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NOTES ON COLEOPTERA—No. XI.

BY JOHN HAMILTON, M. D., ALLEGHENY, PA.

Baptolinus pilicornis, Payk.

Till lately this species has been known in our literature as *B. macrocephalus*, Nord. It has a very wide distribution across the northern part of the continent, from Alaska to New Hampshire, and through the Alleghanies as far south as southern Pennsylvania, and probably much further. In Europe it ascends to 68°, and is spread over all Siberia to the Amur. It does not seem to be abundant anywhere. It is very variable in colour, and to some extent in the fineness or coarseness of the general punctuation. I took two examples here recently under the bark of a moss-covered decaying oak, and several a few days afterward on the mountains, in the same situation. All these are black and shining, with the mouth parts, antennæ and legs pale, corresponding to the description of Paykull's type. Four examples from Vermont have the mouth parts and the antennæ rufous, and the elytra rufous, grading imperceptibly to rufopiceous at the apex and sides. One example from Prince of Wales Island, Alaska, seemingly mature, is altogether pallid, except that the last abdominal segment and the outer hind angles of the elytra are fuscous, the general punctuation exceedingly fine, and the length only .15 inch (normal .20-.25 inch). *B. macrocephalus*, Nord., which occurs at Sitkha, is still different as described by Mannerheim, who says it has three punctures on each side of the thorax, whereas those above mentioned have but two. In Europe there are two other species listed, though by what characters they are separated I am not aware, but they are certainly very close to *pilicornis*. One of these, according to Mr. A. Fauvel (Rev. Entomolog. V. 117), *B. longipennis*, Fauv., occurs in Canada and New York, and inasmuch as he does not mention *B. pilicornis* as American, it is not improbable both species are confounded here, and perhaps *affinis*, Payk., which is as widely distributed in Europe and Asia as *pilicornis*. The thorax in *pilicornis* is exceedingly smooth and polished, with two minute setiferous punctures on each side—one near the anterior angle, and the other near

the middle of the disk ; and here is a difficulty in referring it to the proper genus by the classification, in which it is said the thorax in the *Xantholinini* has " rows of punctures, of which the outer ones are curved."

Lathrobium armatum, Say.

Like the foregoing, this species varies greatly in coloration, which seems to be racial. Say described it from an example taken in Indiana, which had the elytra entirely dark, as have my examples from Illinois. As it occurs here, the apical half of the elytra is rufous, and no typically coloured example has been taken, though the individuals are numerous, inhabiting with mosquitos certain damp alluvial places overgrown by rank vegetation. The colour of the legs in both forms is usually bright rufous, that of the antennæ ferruginous to brown, and the ♂ sexual characters are identical. The species likewise occurs in Ohio, West Virginia, Wisconsin, Michigan and Canada.

Bledius ferrugineus, Lec.

Is found along streams in wet, loamy places inhabited by *Heterocerus* and other mud insects. If it forms any galleries they cannot be distinguished from those of the other occupants ; pouring water on such places will frequently induce them to appear on the surface. The variety which occurs here is the typical, as described by Dr. Leconte, which has a shining black head and thorax, and the elytra bright ferruginous, with the suture and scutellar region piceous. Length, .18 to .23 inch.

Bledius stabilis, Casey.

This species when found is abundant ; it lives in moist, grassy, compacted places on the banks of streams, and frequently at some distance from water. Its presence may be known by the surface galleries it constructs for a habitation. The individuals vary in the colour of the elytra about equally from piceous-red (perhaps from immaturity) to piceous-black, and average about .15 inch in length. July and August.

B. emarginatus, Say.

This beautiful little *Bledius* occurs everywhere in countless multitudes on damp, loamy places along streams near running water in July and August. These and an occasional example of *annularis* are the only species of the genus which have been observed here as yet ; with *emarginatus* occurs, but less abundantly, the minute *Trogophlæus uniformis*, Leconte, about .05 inch in length, and dark coloured throughout. It constructs surface galleries, and behaves like the preceding. Having no, or scarcely visible, dorsal thoracic impressions, it strongly resembles, a small *Bledius*.

It is closely allied to *T. convexulus*, Lec., a salt-marsh species of the Atlantic coast, which has the same habits. *T. decoloratus*, Casey, is the species of this genus next in abundance here, and is likewise minute, being from .06 to .08 inch in length. It inhabits very wet places along streams and swamps. It does not seem to construct galleries, but is sheltered by any kind of *debris* and the holes made by other mud insects. The most of the individuals have the elytra rufescent, with a dark shade near the base and suture, but occasionally one occurs in which they are piceous. The ♀♀ are very well described by Mr. Casey, and his description of *T. incertus* seems to apply quite well to the ♂♂, which have the head parts more developed. *Incertus* in that case will, according to custom, be the name of the species.

T. spretus, Casey,

Is found with the preceding, appearing to have the same habits, but is much less abundant. It is piceous, with pale legs, and about .11 inch in length.

T. quadripunctatus, Casey (?) Say.

This species is found with the preceding two. It is much larger than *spretus*, and less abundant. Examples of this species may have been formerly distributed as *memonius* from a bought and wrongly named type.

T. congener, Casey,

Has the habits of the preceding, with which it is found. Only a few examples have yet occurred. It is entirely piceous, about .10 inch in length, and is readily known by the thorax being quite convex, and the dorsal impressions uninterrupted. The foregoing are all the species of this genus detected here as yet, but the exploration can not be considered exhaustive. The collecting and studying of these minute insects in one's local fauna will be found quite fascinating when rightly set about.

Eleusis nigrellus, Lec.

Two examples were taken under the bark of maple, June 15th, identical with others from California.

Siagonum punctatum, Lec.

Many examples were taken with the above, and I have it from North Carolina and New Mexico; it also occurs in Arizona and British Columbia.

Corymbites caricinus, Germ., *lobatus*, Mann. (Bull. Mosc., 1843, 243),
telum, Lec.

