. DYAR, WASHINGTON, D. C.

Prof. John B. Smith's article on certain species of *Tæniocampa* (recte *Graphiphora* Hubn.) should not pass unnoticed. We may be mistaken, but it appears as if it were written because Mr. Dod had ventured to have an opinion on the subject, and this was intended to overwhelm him with a quantity of new names and figures of genitalia. If so, Prof. Smith has overreached himself and landed in the synonymy. We have taken the pains to prepare slides of the genitalia of all the principal forms of the Graphiphoras under *hibisci* and *pacifica* in the collection of the National Museum, and are in a position to state that Prof. Smith's figures 1, 2 and 3 represent one form only, his figures 5, 6 and 7 another, while figure 4 represents a doubtful third, and figure 8 a good fourth. In short, the apparent differences in the figures represent variation, differences in position, and the accidents of drawing. If Prof. Smith had put the real differences into words in tabular form, this would have been evident, even if perhaps not suitable to his purpose. The *hibisci* type has the harpes broad, the clasper evenly curved like a sickle; the *quinquefasciata* type has the harpes narrowed, the clasper crumpled or sharply bent. *Nubilata* is a derivative of the *quinquefasciata* form, and I tentatively leave it separate. *Pacifica* is abundantly distinct.

The differences of method between Mr. Dod and Prof. Smith make an interesting comparison. Mr. Dod depends upon the markings and coloration of the insects, Prof. Smith upon the structure of the genitalia. Prof. Smith's method sounds the more reliable, yet Mr. Dod is the one who is right in his conclusions. Mr. Dod makes one species with varieties,

where Prof. Smith makes seven species. The discrepancy is due to an erroneous assumption by Prof. Smith, that any slight difference in the genitalia indicates a different species. This is not so. I do not belittle the importance of the male genitalia in the Noctuidæ. They are important. But the structures are very flexible from an evolutionary point of view, and slight modifications in them are not necessarily indicative of specific separation, but of racial separation only, especially if correlated with geographic distribution. Thus, the *hibisci* form extends into Colorado and the Northern Rockies, as far at least as Rossland, B. C., whence I have it. Here it becomes the form *latirena* Dod. The genitalia are unchanged. But on the west coast the race *quinquefasciata* prevails, with a slight modification in the genitalia. This race has crossed into the Western Rockies, producing the form *nubilata*, which constitutes an incipient species.

It is necessary to notice two nomenclatorial errors of Prof. Smith. First, he gives *instabilis* Fitch (1856) precedence over *hibisci* Guenée (1852), which is wrong. It does not matter whether *hibisci* is an aberrational form or the usual one for establishing the name. Only the dates of publication count. Second, there is no such species as *instabilis* Fitch. Fitch used Schiffermüller's name in error for the American representative. Misidentifications cannot be made the basis of any new name.

This synonymy will stand as follows. It is as given by Mr. Dod, with Prof. Smith's new synonyms added.

GRAPHIPHORA HIBISCI Guen.

*confluens* Morr.

var. LATIRENA Dod.

*brucei* Smith.

*malora* Smith.

var. QUINQUEFASCIATA Smith.

*inflata* Smith.

*inherita* Smith.

*proba* Smith.

? G. NUBILATA Smith.

G. PACIFICA Harv.

#### NOTES ON LIFE-HISTORY OF ANISOTA SKINNERI, BIED.

BY WILLIAM BARNES, M. D., AND J. MCDUNNOUGH, PH. D.

In the original description of this species (Ent. News, XIX, 77) a very brief account of the larval stages is given, but as far as we know no

detailed description has yet been published. In the fall of 1909 we received from Ft. Wingate, N. M., a number of pupæ of this species, which began to emerge about the middle of April, 1910. The time of emergence is usually towards noon, and in the early afternoon the males commence their flight. Our first attempts to secure a pairing were futile, but on experimenting further it was found that freshly-emerged males copulated very readily with females that had emerged the previous day. From two such pairings a large number of ova were secured, oviposition lasting over a period of a week, and being in each case practically complete; the number of ova laid by a single female is in the neighbourhood of 300. The duration of the egg stage is about two weeks, the young larvæ on hatching feeding readily on oak and reaching maturity in from four to five weeks. Pupation takes place, as in all the members of this group, in the ground. A very small proportion of the brood emerged after a short pupal duration of about three weeks, these being all females; the remainder are at the time of writing still pupæ, and will probably hibernate as such. Whether in their natural condition there are normally two broods we do not know, but consider it very probable from the fact that Biederman mentions obtaining ova the latter part of August. Following is a more detailed account of the various stages:

*Ova*.—Smooth, flatly elliptical, pale yellow; dimensions, 2 mm.  $\times$  1.7 mm.  $\times$  1.2 mm.

