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The Canadian Entomologist.

VOL. IX.

LONDON, ONT., JULY, 1877.

No. 7

REMARKS UPON THE CYNIPIDÆ.

BY H. F. BASSETT, WATERBURY, CONN.

In an article published in the ENTOMOLOGIST for May, 1873, I gave the results of my observations upon the genus *Cynips*, so far as they related to the agamous reproduction of certain species.

I showed that at least two two-gendered species, *C. q. operator* O. S. and a species nearly related to, if not identical with, *C. q. batatus* Bassett, were followed in the next generation by a brood composed entirely of females.

I had reared thousands of *C. q. batatus* of both generations, not for one, but for a series of years, and always with the same results. The early summer brood from leaf galls was always made up of both sexes in nearly equal numbers. The brood from the late summer galls came out in the spring (from twig galls), just as the leaves began to appear, and were all females.

In the case of *C. q. operator* there could be really no room for doubt, as this very peculiar species was repeated, except in size, in the females I took in the act of ovipositing.

If there could be any doubt, it was certainly dispelled when Prof. C. V. Riley reared from the acorn cup galls produced by *C. q. operator*, gall flies exactly like those I had found ovipositing in the buds of the shrub oak.

I advanced the idea in that article that when the true history of the one-gendered species should be known, they would be found to alternate with a generation of males and females. Further proof of this than I now offer will hardly be called for.

Dr. Gustav Mayr, of Vienna, in a letter just received, states that Dr. Adler, of Schleswig, has this year published an "epoch-marking" paper upon the subject of agamous reproduction among the Cynipidæ.*

Dr. Adler finds that what have been described as fourteen distinct species of Cynipidæ—belonging to six distinct genera—are really but seven species.

Four species of *Neuroterons* are found to be the agamous forms of as many species of *Spathogaster*.

Two species of *Aphilothrix* are the agamous forms of two species of *Andricus*, and a species of *Dryophanta* is the agamous form of a *Trigonaspis*.

Dr. Mayr himself was at work upon this problem, but had not succeeded, as his efforts to grow oak trees in his garden had failed. He had not given up the attempt, but had ordered more trees to plant this spring.

Neither Dr. Mayr nor Dr. Adler seem to have seen my article. I communicated the substance of it in a letter to Prof. Albert Müller, then in London. This was read before the London Entomological Society at the meeting of April 7th, 1873, but I notice that English Entomologists continue to talk about Hartig's experiments, and agamous reproduction through an infinity of generations, and of a hypothetical male gall fly that must appear now and then, always just in time to save the race from extinction.

Dr. Adler's paper will no doubt receive the attention it justly deserves and it is to be hoped that the success that has followed his experiments may lead others to aid in developing the history of this singular family of insects.

It is not safe to assume that the history of one species will be the history of all, but the idea that these insects are perpetuated through many generations by unimpregnated females must be abandoned.

* Since the above was written I have received a copy of Dr. Adler's paper; also a letter in which he kindly consents to the publication of all or a part of the paper. I propose shortly to prepare for publication in the ENTOMOLOGIST a summary of his remarkable discoveries.

TINEINA.

BY V. T. CHAMBERS, COVINGTON, KY.

GRACILARIA.

G. (Corisceum) albanotella Cham.

The nearest known ally of this species is the European *C. Brongniardellum*, not *C. calicella* St., as I suggested before I knew *Brongniardellum*. *Albanotella* makes a large, somewhat tentiform mine, on the under surface of oak leaves (*Q. obtusiloba* and *Q. alba*); the mine is at first long, winding and *Nepticuli*-form, ending in the large tentiform blotch. The larva, before leaving the mine, becomes pinkish red. In the breeding cage it pupates in a cocoonet which it spins on the surface of the leaves. I have never met with the pupa elsewhere, nor have I ever, although I have seen hundreds of the mines, found one on the upper surface of the leaf. Yet in Colorado I found a precisely similar larva in precisely similar mines, always on the upper surface of the leaves, and the cocoonet of the pupa was always found on the leaves near it. The larva of *albanotella* is abundant in the latter part of May and the first half of June, and I have never seen it at any other time, though from the abundance of the imago in perfect condition in May, I infer there must be a fall brood of the larva. The description should be corrected to state that the cilia of the fore wings are whitish with the tips at the apex fuscous, and with a wide yellowish hinder marginal line, which sends off two ciliary lines or hooks through the dorso-apical cilia. The eyes are bright red.

