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No. 5

HYPENA SCABRA (FABR.) AND H. ERECTALIS, GUEN.

BY J. A. LINTNER, ALBANY, N. Y.

In the examination of my last season's collections of *Hypena scabra* (*scabralis*, Guen.) and "*H. erectalis*," for sexual determinations, I was surprised to find of the former, only the male represented, and of the latter, only the female. Collections of each having been made during the same period of time (from September 1st to September 24th) and at the same place (the wall and ceiling of the piazza of my residence)—such a remarkable occurrence seemed to be so removed from accident, and inexplicable from any difference of sexual habits, that I was led to suspect the identity of the two species. On referring to my cabinet, I there found individuals labelled as ♂ and ♀ of each species; but, on a critical review of these determinations by an infallible method of distinguishing sex in the Heterocera, viz., the structure of the *frenulum* (simple in the male and compound in the female), my "♀" *scabra* proved to be a ♂, and my "♂" *erectalis* a ♀. Among my duplicates of the collections of several years, the same result obtained. Mentioning these facts to my friend, Mr. Meske, of this city, he was quite positive of having in his cabinet the sexes of each species, but he subsequently found that a *frenulum* inspection of all his examples gave him only one sex of each form. There was, therefore, no longer room for doubt of the identity of the "two species"—that "*erectalis*" is only the female (though uniformly smaller) of *scabra*.

It is interesting, in connection with the above, to notice that Guenee, in his description of *scabralis*, refers to seven ♂'s under his observation, and says, "Je ne connais pas la ♀." Of *erectalis* he says, "3 ♂, 1 ♀." Mr. Grote (Trans. Amer. Ent. Soc., iv, p. 102) cites ♂ and ♀ of *erectalis*

and *scabra*. The varying form of the abdomen of *scabra*—each sex often assuming the form pertaining to the other—may have easily led him into this error, as it had done with me in those which I had placed in my cabinet.

A strong testimony to the value of the investigations in which the eminent German Lepidopterist, Dr. Speyer, is at present engaged, in his examination and comparison of the identical or closely allied forms of European and American Heterocera, is given in the fact, that from the study of a small number of *scabra* and *erectalis* submitted to him (perhaps three of each form), he was led to believe that the two would prove to be but one species. This opinion was recently communicated by him in a letter to Mr. Meske. Before its reception, the conclusion, confirming his belief, to which I had arrived, through an examination of abundant material, had been forwarded to him.

There seems to be no sufficient reason at present for changing the *scabra* of Fabr. into the *scabralis* of Guenee—the true relations of the Deltoidæ, whether to the Noctuas or to the Pyralites, being still a matter of opinion and discussion.

I embrace the present opportunity to communicate the fact, that an example of *Depressaria Ontariella* Bethune, sent by me last fall to Dr. Speyer, and by him submitted to Zeller, was by the latter determined to be *D. heradiana* Deg. The opinion of Mr. Angus, recorded in vol. 2, p. 19 of this Journal, that it was probably identical with the above named European species, is hereby confirmed.

DESCRIPTIONS OF NORTH AMERICAN HYMENOPTERA, No. 7

BY E. T. CRESSON, PHILADELPHIA, PENN.

Continued from Page 54.

Genus HELCON, Nees.

Posterior femora toothed beneath near apex.

Body entirely black, legs ferruginous.....1. OCCIDENTALIS.

Body black and ferruginous.

Abdomen black, with broad median ferruginous band...2. BOREALIS.

Abdomen entirely ferruginous.

Metathorax and pleura more or less ferruginous;

posterior tarsi white.....3. ALBITARSIS.

Metathorax and pleura black; posterior tarsi black.4. FRIGIDUS.

Posterior femora simple.

Body entirely black.

Legs entirely honey-yellow or ferruginous.

Wings hyaline; first abdominal segment narrow,
shining5. AMERICANUS.

Wings fuliginous; first abdominal segment broad,
opaque.....6. FULVIPES.

Legs ferruginous, posterior femora, tibiæ and tarsi black.7. PEDALIS.

1. HELCON OCCIDENTALIS.

Helcon occidentalis, Cress., Proc. Ent. Soc., iv, p. 292. ♀.

Colorado.

2. HELCON BOREALIS. *N. sp.*

♂.—Black, opaque; clothed with a short thin pale pubescence; top of head, cheeks and space on side of pleura smooth and shining, face finely and densely punctured; antennæ long, slender, brown; thorax densely, rather roughly sculptured, somewhat coriaceous; metathorax densely and coarsely sculptured; tegulæ dull honey-yellow; wings hyaline, iridescent, nervures and stigma fuscous; legs bright honey-yellow, anterior coxæ tinged with fuscous, posterior tibiæ black, reddish at base, their tarsi pale yellow, dusky at tips, femoral tooth strong and blunt; abdomen depressed, first segment coriaceous, second and third segments honey-yellow. Length .33 inch.

Maine.