Stage I.—Head oval, with a few short setæ; width, .8 mm. Body on first hatching yellowish, later greenish-gray, with smooth skin and black primary tubercles. The prothorax contains a narrow cervical plate of a slightly darker colour than the surrounding area, on the anterior margin of which are placed four small rounded black tubercles, each with two setæ. On mesothorax tubercles i and ii appear to have united to form a spine .8 mm. long, from the apex of which two fine setæ arise; on metathorax the position of tubercles i and ii is occupied by a small conical tubercle with two setæ. Tubercle iii on both segments also possesses two setæ, whereas iv shows but one. On the abdominal segments, with the exception of the 9th, both tubercles i and ii are present, i being much the larger; each has but one seta. Tubercle iii arises from the anterior margin of the segment directly above spiracle, whilst iv is well below lateral fold of skin, and rather minute. On the thoracic and first two abdominal segments there is also a fifth small tubercle, placed rather ventrally. The 9th abdominal segment contains dorsally but one tubercle placed in the central line, and rather larger than the preceding ones. Laterally the

position of iii is occupied by a very minute tubercle, whilst ventrad and posterior to this a tubercle corresponding in size to iii of other abdominal segments is present, preceded on the anterior margin by another minute tubercle. Anal plate heart-shaped, bordered with several seta-bearing tubercles. Legs black. Prolegs with prominent lateral chitinous plate, especially well developed on anal claspers. Length, 3 mm.

Stage II.—Head red, oval, the lobes extending dorsally much above the clypeus, which is quite small. Between the lobes is a distinct suture; width of head, 1.5 mm. Body cylindrical, olive brown, turning later red-brown; skin granulated; all tubercles and spines shiny black; cervical plate usually, anal plate always black. The mesothoracic spine is now 2.3 mm. long and covered with minute bristles, the apex is slightly bifurcate, but the long setæ of previous stage are lacking. Tubercle i is represented by a double row of short conical, sharply-pointed spines along the dorsum, ending with a single one on the 9th abdominal segment; of these the pair on the metathorax are slightly larger than the others. Tubercle ii is very minute and scarcely visible; other tubercles conical, smaller than i. Spiracle round, black; anal plate, legs and prolegs as in preceding stage. Length, 9 mm.

Stage III.—Head orange-red, with fine network of darker lines, sparsely covered with very minute setæ. Width, 2.3 mm. Body brick-red; skin granulated, with a well developed lateral fold; cervical plate black, well defined, with the four tubercles of previous stages and numerous other minute black granules. Mesothoracic spine slightly recurved, 5.5 mm. long, covered with short secondary spines; the dorsal rows of spines are also slightly spiculate near their bases; tubercle ii has now practically disappeared, and can scarcely be distinguished from the granulations; other spines short, conical, slightly spiculate; dorsal spine of 9th abdominal very prominent; anal plate fringed laterally by row of spines; spiracles oval, black, with small central slit. Prolegs with several minute black tubercles on the upper portion and black lateral plate, which is much reduced on anal claspers, being restricted to small patch on anterior margin. Length, 19 mm.

Stage IV.—Head as in previous stage, with deep furrow between lobes; width, 3.2 mm. Body brick-red, granulate. The cervical and anal plates are no longer black, but of same colour as body, and not very apparent. In late stages traces of a yellow subdorsal stripe, situated laterad of tubercle i, and yellow patches about spiracles, are present. Mesothoracic spine 8 mm. long, strongly spiculate; other spines as in

previous stage, slightly more spiculate and very sharply pointed; spines i and iv longest, about .7 mm. long, iii short; on abdominal segments a minute black tubercle occupies the place of v (*i. e.*, well ventrad of iv), but is not present on thoracic segments; several other minute spines are situated in a row at base of prolegs; on the thoracic segments and those abdominal ones without prolegs, a large spine (vi?) occupies a similar position, being accompanied on 1st and 2nd abdominal segments by a smaller spine slightly anterior and ventrad to it. Spines of anal plate much reduced, only one pair, situated laterally, being black. Prolegs as before, and claspers entirely without black plate. Length, 38-50 mm., presumably according to the future sex.