This species is characterized by having an elongated thorax rather densely and finely punctured above and below, with the hind angles produced and non-carinate; the antennæ are elongate in the male, serrate in both sexes from the 2nd joint, the 3rd and 4th being subequal. My examples from Queen Charlotte and Vancouver Islands are dull black, and no colour variations are recorded. Unalaska, Oregon. *C. umbricola*, Esch., Mann. (Bull. Mosc., 1843, 242).

This species in some way has become a synonym of *caricinus*, which it resembles by its elongate thorax and parallel form; but here the likeness ceases. The thorax is more coarsely and sparingly punctured above and below, though somewhat densely on the sides above; the hind angles are produced divaricately to a point, and are finely, conspicuously carinate, and blood red. The antennæ (males only seen) are elongate and serrate from the 2nd joint, the 3rd being notably longer than the 4th. All the examples seen are shining black, with a metallic lustre, and only one colour variation is recorded in which the hind angles of the thorax are fuscous. Sitka, British Columbia. My examples are from Queen Charlotte Island.

C. lobatus, Esch.

This species has been placed in synonymy with *caricinus*, evidently by oversight, because in his comparison (Bull. Mosc., 1846,) Mannerheim distinctly states that *lobatus* has the hind thoracic angles carinate. I have seen no examples of *lobatus* with which to compare *umbricola*, but Mannerheim gives so many points of difference that it is not obvious why they should be united; both were described at the same time and on the same page. Mannerheim gives six colour variations for this species, and the distribution Unalaska, the island of Kadjak, the peninsula of Kenai, and the island of Sitka.

Tragosoma deparium, Linn., *Harrisii*, Lec.

The European and American forms are here united, for reasons which will appear. An example was taken in this locality this season; it is widely distributed across the northern part of the continent, from Newfoundland to Vancouver Island, and through the Rocky Mountains into New Mexico. The punctuation of the thorax is much denser and finer in examples from Canada and the Rocky Mountains, than in those from the Pacific coast, in many of which the punctures are well separated. Each

puncture supports a hair, and, curiously enough, the finer the punctures, the longer are the hairs, so that the Pacific coast females, with comparative sparse punctuation, are not conspicuously hairy. European examples are before me which are in no way distinguishable from those taken on the Pacific coast. To what extent individuals vary in Europe is unknown, but, regardless of sex or locality, there is much variation here. The following observations are made from a study of about 30 examples from Canada, Custer and Conejos counties, Colo.; Las Vegas Hot Springs, New Mexico, and various places on the Pacific coast, namely: The eyes are not uniform in size, depth of emargination, nor distance apart either above or below; the same joints of the antennæ are not always of the same length, and their united length is much greater in some individuals than in others; the antennæ differ also in the degrees of compression, coarseness, fineness and density of punctuation, while in some examples the outer joints seem glabrous; in others there is an evident microscopic pubescence; the thorax is variable in every way, and in few examples is there more than an approximation in every respect; the degree of angulation of the sides of the thorax varies from very strongly defined to scarcely any, and in some examples the angular point is before the middle in others behind it, while in the majority it is about the middle of the margin; the thoracic spine at the angle may be small or large, obliquely vertical, or sometimes directed anteriorly or posteriorly; the margin of the thorax behind the spine is narrowed in some individuals by a straight line, till it meets the margin of the base in nearly a right angle; in others it is either sinuate or arcuately rounded, forming no angle at its conjunction with the base; the surface may be nearly equal with a dorsal channel, more or less deep, but usually it has many irregular inequalities; the punctuation varies from the exceedingly dense (almost granulate) and rather fine, to that which is sparser and coarser, with the punctures well separated. The scutellum is also variable, sometimes large and equilaterally triangular, and again transverse and rounded at apex. There are no well defined races. The species is widely distributed through eastern and western Siberia, the countries along the Amur, and the mountainous parts of Central Europe

Another species of *Tragosoma*, in some American collections for many years, has lately been described by Mr. T. L. Casey, from the male, under the name *spiculum*; of this I have not seen the female, which is probably Mr. Casey's *pilosicornis*, in which case, if the locality is correct,

this species extends from New Mexico to the coast range in southern California.

Hylotrupes litigiousus, Casey.

With some hesitation by the author, this species is created at the expense of *ligneus*, on the grounds of colour pattern, differences in the size and shape of the elytra and thorax, differences in the punctuation and pubescence of the elytra, and certain differences in the anterior and middle tarsi of the males. All these characters are evanescent when a large number of examples from all parts of the country are placed together. There are before me now about 20 from Massachusetts, New York, Canada, Colorado, New Mexico, and the Pacific coast, and I have examined lately perhaps twice that number. The coloration of the elytra amounts to nothing in this species; one example is unicolorous rufous, except a blotch at the side; another is entirely black except a narrow marginal and subsutural line before the middle, rufous: between these extremes there are all kinds of spottedness and fasciateness. The series in my collection disproves the validity of the next two characters, and need not be discussed. I have only a male of the proposed species, and while the anterior and middle tarsi are in it as described by Mr. Casey, yet some of the males with differently coloured elytra have nearly the same form of tarsi, and there does not seem to be uniformity nor constancy in this character. The name will do very well for a colour variety, and two more might be made in this species with equal propriety.

Psenocerus tristis, Casey.

Since the note on page 160 of this Vol., I have obtained an exactly typical example of *tristis*, in which there is scarcely a suspicion of the basal elytral tubercles, and also one of the *supernotatus* colour in which they are equally inconspicuous. Another black example has them as fully developed as any of the rufous individuals. Their synonymy is seemingly absolute.

Leptura serpentina, Casey (*l. c.*).