3. HELCON ALBITARSIS. *N. sp.*

♂.—Head, pro and mesothorax, scutellum and sometimes the pleura entirely black; remainder honey-yellow or ferruginous; sometimes the pleura is entirely ferruginous, and sometimes the metathorax is obscurely ferruginous, nearly brown; antennæ black or brown; head and thorax sculptured as in *borealis*, the metathorax being more distinctly reticulated; tegulæ honey-yellow; wings hyaline, iridescent, nervures and stigma fuscous; legs bright honey-yellow, posterior tibiæ black, reddish at base, all the tarsi white, dusky at tips, femoral tooth acute; abdomen narrow, shining, first and second segments reticulated; apical segments sometimes tinged with dusky. Length .27-.35 inch.

Virginia ; Illinois. This may be the male of *dentipes*, Brulle, the female of which is described as having a white annulus on antennæ, and the tarsi are not conspicuously white as in *albitarsis*.

4. HELCON FRIGIDUS. *N. sp.*

♀.—Black, shining ; face rough ; antennæ slender, black ; prothorax except posterior angles, semi-circular band on pleura, disk of mesothorax and basal excavation of scutellum, covered with coarse striæ or reticulations ; metathorax coarsely reticulated ; tegulæ piceous ; wings smoky hyaline, nervures and stigma black ; legs, including coxæ, rufo-ferruginous, tarsi tinged with yellowish, posterior tibiæ blackish, femoral tooth strong and very blunt ; abdomen longer than thorax, narrow, polished, ferruginous, dusky at base, first segment with two longitudinal ridges and a stout blunt tubercle on each side near base ; ovipositor longer than body, honey-yellow, sheaths black. Length .45-.50 inch.

Hudson's Bay ; Vancouvers' Island (Henry Edwards.)

5. HELCON AMERICANUS. *N. sp.*

♀.—Black, shining ; face roughened ; prothorax and metathorax reticulated ; labrum and mandibles except tips ferruginous ; palpi pale yellowish ; antennæ long and slender, brown-black, base honey-yellow ; middle lobe of mesothorax prominent, divided from the side lobes by a deep groove which become confluent behind ; tegulæ and base of wings honey-yellow ; wings hyaline, sub-iridescent, nervures and stigma black ; legs honey-yellow, posterior tibiæ and tarsi more or less dusky, femora simple ; abdomen long, slender, shining, sides and base of second and third segments tinged more or less with testaceous, first segment long, narrow, grooved medially ; venter more or less tinged with testaceous ; ovipositor very long and slender. Length .55-.60 inch.

Canada ; Virginia. Very distinct from *fulvipes* by the shape and sculpture of the first abdominal segment.

6. HELCON FULVIPES.

Helcon fulvipes, Cress., Proc. Ent. Soc. Phil., iv, p. 292. ♀.

Colorado.

7. *HELCON PEDALIS*. *N. sp.*

♂ ♀.—Same form and sculpture as *fulvipes*, from which it differs by the posterior femora except base, and their tibiae and tarsi being black. Length .40-.48 inch.

Hudson's Bay; Massachusetts.

MICRO - LEPIDOPTERA.

BY V. T. CHAMBERS, COVINGTON, KENTUCKY.

Continued from Page 50.

TINEA.

1. *T. eunitariælla*. *N. sp.*

Black; head and face rufous; palpi grayish white; antennae yellowish gray, annulate with black, tips white; wings black, with a costal and dorsal white spot opposite each other just before the middle (sometimes united, forming a fascia), a white fascia (sometimes interrupted) beyond the middle, a costal white spot in the apical portion of the wing, and near the apex an obliquely curved costal white streak; apical portion of the wing bronzy, iridescent, ciliae grayish brown; legs silvery white, in parts tinged with fuscous; posterior wing fuscous. *Alar ex.* less than $\frac{1}{3}$ of an inch.

The larva is found upon old stone walls and monuments in cemeteries. I do not know whether it feeds upon the hairs contained in the mortar of the walls or upon the mortar itself, or upon Lichens, but upon the wall where I have found it most abundantly, I have never found a trace of Lichens. The case is composed of silk and grains of lime. It is flattened, with the under surface truncate at each end, and the upper surface projects in shape something like the bowl of a spoon at each end; the sides are emarginate near each end. I have lost my notes upon the larva. *Hab.* Kentucky and the Gulf States.

It is one of the handsomest *Tineæ* known to me.

2. *T. Orleansella*. *N. sp.*

Straw color or pale yellowish, thickly dusted with fuscous; a discal fuscous spot about the middle of the wing, and another opposite to it on

the dorsal margin ; a row of dark brown spots around the apex, a dark brown spot on the base of the costa and an obscure one at the inner angle : the apical portion of the wing is thickly dusted. Antennae grayish stramineous : head and palpi sordid, stramineous, the outer surface of the palpi brown. *Alar ex.* $\frac{3}{8}$ inch. New Orleans, La., in November.