G. fasciella Cham.

Aesyle fasciella Cham., C. Q. J. S., v. 2, p. 97.

In indicating the new genus *Aesyle* for this species, I committed a mistake very similar to that of Dr. Clemens in establishing his genus *Parectopa* for *P. robiniella*, &c., which also belong in *Gracilaria*. *G. fasciella* finds its nearest ally in the European *omissella*, but the fasciae are oblique and angulated in the latter, and are not in *fasciella*, in which they are perpendicular to the margins; *fasciella* has four white fasciae separating the five grayish ochreous ones, the last of which covers the apex, which is

white in *omissella*. The position of *fasciella* in repose is that of a *Gracilaria*, but it has not the slender, graceful appearance of such species as *superbifrontella*, *Packardella*, etc., and the shorter, more robust palpi and antennae and somewhat different neuration indicate affinities with *Lithocolletis*. The second joint of the palpi, though not tufted, is somewhat thickened beneath with scales.

G. (Corisceum) quinquenotella, n. sp.

Very different from *C. quinquestrigella* Cham. ; nearer to *C. albanotella*, but, notwithstanding the small though distinct tuft on the second joint of the palpi, which places it in *Corisceum*, it finds its nearest congener both structurally and in ornamentation in the preceding species, *G. fasciella*.

Pure snowy white ; outer surface of the second joint of the palpi grayish brown ; eyes bright red ; antennae whitish, annulate with fuscous ; thorax with two small brownish specks just before the apex. The marks on the fore wings are grayish fuscous tinged with ochreous, and are placed as follows : there is a basal costal spot extending about one-fifth of the wing length, *sometimes* followed by a small spot about the basal third of the costa ; there is a somewhat oblique streak extending to the fold, and which *sometimes* sends a branch from about the middle of the wing to the costa, thus enclosing a small white costal spot ; then follows a fascia, wide on the costa, where it *sometimes* encloses a small white spot ; at about the end of the cell this fascia curves obliquely back to the anal angle ; it is followed before the apex by another somewhat oblique fascia, and there is still another on the apex ; *sometimes*, however, the apex is yellowish with a small apical brownish spot, followed by a curved hinder marginal line ; the fascia next before the apex is continuous in the dorsal ciliae with a faint dark hinder marginal line, and the fascia *at* the apex is continuous with another similar line ; or both of these lines may be considered as a single interrupted line. Where I have indicated above that the marking is *sometimes* present, it is sometimes present in one wing and absent in the other of the same specimen. Abdomen fuscous, with the hinder half of each segment on the ventral surface white and anal tuft yellow. Legs and tarsi annulate with brown and white. *Al. ex.* 4 lines. Kentucky, June 10th to 15th.

G. 12-lineella Cham.

This specific name may be misleading, and, indeed, I can not say that

I am certain that there are just twelve white or black marginal markings on the fore wings; these color marks are so narrow, some of them so short and sometimes so faint, that it is well nigh impossible to describe the species with anything like accuracy. The most distinct and salient mark is the oblique dark gray or gray brown streak on each side of each segment of the whitish or pale gray ventral surface of the abdomen. Indeed, owing to the indistinct and confused character of the markings on the fore wings, I have sometimes doubted whether I have not two very closely related species before me. I think, however, there is but one, but any, even the least denudation—such, even, as is almost inevitable in pinning and setting a specimen, even where the denudation is so little that it requires comparison with other specimens to detect it—alters the character of the markings so that a description could scarcely be prepared from one specimen by which another could be recognized. The original description was prepared several years ago from three specimens, and I have never seen another until this year (May, 1877), when I have taken two others.