The statement that this is a "valid species" must be reversed; fresh material from California and an inspection of other collections show it to be synonymous with *3-balteata*, Lec., which is somewhat variable in form and elytral ornamentation: the length of the antennæ in this species as well as in many other Cerambycides is variable; in one collection there is an example of *3-balteata* with one of the antennæ blackish and the other rufous, and in another an example with them partly dark and partly

rufous. It is easy to pick out typical *3-balteata* and *serpentina*; but what about the intermediates?

Marolia (Dircaea) Holmbergii, Mann.

Three examples of this pretty little species from Queen Charlotte Island, British Columbia, are before me, which agree absolutely with Mannerheim's description. Dr. Leconte described *Hypulus fulminans* from Oregon in words so similar to Mannerheim's, that his description is entirely applicable to these examples, allowing for a little variation in the colouring of the tibiae. As Dr. Leconte suggested, his species is probably the same as Mannerheim's, and a comparison of types seems scarcely necessary. (Bul. Mosc., 1852, 347; Proc. Acad. Phil., 1859, 284.) Mannerheim's type was a unique taken at Sitkha.

Cteniopus murrayi, Lec.

Andrimus is proposed by Mr. Casey for this and four other forms described by him as species, namely, *brunneus*, *concolor*, *nigrescens* and *convergens*. Lately came to hand one ♀ and five ♂ examples belonging to this genus, said to have been taken at one place near Jacksonville, Florida, which I would have referred without hesitation to *murrayi*, had it not been for Mr. Casey's paper. Using the characters he employs in the separation of his species, there should be three as valid as any of his, and neither of them *murrayi* nor Mr. Casey's species. One ♂ and its assumed ♀ are near *brunneus*, but not quite; two ♂'s approximate *concolor*, but there are points of difference; while the other two do not quite agree with the description of *murrayi*. Without discussing details, with these insects in hand, and a careful study of Mr. Casey's descriptions, the conclusion reached is that at least three of his species, and the three which it would otherwise be necessary to create, are all one, and that *murrayi*. The Cistelidæ is one of the degredational families in which great latitude must be allowed for individual structural variation, otherwise there will be an excessive and artificial multiplication of species.

Apion — A species occurs here very abundantly in June on *Vaccinium stamineum* which seems to be undescribed, apparently belonging in section 4 of Smith's Synopsis; it may be known by its slender beak, shorter in the ♂, antennæ inserted near the base, with the first joint short and strongly clavate, the second one half its length, but not more slender; by the thorax short, scarcely narrowed anteriorly, closely moderately punctured, and with a circular impression at base more or less obvious, the

humeri prominent, base of elytra wider than thorax, striæ deep and punctured, intervals convex, claws acutely appendiculate, a bunch of long yellow bristles between the middle coxæ, black, scarcely or not pubescent; length, .05 inch. It occurs with *Anthrenus corvinus*, and being of the same size and appearance, some care is requisite in their separation.

ANNUAL MEETING OF THE ENTOMOLOGICAL SOCIETY OF ONTARIO.

The Annual Meeting of the Society was held in its rooms in Victoria Hall, London, on the 31st of August and the 1st of September, the President, Rev. Dr. Bethune, of Port Hope, occupying the chair. The reports of the Treasurer, Librarian, and Curator, the Delegate to the Royal Society, the Council, the Botanical, Geological, Microscopical and Ornithological Sections, were read and approved. The President delivered his annual address, and several interesting papers were read. A number of rare and remarkable specimens were exhibited. Full reports, with all the papers and proceedings in detail, will be published in the forthcoming Annual Report to the Legislature.

The following gentlemen were elected officers for the ensuing year:—

President—W. Hague Harrington, Ottawa.

Vice-President—J. M. Denton, London.

Secretary—W. E. Saunders, London.

Treasurer—J. A. Balkwill, London.

Directors—Division 1—James Fletcher, F. L. S., F. R. S. C., Ottawa.

“ 2—Rev. C. J. S. Bethune, F. R. S. C., Port Hope.

“ 3—Gamble Geddes, Toronto.

“ 4—A. H. Kilman, Ridgeway.

“ 5—J. Dearness, London.

Librarian and Curator—J. Alston Moffat, London.

Editor of the CANADIAN ENTOMOLOGIST—Rev. C. J. S. Bethune, M.A., D.C.L., Port Hope.

Editing Committee—J. Fletcher, Ottawa; H. H. Lyman, Montreal
Rev. T. W. Fyles, South Quebec; J. H. Bowman, London.

Delegate to the Royal Society—The President.

Auditors—J. H. Bowman and W. E. Saunders, London.

A PRELIMINARY GROUPING OF THE DESCRIBED SPECIES
OF SAPROMYZA OF NORTH AMERICA, WITH
ONE NEW SPECIES.

BY C. H. TYLER TOWNSEND, LAS CRUCES, NEW MEXICO.

The following is a purely provisional grouping of the described North American species of *Sapromyza*, made up from the descriptions alone. As such, it is offered for publication. The practical use of this kind of work does not need pointing out. It greatly facilitates the identification of species where the descriptions are scattered through various works. In the determination of the single new species described at the end of this paper, it was necessary to consult each description separately. It required but little additional labour to tabulate the leading points in the descriptions, thus relieving later students from the necessity of going through the same laborious process. It is only necessary to give a warning against using the table without consulting the descriptions. The references to the latter will be found in the Osten Sacken Catalogue.

PRELIMINARY TABLE OF N. A. SPECIES SO FAR DESCRIBED.

a Flavous, rust yellow or rufous species.

b Wings, without distinct markings (spots or fasciæ).

c Antennæ and palpi concolorous with rest of body.

d Face and body unspotted.

e Antennæ, palpi, and body flavous, wings lutescent

.....BISPINA Lw. (Nebr.)

TENUISPINA Lw. (Nebr.)