3. *T. auristrigella*. *N. sp.*

Head and antennae straw color or pale golden, palpi silvery ; thorax and wings brown in some lights, bright purple, roseate or violaceous, with a wide shining straw colored or pale golden streak upon the fold, beginning at the base of the costa and extending to and into the beginning of the dorsal ciliae, and sometimes connected with a large straw colored or pale golden costal spot before the costal ciliae ; ciliae pale golden *Alar ex.* $\frac{3}{8}$ inch. Kentucky, in July.

4. *T. straminiella*. *N. sp.*

Head sordid yellowish ; palpi, antennae, thorax and anterior wings straw color, palpi brownish externally ; sides of the thorax behind the eyes brown ; a row of small brown spots along the fold, another at the end of the disk. Apex dusted with brown. *Alar ex.* $\frac{1}{3}$ inch. Kentucky, in June.

5. *T. iridella*. *N. sp.*

Palpi and lower part of the face brownish ; upper portion and vertex yellowish ; antennae brown ; thorax and anterior wings iridescent, in some lights brown, in others glittering bluish green, violet or topaz red. In some lights the entire wing appears of a beautiful azure. Posterior wings pale fuscous. *Alar ex.* $\frac{2}{3}$ inch. Col. Mr. Wm. Saunders, of London, Ontario, Canada.

A beautiful insect under the microscope.

6. *T. miscella*. *N. sp.*

Head and palpi pale yellowish ; antennae pale fuscous ; thorax and primaries fuscous and saffron yellow intermixed in almost equal quantities, the fuscous scales being sometimes aggregated into small spots, one of which is about the end of the disc and a larger one is near the base. *Alar ex.* $\frac{3}{8}$ inch. Kentucky.

7. *costotristrigella*. *N. sp.*

Head and palpi pale saffron yellow, the outer surface of the palpi dark brown; antennae dark brown; thorax and basal portion of the dorsal margin of the primaries dark brown dusted with yellowish white, the primaries otherwise white dusted with dark brown, with an oblique dark costal streak near the base, extended to the fold; just before the middle is another longer one also extended to the fold where it enlarges into an irregular spot, being also dusted with yellowish white above the fold; just behind the middle is another streak not reaching the fold, behind which is a small costal brown spot and a row of brown spots around the apex. The apical portion of the wing is more densely dusted than the disc. Ciliae white with fuscous spots. *Alar ex.* $\frac{1}{2}$ inch. Kentucky, in August and September. Taken flying.

8. *T. bimaculella*. *N. sp.*

Outer surface of the second joint of the labial palpi brown; inner surface and terminal joint pale yellowish or stramineous; head pale stramineous; antennae pale yellowish tinged with fuscous; thorax shining dark brown, almost black, except the tip which is stramineous; costal half of the primaries fuscous, narrow towards the base, but spreading towards the apex, where it is mixed with pale yellowish, with a distinct dark brown spot beyond the end of the disc; dorsal half stramineous, widest at the base, narrowing towards the apex, with a distinct dark brown spot within the margin about the middle: ciliae fuscous and stramineous mixed; anterior and intermediate legs dark brown, the tarsi faintly annulate with stramineous; posterior legs stramineous. *Alar ex.* $\frac{1}{3}$ inch. Kentucky.

9. *T. aurosuffusella*. *N. sp.*

Palpi pale stramineous, the outer surface of the second joint of the labial pair brown; antennae pale fuscous; head and thorax pale stramineous, with a small pale fuscous spot on the thorax before the apex; primaries pale stramineous streaked along the fold with pale reddish golden, and the apical portion of the wing suffused with the same hue; a rather wide pale fuscous streak, the basal portion of which is scalloped towards the fold, extends from the base of the costa along the costal margin to a little beyond the middle, and a similar streak, scalloped towards the fold in its posterior half, extends along the dorsal margin from near the base to the

beginning of the ciliae ; and at the beginning of the costal ciliae is a rather wide somewhat oblique streak or band which extends almost to the dorsal margin and is a little convex towards the base ; ciliae pale stramineous. *Alar ex.* $\frac{1}{8}$ inch. Kentucky.

10. *T. griseella*. *N. sp.*

Palpi brown ; head and antennae sordid yellowish gray ; thorax and primaries brownish gray, with a small brownish spot within the dorsal margin before the middle, another still more faint on the disc, and a more distinct one at the end of the disc. *Alar ex.* $\frac{1}{8}$ inch. Kentucky.

11. *T. marginistrigella*. *N. sp.*

Palpi yellowish white, the labial pair brown externally and tipped with white ; head whitish yellow ; thorax dark brown with a faint golden tinge ; primaries dark golden brown, with some white intermixed, especially in the basal portion and along the dorsal margin to beyond the middle ; the white of that part of the dorsal margin is arranged in numerous narrow short streaks which are perpendicular to the margin ; a large white patch at the beginning of the dorsal ciliae, sparsely dusted with brown ; a row of white spots extends along the entire costal margin from near the base ; two of these spots about the middle being much larger than the others ; extending to the middle of the wing, and only separated from each other by a narrow crooked brown line. The margin just before and at the apex is white, much dusted with brown and separated from the dorsal white patch by a patch of brown. Ciliae white with about seven or eight brown spots extending into them. *Alar ex.* $\frac{1}{2}$ inch. Kentucky.