Stage V.—Head reddish-brown, shiny, slightly furrowed and sparsely covered with very minute setæ; width, 4.5 mm. Body dark brick-red, very strongly granulate, with broken yellow subdorsal and spiracular stripes, the latter being chiefly confined to a yellow patch about spiracle. Tubercles of prothorax blunt, rounded; mesothoracic spine slightly recurved, blunt at apex, spiculation much reduced; length, 5.5 mm., all other spines sharply pointed and directed backwards, being shiny black and practically smooth, the spiculations of previous stages being obsolete. Length of spine i, 1.5 mm. Tubercle ii is again visible as small black spine; other tubercles as before. Numerous small black secondary spines are now present on anterior margin of each segment, forming a group anterior to iv, another below this tubercle and a band across base of prolegs, or in the case of the thoracic and first two abdominal segments, a group around the extra spine peculiar to these segments. Spiracle black; legs pale red, prolegs and anal clasper and plate as in previous stages. Length, 50-65 mm.

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### MELITÆA ALMA STRECKER, AND ITS SYNONYMY.

BY KARL R. COOLIDGE, PASADENA, CALIF.

Strecker, in his *Rhopalocera Heterocera*, etc., p. 135, 1878, described *Melitæa alma* from two specimens, one from Arizona and the other from Southern Utah. On Pl. XV a ♂ is figured above and below. There appears to be very little in our literature concerning *alma*. Holland, Butt. Bk., says: "The specimens I have come from Death Valley." He figures a male, fig. 1, on Pl. XVII, which is certainly a puny individual, if it is *alma* at all. Mr. W. G. Wright, Butt. West Coast, p. 162, 1905, says

of *alma*, that "only one male and one female known." Dr. Barnes, Ent. News, p. 329, 1900, writes that "examples from Durango, Colo., do not differ from those taken in Utah and Arizona."

*Melitæa fulvia* Edwards.—Originally published in the Trans. Amer. Ent. Soc., Vol. III, p. 191, 1879, and is known to occur in Texas, New Mexico and Colorado. Holland, Pl. XVI, fig. 17, gives a good representation of the ♂, but no reference is made to *fulvia* in the text. Dr. Skinner, Suppl. Cat., p. 9, 1904, remarks that "*fulvia* and *alma* are probably identical." This is certainly correct. Dr. Dyar, Bu. 52, U. S. Nat. Mus., makes *fulvia* a synonym of *theona* Menetries, but to which it bears little affinity, *theona* being identical with *thekla* Edwards (= *bollii* Edwards), and has priority. I have seen in the collection of Mr. Victor L. Clemence quite an extensive series of *alma*, taken in the Chiricahua Mountains of Cochise County, Arizona, and during the past season I took a few specimens in the Huachuca Mountains of the same county. Great variation is displayed as to the coloration, in some the ground colour being bright fulvous, and from this it varies to black. Strecker's types were unfortunately of the fulvous type.

*Melitæa cyneas* Godman and Salvin.—Biol. Cent. Amer., Rhop., Vol. I, p. 191, 1882. Described from Oaxaca, Mexico, and in the supplement, p. 677, 1900, Vol. 2, is reported further from Durango City, Pinal, Puebla, and from Pinos Altos, in Chihuahua. The authors remark that "this species and the next belong to a group of *Phyciodes*, represented in North America by *P. leanira* (Feld.) and by *P. fulvia* (Edw.), one of the distinguishing characters of which is a dark band across the secondaries, in which is a series of yellow spots." The figures of *cyneas* on Pl. XXI, figs. 10, 11, show that it is absolutely identical with *alma*. *M. cynisca* Godman and Salvin is also very probably another synonym of *alma*. Dr. Skinner, Suppl. Cat., p. 9, 1904, lists *cyneas* from Arizona, and Wright figures a female from the Huachuca Mountains.

The present synonymy is then as follows.

*Melitæa alma* Strecker.

syn. *fulvia* Edwards.

*cyneas* Godman and Salvin.

Dist.—California, Arizona, Utah, New Mexico, Colorado and Mexico.

Mailed December 15th, 1910.



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