ROTUNDICORNIS Lw. (Sitka.)

ee Antennæ and body pale honey-yellow, terminal
antennal joint rounded; wings with a slight yellow-
ish tinge.....CONNEXA Say. (Indiana)

eee Antennæ ferruginous, palpi golden ochreous, body
yellow, wings yellowish; front honey-yellow
.....SORDIDA Wd. (W. Indies)

eeee Antennæ and body fulvous, palpi yellow; wings
clear.....AMIDA Wlk. (Ga.)

dd Face with a black spot.

f Body unspotted, lutescent, opaque; wings
yellowish-cinereous....MACULA Lw. (Texas)

- ff* Abdomen with six and scutellum with two black spots, otherwise yellow.....
 OCTOPUNCTA Wd. (W. Indies).
- cc* Antennæ concolorous, palpi black; antennæ, body and wings honey-yellow..... RESINOSA Wd. (Ga.)
- ccc* Antennæ and palpi black on apex.
- g* Ocellar area enveloped in a round black spot.
- h* Body pale yellow, wings clear; arista short plumose above and below.....
 VULGARIS Fitch (Atl. St.)
- hh* Body pale rufous, wings clear; arista long plumose above, short plumose below.....
 OCELLARIS n. sp. (New Mex.)
- gg* Ocellar area concolorous with rest of front; body flavous, wings dilute pallid to fuscous; posterior segments of abdomen with black hind margins.....
 CINCTA Lw. (Cuba)
- bb* Wings with markings.
- i* Body not spotted or vittate.
- j* Antennæ, palpi, and body flavous; wings lutescent with spots..... FRATERNA Lw. (Pa.)
- jj* Antennæ, palpi, and body flavescens; wings lutescent, except markings..... COMPEDITA Lw. (Pa.)
- jjj* Antennæ and body pale yellow, wings spotted.....
 NOTATA Fallén (Eu. & N. A.)
- jjjj* Body pale yellow to rufous, wings spotted.....
 PHILADELPHICA Mcq. (N. A.)
- ii* Either thorax, scutellum, or abdomen with spots.
- k* Body pale honey yellow, scutellum with two black dots on hind border.....
 BIPUNCTATA Say (Mexico).
- kk* Body flavescens, with black spots; wings fuscous, reticulate..... DECORA Lw. (N. Y.)
- iii* Thorax and scutellum subfuscous vittate; body flavescens, except vittæ..... UMBROSA Lw. (D. C.)

the posterior margin of each segment. Legs flavous, tarsi somewhat darker, front tibiæ slightly darker. Wings almost clear, with a very slight smoky tinge, wholly without spots, markings, or infuscations of cross-veins; halteres rufous yellow.

Length of body (including antennæ and with abdomen flexed), 3 mm.; of wing, $3\frac{1}{2}$ mm.

Described from one specimen taken on foliage May 5, Las Cruces, New Mexico.

PRELIMINARY REMARKS ON SOME NORTH AMERICAN SPECIES OF HALISIDOTA HÜBN.

BY HARRISON G. DYAR, ROXBURY, MASS.

Mr. Neumogen and myself are at work upon this genus, with a view to present a revision of it; there are, however, some points upon which I should like to make a few independent remarks. The genus *Halisidota* is exclusively American, its stronghold being in the South. Indeed, the whole sub-family, the Phægopterinae, are strongly American, there being no European species and but few African, while still fewer reach through the East Indies to Australia.

HALISIDOTA (LOPHOCAMPA) MACULATA, Harris.

race *angulifera*, Walker.

race *agassizii*, Packard.

This species, *H. maculata*, presents three well-marked local races. The first named form is well known both in imago and larva, and extends in its range as far west as the Rocky Mountains. In the Sierra Nevada, the Cascade range, and throughout Western Oregon, Washington and British Columbia, its place is taken by the race *angulifera*, Walk. (= *alni*, Hy. Edw.) This race does not differ in the markings of the imago, and I do not think Western specimens can be distinguished from Eastern; but the larva is strikingly different. Mr. Hy. Edwards has described the most divergent form, * and this is found in the Sierra Nevada of California, and also, I believe, in Southern Oregon. But further to the North, the larvæ assume the black dorsal tufts of the typical form, though I have not seen any that could not be readily distinguished from *maculata*. It would be very instructive to trace *maculata* to the West, and *angulifera* to the East through Canada, to see whether the larvæ strictly intergrade.

In the coast region of California, that distinct climatic area which has so many endemic species, *angulifera* is replaced by the race *agassizii*, Pack.

* Proc. Cal. Acad. Sci. VII. 129.

This is a very distinct race.† The moths are noticeably different, and can usually be readily picked out. The larvæ, too, differ from both the other races, being intermediate between the two. They are subject to a wonderful amount of variation, as I have elsewhere pointed out,* some examples closely approaching the larva of *maculata*, though the intermediate, typical form is quite different.

The above conclusions have been reached after breeding larvæ at various points on the Pacific Coast, and I have been assisted by information kindly given by Dr. H. H. Behr, of San Francisco, and by Prof. O. B. Johnson, of Seattle.

HALISIDOTA (LOPHOCAMPA) ARGENTATA, Packard.

race *sobrina*, Stretch.

race *subalpina*, French.

Almost strictly parallel to the preceding, *H. argentata* presents three local races. The Eastern one, *subalpina*, French, does not reach to the Atlantic States, nor probably even to the Mississippi Valley. It may be said to inhabit the Rocky Mountain region. Its larva is unknown, but the moth approaches *H. argentata* so closely, that I can find no distinguishing characters. The ground colour seems a little more yellowish, less densely covered with brown, but I doubt the constancy of this obscure character. Prof. French compares his moth with *H. scapularis*, Stretch (= *ingens* Hy. Edw.), a very distinct insect, and I can only account for his failure to mention *argentata*, by the supposition that he did not possess specimens of it. If he had, it seems doubtful that this race would have ever received a name.

The race *argentata* proper inhabits the Sierra Nevada of California and the Pacific Northwest. It is abundant where found, its larva feeding on various coniferæ.