12. *T. trimaculella*. *N. sp.*

Pale stramineous, the head a shade deeper yellow ; thorax and primaries dusted with pale fuscous ; two small fuscous spots upon the disc about the middle, the one nearest the costal margin being the most indistinct, and a third one more distinct at the end of the disc ; posterior wings shining pale or whitish yellow. *Alar ex.* $\frac{1}{8}$ inch. Kentucky.

13. *T. fuscomaculella*. *N. sp.*

Gray, flecked and spotted with fuscous, which in some lights appears reddish or brownish golden ; one of the spots is at the base of the costa, and opposite to it on the dorsal margin is a smaller one connected with it

by scattered fuscous scales ; a fuscous streak from the costa to the fold sometimes almost interrupted in the middle ; an oblique fuscous streak about the apical third of the wing and a small dorsal spot opposite to it, and another small spot of the same hue near the apex ; antennae silvery gray ; face and palpi whitish, outer surface of the palpi dusted with fuscous. *Alar ex.* $\frac{1}{2}$ inch. Kentucky.

The antennae in this species and in the one next described are rather longer than is usual in *Tinea*. The neurulation of the wings in both these species is also different. But I have not thought it necessary to make a new genus for them upon this account, the more especially as the neurulation is by no means constant among the different species of *Tinea*, and these two species differ somewhat from each other in neurulation. There are also minute differences in the form and relative size of the joints of the labial palpi between the preceding species and these two. This species and the next differ from the others and agree with each other in having the costal margin of the hind wings excised from the middle to the tip. For these reasons I had at first intended to place them in a separate subgenus, but as they differ from each other somewhat, especially in neurulation and pattern of coloration, and agree with *Tinea* otherwise than as above quoted, I have concluded not to remove them from this genus. The next described species has the scales of the thorax and wings appressed and smoother than in the other species.

14. *T. argenti-strigella*. *N. sp.*

Face and palpi silvery white, outer surface of the labial palpi brown ; antennae silvery beneath, maroon brown above, annulate with silvery white ; vertex maroon brown ; thorax above, a spot under each wing and the basal portion of the primaries rich maroon brown, or in some lights violaceous, with a narrow irregular white fascia upon the wings behind the maroon basal portion ; behind the fascia the primaries are maroon brown or violaceous, mixed with white towards the fascia, the white gradually disappearing towards the apex. Six oblique silvery costal streaks, the first being small and the others becoming gradually larger to the fifth, the sixth again being smaller ; two distinct dorso-apical white streaks and a small patch of maroon dusted with white in the dorso-apical part of the wing, which is continuous with those of the five dorsal silvery streaks ; dorsal ciliae silvery ; abdomen violaceous, each segment silver fringed ; legs silvery iridescent. *Alar ex.* $\frac{1}{2}$ inch. Kentucky.

A very handsome species.

The following species differ from the true *Tinea* as follows: the antennae are shorter and thicker, with the joints shorter and arranged like a series of cups placed in each other, and microscopically ciliated (or rather pubescent.) I have not thought it necessary to erect a new genus however, as in other respects they agree with the true *Tinea*.

15. *T. auropulvella*. *N. sp.*

Snowy white; outer surface of the second joint of the labial palpi brown; antennae yellowish white; primaries very sparsely dusted with pale reddish or brownish golden, except in the apical portion, where the dusting is rather dense; it is also thicker near the base of the dorsal margin. A dark brown spot on the costa at the extreme base; another larger one on the costa near the base; a smaller costal one just before the middle; a large one just behind the middle reaching to the fold; another small one before the ciliae and five or six other small ones extending around the apex at the beginning of the ciliae; in some lights these spots are distinctly golden brown. *Alar ex.* \bar{r} : inch. Kentucky. Taken in July resting upon the trunks of trees in forests. It is rather sluggish and does not easily take flight.

16. *T. fuscopulvella*. *N. sp.*

Snowy white; outer surface of the labial palpi dark brown; antennae sordid yellowish white; thorax and primaries dusted irregularly with dark brown scales, the dusting sparse in some portions, but in others aggregated into small spots or patches, a small one of which is on the fold not far from the base; two other larger ones about the middle and others in the apical half of the wing; it also assumes the form of more or less distinct costal and dorsal streaks. *Alar ex.* $\frac{3}{8}$ inch. Kentucky.

17. *T. maculabella*. *N. sp.*

Snowy white; maxillary and labial palpi brown, except the inner surface of the labial pair, which is white; antennae sordid yellowish white; thorax and primaries snowy white, with large distinct dark brown spots which in some lights are golden brown; one of these spots is on the anterior margin of the thorax and one on each side before the apex; primaries sparsely dusted with dark brown; a dark brown costal spot at the extreme base and a larger one near the base; another within the one last named on the fold; before the middle is an oblique irregular streak

of the same hue reaching to the fold and pointing towards a spot of the same hue just within the fold; a small spot of the same hue about the middle of the costa, behind which is an irregular costal streak of the same hue which extends to the middle of the apical portion of the wing and widens into a large irregular spot; in the apical part of the wing is an indistinct *longitudinal* dorsal streak, nearly opposite to which, but a little behind it, is a larger and more distinct streak which is also longitudinal. All of these spots are mixed with or margined by reddish yellow scales; ciliae white dusted with dark brown. *Alar ex.* $\frac{7}{8}$ inch. Kentucky.

The three foregoing species thus resemble each other and differ from the others in ornamentation as well as in the structure of the antennae. They were all three taken in the same situations.

ON THE HABITS OF CERTAIN GALL INSECTS OF THE GENUS CYNIPS.

BY H. F. BASSETT, WATERBURY, CONN.

For ten years past I have been studying the habits of the Cynipidæ to determine, if possible, whether there are one or two broods of these insects each year.

Several years ago I discovered the flies of *C. q. operator* in the act of ovipositing in the young acorns of *Quercus ilicifolia*, the oak on which the woolly galls of this species are generally found. The insect thrust its ovipositor down between the acorn and the acorn cup, and, late in the summer, the acorns thus stung proved abortive, while around them and often protruding far above the cup were little acorn-like galls, each containing a large Cynipideous larva. Several of these galls were often found in each acorn cup. That year nearly all the acorns were affected, and there are more or less thus injured every year.

I have as yet failed to rear any flies from these galls, probably because I have failed to keep the galls in the proper condition for development.

A later discovery, made three or four years ago, was that of two, and I think three species of Cynips in the act of ovipositing in the buds of the oak, *Q. alba*, just as the buds began to develope, but before the leaves were visible.

The relationship of these species to any known species was only inferentially established. It is true that the leaves of several oaks on which I found one species very abundant, were almost all covered with galls of *C. q. futilis*, *O. S.*, but the females of this species were not so large as my new bud stinging species.

I have, for the past three years, carefully examined the buds of *Q. ilicifolia*, hoping to find the producer of *C. q. operator* at work, but without success, till this week, when I found no less than thirty gall flies ovipositing in the buds of this oak.

That they really are the producers of these galls needs no further proof than I now give. The insect *C. q. operator* is distinguished from all our other species by the projection of the ovipositor above the dorsum. In this respect it resembles the several species of guest gall flies that infest almost all our species of galls. It has, however, the neurulation of the true gall flies. In size my insects are considerably larger than *C. q. operator*, but in form, color, neurulation of the wings, and, above all, in the peculiar form and position of the sheath of the ovipositor, they are like this species.

Few will doubt their identity; but to make "assurance doubly sure," I hope some one will be so fortunate as to raise gall flies from these acorn galls, when a comparison with mine will settle the question whether this particular species (*C. q. operator*) is double brooded or not.

I wish (if my article is not already too long) to state a few other facts and to show their bearing upon the history of these interesting insects.

There stands not far from my house a small oak tree, *Q. bicolor*, which is almost ruined by the ravages of a species of gall fly, which closely resembles and may be identical with *C. q. botatus*, Bassett. Every summer the leaves of this tree are so injured by the galls that scarcely one perfect one can be found on the tree. The petioles and midveins are enlarged to the size of one's finger, and the blade shrivels up or remains undeveloped, and each gall contains a large number of insects which come out in June. I have reared many thousands of these gall flies and find them of both sexes—about equally divided.

Late in the summer another form of gall appears, this time on the ends of the small branches, and the insects remain in these, in the imago, through the winter. I have reared not less than fifteen thousand of these gall flies and *all are females*, and they cannot be distinguished from the

summer brood except that they are a very little larger. The flies of *C. q. futilis*, O. S., are of both sexes, but among the considerable number found ovipositing in the buds of the White Oak, and which, I have no doubt, produce the galls of *C. q. futilis*, there are no males and the females are considerably larger than the summer brood.

And again, in my last discovery the flies are all females, but larger than the females of *C. q. operator*, though they have the structural peculiarities of that species.

From all the above facts I infer that all our species that are found only in the female sex are represented in another generation by both sexes, and that the two broods are, owing to seasonal differences, produced from galls that are entirely distinct from each other. I shall not be surprised if it shall yet be found that all our species of *Cynips* proper are double brooded, but the allied genera *Diastrophus* and *Rhodites* probably produce but one brood each year.

Mr. Walsh's successful attempts at colonizing *C. q. spongifica*, O. S., do not prove that the galls he raised were the *immediate* product of the flies he colonized; another generation may have intervened from which his galls were descended. I have in mind two species of *Cynips* that mature from the egg in less than thirty days. They are our earliest vernal species and are not yet described.

In an article published ten years ago in the *Proc. of Ent. Soc. of Phila.*, describing several new species of *Cynips*, I ventured to remark that probably some of the species whose galls are formed on the leaves deposit their eggs in the embryo leaves, the leaf buds of the following year being formed at the time these insects appear.

This seems to be true only in part. It is at another time and by another brood that the eggs are so deposited.