In the coast region of California we have, again, the most distinct race, *sobrina*, Stretch. Both moth and larva present perceptible differences. The white spots on the wings are smaller, and the brown ground colour more even and less irrorate, though the difference in coloration of the thoracic and abdominal parts as exhibited in Stretch's figure does not exist. The differences in the larvæ have been pointed out by Hy. Edwards, though he makes more of the slight differences than seems justifiable to me; they are not nearly so striking as his remarks would

* Psyche. VI. 323. † Dr. Behr considers it to be a valid species, and there is much in favour of his view.

lead one to suppose. Moreover, the larvæ of *sobrina* are quite variable, some being darker, others lighter, as they occurred to me in some twenty-five examples at Monterey, Cal. I found but two larvæ of *argentata* at Portland, Or., both being dark in colour, with the yellow hairs reduced as described by Mr. Edwards, so that these characters seem fairly constant.

Halisidota (Halisidota) tessellaris, Abb. and Sm.

Halisidota (Halisidota) harrisii, Walsh.

I maintain the specific distinctness of these forms, though Mr. Neumoegen is unwilling to do so, because the moths cannot be superficially distinguished. They inhabit the same territory, so that we cannot have here to do with local races. I have verified the observations of Walsh, and shown some additional differences in the manner of growth of the larvæ.* The difference in the male genitalia gives additional weight to my conclusion, though I wish to examine more specimens before I can be sure that these differences are constant.

Halisidota (Zatrephes) trigona, Grote.

A specimen of this species, received from Dr. McKnight, shows that I have been mistaken in referring it as a synonym of *specularis* H. S. I am obliged to Mr. Grote for promptly pointing out the error. Mr. Neumoegen has written out, somewhat at length, the differences between the two species.

HALISIDOTA (AEMILIA) ROSEATA, Walker.

cinnamonca, Boisd.

significans, Hy. Edw.

sanguivenosa, Neum.

This pretty little species has proved a pit-fall to more than one describer, as witness the above synonymy. It has been unique in our fauna until the discovery of *H. occidentalis*. French has given us its close ally. The two differ only in coloration. *H. roseata* has a wide range, from Sonora (Boisduval) and New Mexico (Hy. Edwards) on the south, through California and the North-western States to British Columbia. Its larva is unknown, but it will probably prove to be a pine feeder.

Halisidota (?) macularia, Walk. †

This name awaits identification. It is referred to by Stretch, † but I cannot find it in Kirby's catalogue anywhere among the Phægoterinae. The description reads like an Epantheria.

* Psyche, VI. 162.

† Cat. Brit. Mus. XXXI. p. 314 (1864). † Ent. Amer. I. 107.

PARTIAL PREPARATORY STAGES OF CATOCALA ILLECTA,
WALKER, WITH NOTES.

BY G. H. FRENCH, CARBONDALE, ILL.

Three days before the last moult, the larva is 1.30 inches; after the last moult and three days before pupating, 2 inches. Nearly cylindrical, tapering from the middle to both ends, the under side a little flattened, a slight fold above the legs but no fringe on the sides. The markings in the two last stages are the same, except that the orange is a little heavier in the last stage. The ground colour of dorsum, sides, except below stigmata, and venter sordid white, below stigmata clear white; striped transversely over the back as low as the stigmata, thus leaving a clear white substigmatal stripe, eight of these stripes and these somewhat double, some broken and others partly continuous; a subdorsal and substigmatal row of orange patches, two of each row on each joint, the lower on each side of the stigma on the anterior part of the body, but on the posterior part these patches connect above the stigma, gradually passing from one form to the other; on joint two, instead of two patches, the anterior half of the joint is orange with a row of black spots; joints three and four with an irregular row of orange across near the middle of the joint. The fold above the legs black, with an orange spot on each joint; the true legs orange with black tips, each with an obscure white stripe at the base; the prolegs black and orange, with a white stripe at the base, anal legs orange; anal plate orange with an anterior row of black spots; the joint preceding this contains a somewhat zigzag transverse irregular orange stripe with black mottlings. Head olive, with four black longitudinal stripes to a side and one in the middle. Venter dull sordid white, rather dark; the anterior joints, two to four, unspotted but striped transversely between the joints with black, the black and white lines going round the base of the legs; joints five and six striped as above, even with the orange patches, but these paler than above; joints seven to ten black between the legs and striped transversely between the joints with black and white; joints eleven and twelve irregularly marked with black, as though the transverse black lines were broken into dots and dashes, an orange patch containing a black spot on each side of each joint, the orange connected with the orange on the lateral fold; joint thirteen dull blackish; each of the last three joints with blackish centres.

The chrysalis is 1 inch long, subcylindrical, slightly indented on the dorsum of the first abdominal joints, tongue and wing cases extending

back to near the posterior part of joint five, tapering from five to the end, cremaster with two long hooks, two more about half as long from the tip, and several as long as the longer ones arising further back on the last joint. Anterior part rounded, abdominal joints punctured, other parts wrinkled. Brown, covered with a white powder, as in common with other species.

In pupating, leaves were fastened together with silk, the interior lined with a thin lining of silk to which the hooks of the cremaster were fastened. The food plant is honey locust. I have several times found the larvæ on low bushes of this tree.

In many respects this species is peculiar. In habits, it is one of the earliest, hatching the fore part of June in this latitude, after a pupal period of three weeks. I never found but one imago in the day-time and that was scared up from some raspberry bushes. I am of the opinion that it does not stay on trees in the day-time, as do most species, but hides among low bushes. I have not found the larva by whipping the limbs of trees, but on low bushes, and usually in such cases down in the grass, but on the stem of the food plant.

It is the only species I know that is striped transversely in the larval state; in fact, there is nothing in the markings of the larva that would lead one to suspect that it belonged to this genus. It is one of three species of which we have descriptions that has no lateral fringe. *Obscura* and *Innubens* being the other two. There are a few brief descriptions that are so imperfect that we cannot tell whether the larvæ were fringed along the sides or not.