In the same article I gave it as my opinion that the woolly galls of *C. q. operator*, O.S. and *C. q. seminator*, Harris were the abnormal development of the embryo leaves, and that the wool was an enormous growth of the pubescence of the leaf. To this view the late Mr. B. D. Walsh objected, either in a published article or in a letter to myself, saying the galls were not connected with the leaf buds.

Last spring I was so fortunate as to find two galls of *C. q. seminator* in the earliest stage of growth; so young that I did not recognize their true character, being simply large buds just beginning to open, but exhibiting

on the summit a beautiful rose-coloured pubescence. I watched them till they were mature and had the satisfaction of seeing them develop into two fine galls of this not very common species.

My friend, Mr. L. S. White, of this city, like a true chemist, as he is, suggested the idea of *weighing* the specimens of new insects we describe and tried his plan upon the gall flies taken the other day. The species taken on the buds of *C. q. operator* weighed $4\frac{1}{2}$ millegrammes, while another species, probably *C. q. globulus*, Harris, weighed alive 18 millegrammes. This last was taken on a bud of the White Oak.

Slowly, year by year, the above and other quite as interesting fragments in the history of the Cynipidæ have come to my knowledge, and I hope to live to see their history fully written. It is in such investigations of the *habits* of insects that our real work and our highest enjoyment as Entomologists consists.

A GLIMPSE OF INSECT LIFE.

BY PROFESSOR BELL, OF BELLEVILLE.

While looking over some old memoranda a few days ago, I found the following, which may prove interesting to the readers of the ENTOMOLOGIST:

In the summer of the year 1830, while residing in the northern part of the County of Northumberland, England, in the capacity of a farm student, I was requested to carry out a sentence of death upon a worthless cur, which had been condemned as an incorrigible cattle chaser. After the execution, I dragged the carcass across some fields to a small clump of Willows near the river Till, and deposited it as an insect trap in a hollow, which, from having been long under water, was devoid of vegetation. In a short time the decomposing carcass became the resort of an immense crowd of the common Blow-fly, *Musca carnifex*, under whose manipulations it soon became a seething mass of the largest, fattest and liveliest of maggots. It also attracted a number of the Silphidæ, especially *Necrophorus humator*, *N. vespillo*, and *Necrodes littoralis*. After capturing as many specimens of these insects as I wanted, I was much interested in observing their proceedings. About forty of them had established a sort of encampment under the vertical wall of the hole, about thirty inches from the carcass, to which each individual ever and anon made a raid and captured a fine fat maggot, which he bore off writhing and wriggling in his mandibles to the camping ground, where it

was speedily devoured, when its captor made another incursion and carried off another victim.

During the half hour that I watched their manœuvres, each one consumed one maggot and set out in search of another about once in five minutes ; and as they appeared to keep this up all day until late in the evening, and perhaps all night long, the quantity of maggots destroyed must have been quite considerable. One gigantic fellow of a *humator* particularly distinguished himself in this predatory warfare, making about three incursions to two of any of the others. I captured him finally, and found him rather to exceed two inches in length.

After the lapse of a few days the maggots disappeared into the earth, there to undergo their final transformation, when the burying beetles left the place, and were succeeded by the *Silpha rugosa* and one or two of its congeners, numerous specimens of which frequented the remains for a time ; and even after the softer parts had all disappeared, I took from the bones several individuals of two or three species of *Nitidula*.

I never observed the *Necrophorus mortuorum* near the carcass of the dog, though within half a mile, in the pine woods of Ewart Park, it was very numerous on the bodies of crows and other carrion birds which had been shot and left lying by the gamekeeper ; and though I took several specimens of *N. respillo*, and of another nearly allied species of which I do not remember the name, in comparing with the *N. mortuorum*, I never met with a single individual of the *N. humator* or the *Necrodes littoralis* in the pine woods.

THE question has often been debated whether flies eat the pollen of plants, or merely carry it away accidentally on their legs and backs. The question would appear to be set at rest by a paper read at the last meeting of the Scientific Committee of the Royal Horticultural Society by Mr. A. W. Bennett, in which it is stated, as the result both of his own observations and of those of Erm. Muller, that the microscopic examination of the stomachs of Diptera belonging to the order Syrphidæ, shows them to contain large quantities of pollen-grains, especially of plants belonging to the order Compositæ. Entomologists had expressed a doubt as to whether it were possible for insects possessed only of a suctorial proboscis to devour such solid bodies as pollen-grains ; but Muller believes that the transverse denticulations found in the valves at the end of the proboscis of many Diptera are especially adapted for chewing the pollen-grains, and for dividing the threads by which the grains are often bound together.

INSECTS OF THE NORTHERN PARTS OF BRITISH AMERICA.

COMPILED BY THE EDITOR.

From Kirby's Fauna Boreali-Americana: Insecta.

(Continued from Vol. 4, Page 235.)

FAMILY GALERUCIDÆ.