The species in this country whose larvæ have lateral fringes are *Desperata*, *Retecta*, *Relicta*, *Amatrix*, *Cara*, *Concumbens*, *Unijuga*, *Stretchii*, *Parta*, *Ultronia*, *Ilia*, *Palæogama*, *Polygama*, *Cratægi* and *Minuta*. To this we may add the European species *Fraxini* and *Nupta*. This makes fifteen of our American species that are known to have fringe along the sides of the larvæ, and three that are known not to have. One feature about it is that according to our systems of classification the unfringed are mixed with the fringed. While this shows us that we do not know all about the affinities of the genus yet, still we know too little of the early stages to enable us to use it for classification. Some one has said we should place *Illecta* near *Concumbens* on account of similarity of markings, notwithstanding the dissimilarity of colour of hind wings. The above shows that the larvæ are as dissimilar as those of any species now known. At present it is well enough to let the lists be as they are.

DISCOVERY OF THE GENUS *CRATÆPUS* FÖRSTER IN AMERICA, AND THE DESCRIPTION OF A NEW SPECIES.

BY WM. H. ASHMEAD, WASHINGTON, D. C.

In 1878 Dr. Arnold Förster, in his "Kleine Monographie", erected many new genera in the family Chalcididæ that have been either overlooked by subsequent entomologists, or, at least, not included in any recent tables of the genera of this family, amongst which is a genus he calls *Cratæpus*, placed by him in the *Tetrastichoideæ*, and which I am pleased to announce also occurs in America.

The genus has only recently been recognized by me in a re-study of a minute chalcid sent to me some years ago by my Canadian friends, Messrs. James Fletcher and W. Hague Harrington, of Ottawa, who reared it from a Dipterous larva destroying the seeds of the "Canada Thistle" (*Cirsium arvense*, Scop.), and to which I gave the MS. name *Solenotus Fletcherii*, although at the time I felt satisfied it was improperly placed in this Thomsonian genus, as I wrote: "This species exhibits strong Tetrastichid affinities, and the genus, if properly recognized, may ultimately be assigned a position in that sub family."

It is a singular fact, and another illustration of the uniformity of habits of the species of a genus, that *Cratæpus aquisgranensis*, Förster, the type of the genus, and the only other species known, was reared by Förster from *Cirsium lanceolatum*.

The description of the Canadian species is as follows:—

Cratæpus Fletcherii, sp. n.

♀.—Length, 2 mm.; ovipositor half the length of the abdomen. Black, shining; sutures of trochanters, apex of femora, front tibiæ, except extreme tips, apex of middle tibiæ, hind tibiæ, except a blotch at the middle, and the basal joint of all tarsi, dark honey-yellow; rest of legs black. The front femora are lengthened and abnormally thickened, markedly contrasting with the slender and shorter middle femora, while the front tibiæ are remarkably short, and slightly dilated. The very short, black antennæ are inserted low down on the face, apparently only 7-jointed, but in reality 8-jointed, the terminal joint being very minute. Head transverse, a little wider than the collar, the face short; collar large transverse quadrate dorsally, obliquely declining towards the head; mesonotum somewhat broader than the collar, flat above, with two distinct furrows and a depression on its disk; scutellum broader than long with

two grooved lines. Wings as in *Tetrastichus*, the nervures, except the submarginal, dark fuscous. Abdomen sessile, depressed above, boat-shaped beneath and terminating in a strong ovipositor that is fully half the length of the abdomen.

Hab.—Ottawa, Canada.

Bred by Fletcher and Harrington from Dipterous larvæ, destroying the seeds of *Cirsium arvense*, Scop.

CNICUS DISCOLOR AS AN INSECT TRAP.

BY W. S. BLATCHLEY, TERRE HAUTE, INDIANA.

It is a well known fact that certain plants, as *Silene antirrhina*, L., and allied species, exude a sticky, viscid substance on stalk or peduncle for the purpose of preventing ants, small beetles, and other honey-loving intruders, which are too small to aid effectively in fertilization, from creeping up to the flower and robbing the honey-glands of their precious nectar. Other plants, as the Sundews, *Drosera rotundifolia*, L. etc., excrete a similar substance with which they attract insects, which are caught and afterwards utilized as food by the plant.

But no one, as far as the writer can ascertain, has called attention to the fact that one of our common thistles, *Cnicus discolor*, Gray, has along the middle of the outer surface of each of its involucreal scales a large gland whose viscid secretion is poured forth in abundance and is especially attractive to certain species of insects. It is true that Dr. Gray in his Synoptical Flora, p. 402, mentions these glands and uses their presence or absence as characters to aid in the determination of species, but he says nothing of the substance which they secrete.

On various occasions in the autumn of 1891, numerous insects were observed by the writer crowded about the lower involucreal scales of the thistle mentioned, where they were evidently attracted by the excretion there found. A closer examination always revealed that a number of the smaller ones were prisoners, their feet having become entangled in the viscid excretion, which had held them firmly, much as the pollen grains of *Asclepias* hold at times our common honey bee.

On Sept. 14 many flies and a number of specimens of a small green beetle, *Diabrotica longicornis*, Say, which feeds upon the pollen of the thistle flowers, were found thus entangled and were dead, as were also three specimens of *Phalangida*. A number of them were so dry as to crumble into powder when touched, showing that they had been prisoners

for some time. On the same date as many as eight specimens of a much larger Scarabeid beetle, *Euphoria melancholica*, Gory, were found clustered at the base of a single head. Only one of them was in any way entangled, but all seemed in a dazed condition, as if intoxicated by the substance fed upon. A number of the same beetles were taken from a similar position on several occasions thereafter.