292. GALERUCA OLIVIERI *Kirby*.—Length of body $3\frac{1}{4}$ lines. Taken in Canada by Dr. Bigsby.

Very near related to *Galeruca quadrimaculata* F. Body long, glossy, reddish-yellow: posterior part of the head black, a cross impressed between the eyes; antennae dusky with the four first joints rufescent: prothorax impunctured, transversely subimpressed behind, sides margined: elytra very minutely and lightly punctured with punctures just visible under a good lens; at the base of each elytrum nearest the suture is a roundish black spot, and another large oblong one extends from above the middle towards the apex; posterior thighs a little incrassated; tarsi dusky, especially at the apex; medipectus and postpectus black.

[Synonymous with *Phyllobrotica decorata* Say. Taken in "Canada, Lake Superior, Illinois; rare. In the ♂ the 5th ventral segment is very large, canaliculate, deeply excavated behind, with a small testaceous triangular appendage projecting over the 6th segment. The disc of the thorax is not impressed." Le Conte.]

[219.] 293. GALERUCA CANADENSIS *Kirby*.—Length of body 4 lines. Taken in Canada by Dr. Bigsby.

Body elongate, hairy with short decumbent cinereous hairs or down, dirty-rufous, underneath black. Head with a black vertical spot; six last joints of the antennae black, the others, except the scape, rufous black at the tip; scape rufous, black above; prothorax transversely impressed, sides posteriorly oblique with a slight sinus; three equidistant irregular black spots or dots placed transversely on the disk; the two elytra taken together have three black stripes, the intermediate or sutural one being common to both, and converging with the lateral ones at the tip; anus obscurely rufous.

[Belongs to Le Conte's genus *Trichabda*. "A common species extending from Lake Superior and the Mississippi Valley to the Pacific." Le Conte.]

294. *GALERUCA SAGITTARIÆ* Gyll.—Length of body $2\frac{3}{4}$ lines. Several specimens taken in Lat. 54° . Taken also by Dr. Bigsby in Canada.

Body brown, a little downy, not glossy. Mouth dirty-yellow; prothorax transverse, impressed, reddish-yellow, with three black nearly confluent spots; scutellum subquadrangular, truncated at the apex; elytra grossly but not thickly punctured; suture and lateral margin paler than the rest of the elytrum; anus and legs reddish-yellow; tarsi darker.

VARIETY B. With the base of the antennae yellowish underneath, the black spots on the prothorax distinct, and the elytra entirely of a brownish yellow.

["Found throughout the middle and northern parts of the Atlantic district." Le Conte.]

[220.] 295. *GALERUCA BILINEATA* Kirby.—Length of body 2 lines. A single specimen taken in Lat. 54° .

Nearly related to the preceding species, but smaller, the whole of the head is rufous, the joints of the antennae are shorter; the prothorax is longer in proportion to its width; and the elytra, nearer the suture than the lateral margin, have two somewhat elevated approximated blackish ridges, the interior one being the shortest and extending from near the middle to the base, and the other reaching neither base nor apex.

[Considered by Le Conte as probably a specimen of *G. notulata* Fab., with indistinct markings.]

296. *GALERUCA MARGINELLA* Kirby.—Length of body 3 lines. A single specimen taken in Lat. 65° .

Body very black, a little downy. Mouth and base of the first joint of the antennae subtestaceous or reddish-yellow; prothorax wider than long, impressed and confluent punctured on each side, with a longitudinal dorsal channel; behind the margin has a slight sinus; reddish-yellow with three black spots, the intermediate one being the smallest; elytra grossly and thickly punctured; lateral margin and apex reddish-yellow; legs dusky-yellow; last ventral segment of the abdomen yellow and deeply emarginate.

[Le Conte refers a specimen from Fort Simpson, Hudson's Bay Territory, to this species.]

[221.] FAMILY SAGRIDÆ.

297. *ORSODACNA TIBIALIS* Kirby.—Length of body $2\frac{3}{4}$ lines. A single specimen taken in the journey from New York to Cumberland-house.

Body piceous ; underneath hoary with decumbent hairs ; above naked, glossy, thickly punctured. Palpi and two last joints of the antennae obscurely rufous ; front between the eyes with a transverse levigated elevation ; prothorax longer than wide, constricted at the base ; lateral margin and epipleuræ or side-covers of the elytra, except at the base, yellowish-red ; thighs, at the base, and tibiae reddish-yellow, the four posterior tibiae darker at the apex.

[Taken at Lake Superior by Agassiz's Expedition.]

298. *ORSODACNA CHILDRENI* Kirby.—Plate vii, fig. 6. Length of body $2\frac{3}{4}$ lines. A single specimen taken in Lat. 54° .

[222.] Body above punctured, naked. Head and its organs yellow, with the eyes, occiput, and apex of the mandibles black ; a levigated transverse elevation of the front, as in the preceding species ; prothorax longer than wide, constricted at the base, with an impression in the middle, pale-yellow, disk embrowned ; scutellum rufous ; elytra rather paler than the prothorax, with a stripe adjoining the lateral margin, an angular band beyond the middle and the base, black ; antepectus, anus, and legs, yellow, rest of the underside of the body is black, and hoary with decumbent white hairs.