On Sept. 23rd about thirty small, black snout beetles (the genus unknown to me), three specimens of a small butterfly, *Pamphila huron*, Edw., more Phalangidæ, several ants, about twenty large Hemiptera, *Euschistus variolarius*, Beauv., together with a number of flies, were taken. Several of the snout beetles, the Phalangidæ, ants, flies, and one of the butterflies, were dead. All the others were easily captured with the fingers, being in the same dazed condition as the beetles above mentioned. The thistle heads whose bracts were most frequented by the insects were those in which the flowers had disappeared and the fruit was beginning to mature. Specimens of all the above-named insects were secured at intervals throughout October and until the plants were wholly deadened by the frost.

Of the use of the glands and their excretion to the plant I can give no explanation. They do not seem to serve, as do those of *Silene*, in keeping injurious insects from the flowers, nor does the plant appear to make any use of the insects which become prisoners.

NOTES ON THE HABITS OF *SIPHONOPHORA* *CUCURBITÆ*, MIDDLETON.

BY F. M. WEBSTER, WOOSTER, OHIO.

During the last days of August, Dr. Kellicott and myself, in studying the Squash borer, *Melittia ceto*, transplanted to a large breeding cage a number of roots and portions of the stems of Squash vines, on one of which was a leaf or two. The cage was filled with earth, dug up in the field, and when the vines were properly transplanted, the cage was covered with fine Swiss muslin, and placed in the Insectary. I soon noticed Siphonophora on the stumps of the vines, and before long there sprung up, from the soil in the cage, numbers of plants of *Capsella bursa-pastoris* and *Nepeta glechoma*. These plants soon became populated, the Squash having died out, and, November 4, I took from these, apterous oviparous females pairing with winged males, and, also, apterous

and winged viviparous females. None of these, however, could be specifically determined by Dr. Riley and his assistants. November 23 there were still many of the egg-laying females and males to be found, and a great number of eggs scattered about over the plants. The oviparous female is very robust, body green; eyes brown and coarsely granulated; antennæ, except first two joints (the bases only of which are black), tip of beak, feet, tips of honey tubes, black; tips of femora and tibiæ, dusky; honey tubes reaching half the length of tail, slender.

The males were light-bodied, with the wing much longer proportionally than in the winged females; black, with margins of abdomen greenish; wing veins dusky; bases of wings very light yellowish; antennæ very dark brown at base, the remaining portion nearly black; eyes brown; anterior femora very light at base and darker toward extremity; middle and posterior femora with less light colour at bases; tibiæ very dark brown, nearly black; tarsi black; honey tubes long, slender, piceous, darker at base.

The eggs were at first of a glassy green colour, but turned to black after being deposited a short time; a little more than twice as long as broad, and appeared to be slightly stuck to the leaves of the plants.

During the following March these eggs gradually disappeared, and the plants again became populated with *Siphonophora*, but specimens sent to Washington were not determinable, except as to genera, and all were wingless viviparous females.

Strongly suspecting that I was dealing with the same species as had been brought into the cage on the Squash, there having been no way by which this could have escaped or another species entered, early in April I planted a number of Squash seeds in the cage. As soon as the young plants appeared they were at once attacked by apterous viviparous females, and on April 18th I secured winged females. On forwarding these to Washington, my own determination of the species as *S. cucurbitæ* was promptly verified. In this case, the environment was, of course, unnatural, and the insects were obliged to use these two species of plants in passing through their cycle, and hence they might find more congenial host plants in the fields; but it seems to me that it would be safe to assume that the melon-louse can readily pass from its summer food plant to either one or both of these, and from them give origin to winged viviparous females in the spring, to return to the original host plant,

BUTTERFLIES ON GRANDFATHER MOUNTAIN,
NORTH CAROLINA.

BY THEODORE L. MEAD, OVIEDO, FLORIDA.

Grandfather Mountain is one of a group of mountains rising to a height of over 6000 feet, in Western North Carolina and Eastern Tennessee, and forming the topmost crest of the Alleghanies. The rocks are chiefly granitic, and the crags and peaks naturally of a grayish cast, but rendered more sombre by innumerable blackish foliaceous lichens (*Umbilicaria* sps). At the bases of the summit crags the forest begins; black spruces and balsam firs, alternating with open meadow-like fields of the sand myrtle (*Leiophyllum buxifolium*), characterize the upper levels, and enormous hemlocks from 5000 feet down; but everywhere is a wealth of magnificent deciduous trees that can hardly be matched elsewhere on this continent. Flowers are abundant all summer long, and the native grasses are supplemented by cleared fields upon the mountain sides and in the valleys, where grass is grown for hay and pasturage. The whole region one would suppose to be a paradise for mountain butterflies, and especially Satyridæ, which are well represented in the foothills and lower valleys of the Alleghanies.

To my surprise, I did not see a single Satyrid of any species during my stay, July to September, either at Linville (3,800 feet) or at any higher point.

The butterflies were in general of northern type, and with rare exceptions were far more characteristic of Ontario than of the Carolinas. A single *Argynnis Diana* was the only suggestion of the rich butterfly fauna of West Virginia to the north of us, while the only Grapta was *Faunus*, abundant all along the roadsides from 4000 to 5000 feet elevation. Although this colony of *Faunus* must have been isolated from the great body of the species for thousands of years—perhaps since the receding ice of the glacial epoch, the butterflies in no way differ from those found in the Catskills and elsewhere.

The other common butterflies of this region are *Papilio Troilus*, *Philenor* and *Turnus*, with occasionally a black female *Glaucus*; *Colias Philodice* flying with about one fifth of its number of *Keewaydin* and *Eurytheme*, which are very variable and show all manner of intergrades; *Terias Lisa*, *Danais Archippus*, *Argynnis Aphrodite*, the females of which with worn males, abound on flowers of fireweed (*Erechthites*), and a *Liatris*, in mountain meadows at 5000 feet and over in August, appearing

in numbers about two weeks later at 4000 feet. *A. Cybele*, however, is rare, and I saw only a single specimen, which was smaller than the associated *Aphrodites*, although *Cybele* is represented by really huge examples in the warmer valleys of Virginia. The single specimen of *A. Diana* was seen at 3800 feet, at which level *E. Claudia* is not uncommon. *P. Tharos* is found occasionally; *Pyrameis Atalanta* and *Huntera* were seen on the topmost crags, as well as lower levels. *Limenitis Ursula* frequented the roads; *Thecla Humuli*, *Chrysophanus Americana*, *Lycæna Comyntas*, with an occasional *L. Pseudargiolus*, represented the *Lycænidæ*; and a few *Hesperidæ* were seen, but not collected.