[Taken in Canada.]

FAMILY DONACIADÆ.

299. *HÆMONIA NIGRICORNIS* Kirby.—Length of body $3\frac{2}{3}$ lines. Taken in Canada by Dr. Bigsby.

This species is considerably larger than *H. Equiseti* and *Zostera*, from which it is perfectly distinct. Body luteous above and glossy ; underneath it is covered with a thick coat of pale, decumbent, rather silky hairs, with somewhat of a golden splendor, if these are rubbed off, the colour of the breast and basal abdominal segment is black. Head hairy, dusky, with a levigated naked testaceous longitudinal elevation between the eyes ; antennae black, robust, very little longer than the prothorax ; prothorax

subquadrangular with prominent anterior and posterior angles making it appear constricted in the middle, it is channelled with an irregular discoidal impression on each side; a few large dusky punctures are observable where the channel terminates; elytra with ten equidistant rows of large punctures which converge at the apex; besides these there is an abbreviated row at the base next the suture, as in many *Harpalidæ*, &c., the apex of the elytra terminates in two teeth or spines; the inner one short and dentiform, the outer one long and spiniform; legs and anal portion of the abdomen yellow, the former with all their articulations dusky at the extremity.

The sculpture of the elytra in this species much resembles that of another aquatic genus *Haliphus*, Lat.

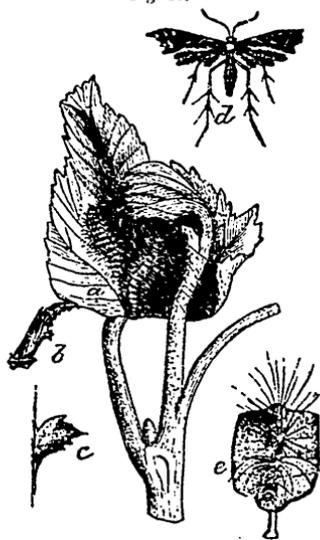
ON SOME OF OUR COMMON INSECTS.

5. THE GRAPE VINE PLUME.—*Pterophorus periscolidactylus*.

BY W. SAUNDERS, LONDON, ONTARIO.

During the latter part of this month and early in June those who have grape vines under their charge are often annoyed at finding the terminal

Fig. 15.



leaves of the young and tender branches tied by means of silken threads into a sort of ball shaped mass, and within the hollow sphere thus formed is found a small whitish hairy caterpillar, which feasts on the tender leaves and young blossom bunches. Usually but a single occupant is found in each enclosure, but occasionally we have found two, and, in one instance, three.

The very young larva is said to be smooth, or nearly so, the hairiness becoming more perceptible after each moult.

In fig. 15 this larva is represented nearly full grown at *a*. It is then about half an inch long with a small yellowish green head, with a band of black across the front, and a yellowish green body, with transverse rows of dull yellow tubercles from each of which arises a small tuft of white

hairs. There is a darker green line down the centre of the back, and the colour of the body becomes a little paler between the segments or rings. The under side is somewhat darker in color than the upper, with a few whitish hairs. It becomes full grown about the middle of June, and then changes to a chrysalis.

The chrysalis, fig. 15, *b*, is a very odd looking thing, nearly half an inch long, angular and rugged in outline. It wriggles and twists about very briskly when touched. At first it is of a pale yellowish green colour, which gradually changes to a reddish brown. We have often found them attached to the under side of the leaves.

In less than a fortnight the moth, *d*, fig. 15, makes its appearance. It is an elegant little creature; its wings are very delicately constructed and measure, when expanded, about seven-tenths of an inch. The fore wings are long and narrow and cleft down the middle about half way to their base, the posterior half of the wing having a notch in the outer margin. They are of a yellowish brown colour and metallic lustre, with several dull whitish streaks and spots. The hind wings are divided into three lobes; the lower division is complete, extending to the base, while the upper one is only about two-thirds as deep; their colour is yellowish brown also, with the same burnished metallic appearance, and with a streak of dull white on the hinder lobe. The outer and hind margins of the wings, as well as all the edges of their lobes, are beautifully bordered with a deep whitish fringe, sprinkled with brown. The body of the moth is long and slender, and of a little darker colour than the wings; the legs are also long, banded alternately with yellowish brown and white, and powdered with metallic scales. The unnatural grouping of the leaves when fastened together to form the home of this insect while in the larval state, leads to its ready detection, when it may be easily crushed with the hand. It is very generally distributed throughout the provinces of Ontario and Quebec.

ADVERTISEMENTS.

EXCHANGE.—I am desirous to exchange English for Canadian or American Lepidoptera. J. C. WASSERMAN, Beverly Terrace, Cullercoats, North Shields, England.

COLEOPTERA FOR SALE.—A number of Rocky Mountain Coleoptera will soon be for sale in sets by JOHN AKHURST, 19, Prospect Street Brooklyn, N. Y.

TO CORRESPONDENTS.

J. C. WASSERMAN.—*Plusia balluca* is very like *P. chrysitis*. We know the latter insect well.