The list is noteworthy, chiefly for the absence of nearly all the butterflies characteristic of the latitude, and of many others which one would expect to meet in so favourable a mountain region. It is possible that some of these missing species may be found in the early spring, when the mountains are said to be one blaze of colour with *Azaleas* and *Rhododendrons* and all manner of vernal blossoms. These butterflies may lay their eggs early—so that the larvæ may have the whole season to grow—and then disappear; but this is mere conjecture, based on the well-attested abundance of early flowers of gay colours well suited for butterfly fertilization.

A NEW GENUS OF DIPTERA ALLIED TO RHAPHIOMIDAS.

BY D. W. COQUILLET, LOS ANGELES, CAL.

In the "West American Scientist" for January, 1891, I gave a brief description of *Rhaphiomidas acton* n. sp., comparing it with the only other described species, *R. episcopus* O. S. The description was drawn from a single male specimen now in the National Museum at Washington, but during the past season I was fortunate enough to capture four additional specimens of this species, three males and a female, all of them having been taken on the wing while hovering over flowers in the hottest part of the day, the time being the first week in July. The possession of these specimens permits me to make a few corrections to my published description. In profile, the lower edge of the third antennal joint is not conspicuously less convex than the upper edge, and the tip is provided with a minute tubercle (this may have been broken off in the type specimen); the three ocelli are shining, but sometimes lose their lustre in drying; the relative length of the fifth, sixth and seventh ab-

dominal segments, as compared with the third, varies greatly according to the amount of contracting in drying; when fully extended they together are much longer than the third; finally, the eyes in death are almost black. The proboscis varies in length from three to four and a-third times the length of the head. The sexes are essentially alike, both in colouring and in structure, with the exception, of course, of the sexual organs. The species will be readily recognized by the deep orange-yellow ground colour of the abdomen.

In both of the above species the palpi are cylindrical and reach halfway to the anterior oral margin, and the anal cell is closed and short petiolate.

My collection contains a single female specimen which in structure is identical with the above two species, except that the anal cell is wide open. A character so important as this necessitates the erection of a new genus, for which I propose the name of *Apomidas*, n. gen. As it is identical with *Rhaphiomidas*, except in having the anal cell wide open, no further characterizing of it will be required, and the species is as follows:—
Apomidas trochilus, n. sp., ♀.

Head, including the antennæ and palpi, reddish-yellow, occiput and proboscis black, the latter being three times as long as the head; pile of head white. Dorsum of thorax black, the four corners, hind margin and pleura, including the cone, reddish, the breast largely black; pile and bristles of thorax white. Scutellum reddish, the pile and bristles white. Abdomen and venter reddish and yellow, the pile white, that on the last three segments black and directed forward; cirlet of twenty-four spines of last segment black. Legs reddish-yellow, the spines yellow, a few on the hind legs black. Wings hyaline, showing a faint milky tinge in certain lights, veins yellowish. Length, 33 m m. Merced Co., Cal. A single female, in midsummer.

CORRESPONDENCE.

MEETING OF THE ENTOMOLOGICAL CLUB.

Sir,—The Secretary's report of my remarks in the discussions held at the meetings of the Entomological Club at Rochester, as published in the October issue, is certainly better than such reports usually are when not revised by the author. The language, however, is hardly my own, and in some cases the expression is misleading. I would therefore beg space for the following emendations:—

Page 249, first paragraph, eleventh line, read: "Acceleration might ordinarily be expected, but this seems not to be the case with this species." At the end of this paragraph insert: "He fully expected, however, that further experience would show a tendency to a second brood at New Brunswick through exceptional individuals, just as there was a tendency to a third brood at Washington."

Page 249, fourth paragraph, read: "In reply to a question by Mr. Lintner, Mr. Riley stated that at Washington the greater part of the second brood of beetles doubtless hibernated, although some laid eggs for a third or even a fourth generation."

Page 250, fourth paragraph, for "species" read "race".

Page 261, next to last paragraph, my remarks refer to *Xenos* and not to *Polistes*, which is mentioned immediately above.

Page 262, first whole paragraph, read: "Mr. Riley stated that he knew of no other species of *Thyridopteryx* similar to *ephemeraformis*, although this species differed much as to the character of the cases, especially those upon conifers when compared with deciduous trees."

C. V. RILEY, Washington, D. C.

BARK-BEETLE DESTROYER.

Sir,—The Bark-beetle *Dendroctonus frontalis*, Linn., has of late years been committing great ravages among the conifers of the West Virginian forests. In order to offer some resistance to this creature, Mr. Andrew D. Hopkins, Entomologist of the Agricultural Experimental Station at Morgantown, W. Va., has hit upon the expedient of placing in its company an enemy in the European Bark-beetle Destroyer, *Clerus formicarius*, L. For this purpose, Mr. Hopkins recently visited Germany, and here, through considerable skill and good fortune, he secured valuable information concerning the conditions favourable to the existence of this useful insect. He has transported the larva of the Bark-beetle Destroyer at various stages of development, as well as the pupa and imago, to America, all in great quantities, and in a state of hibernation. There being reasonable hopes of by far the greater part arriving over there in a healthy condition, it will be possible next spring to begin the experiments of acclimatization.

CAMILLO F. SCHAUFUSS,

Director of the Museum Ludwig Salvator, Meissen, Germany.

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