The wings are very narrow, but the general color and the style of ornamentation are much nearer to those of many species of *Ornix* than to any species of *Gracilaria* known to me. It is, however, a true *Gracilaria*, belonging to the same section (as I think) with our *salicifoliella* and the European *Kallasiella*. In perfectly fresh specimens three or four distinct white dorsal streaks are found before the middle of the wing length, one of which is much larger and more curved than the others, and is placed a little before the middle, and there is another and very similar one about the anal angle. There are some five or six tolerably distinct blackish costal streaks, most of them in the apical half of the wing, and very close to each other; they are the dark margins of as many white streaks, which, however, are, some of them (sometimes all of them save one or two), very indistinct. One of these white costal streaks in the apical part of the wing meets at an acute angle the distinct curved white dorsal streak of the anal angle above mentioned, and just behind it an oblique, narrow, much curved white fascia crosses the wing to the anal angle, where it is continuous with the whitish or pale gray hinder marginal line, which crosses the middle portion of the dark gray ciliæ (or the ciliæ may be described as pale gray, with two wide dark gray hinder marginal lines, one at their base, the other at their tips). But the least denudation removes portions of these white and blackish markings, so that they pre-

sent a very different appearance. Perhaps as good a description as could be given would be to say that it is gray mottled more or less distinctly with white and dark gray marginal streaks on the fore wings, the apex of which is dark gray or gray brown.

G. purpuriella Chamb.

This is the nearest known American representative of the European *G. stigmatella*. It differs from that species as described and figured in Nat. Hist. Tin., v. 8, by having the head and palpi brownish red with a purplish gloss, rather than "reddish gray," and the antennæ purplish brown with very faint white annulations, rather than "pale yellowish with brown annulations." The anterior wings might, perhaps, be called reddish brown, but are very strongly suffused with rich purple; the triangle is white instead of yellowish white, and its margins are not darker than other parts of the wing. As in *stigmatella*, the triangle is sometimes produced beyond the fold. The ciliæ in *stigmatella* are described as "rufous, towards the anal angle gray." In *purpuriella* they do not differ from the general color otherwise than that they have less of the purple hue. The statement in the original description that there is a wide white band across the middle of the posterior femora must have been made under an impression produced by a reflection of the light, or by slight denudation, though the statement that the tip is white is correct, and the base is also white. In *stigmatella* the posterior tibiæ are "pale reddish gray"; in *purpuriella* they are sordid whitish (or white suffused with pale reddish brown); instead of "pale grayish fuscous," as in my original description, the posterior tarsi may perhaps be better described as dark brownish gray, and the other tarsi are of the same hue, whilst in *stigmatella* all the tarsi are described as "whitish faintly spotted with pale gray." My specimens range from a little over six to full seven lines *al. ex.*; *stigmatella* is seven lines. It makes the most perfect "cone" of all the species known to me, frequently using up the entire leaf. I have never found it on any willow except *S. longifolia*. The small spots in the triangle vary in number and size. The most striking difference on comparing a specimen of *purpuriella* with the figure of *stigmatella*, is in the ciliæ of the fore wings, which in *stigmatella* are much paler, more yellowish, while in *purpuriella* they are so dark as to make it somewhat difficult to detect the three hinder marginal lines.

G. crigeronella.

G. plantaginisella Cham.

In one of the vols. of the Zoo. Rec. the Recorder has expressed some surprise at my having changed the name of a species first described by me because I had discovered its food plant. Nevertheless, the practice is so general, and, in my opinion, it is in every way so convenient and proper, to give to the *Tineina* specific names derived from the food plants of the larvæ, that I can not but think it best to adhere to it rather than to an arbitrary rule of priority, especially where the name first given has probably never been used except by the person who bestowed it, and where the change is made by that person, and the first name is not only inappropriate, but misleading, as it would be in this instance. It is not necessary to explain how I was led into the error of supposing that this species feeds on *Plantago* instead of *Erigeron*.

There is a *Gracilaria* larva which, when very young, makes a small mine in the upper surface of the leaves of the Hop hornbeam (*Ostrya Virginica*), but I have never been able to have its subsequent history. Like some other larvæ of this genus, when *very* young, it shows some resemblance to the flat group of larvæ of the genus *Lithocolletis*.

NOTES ON LARVÆ—FONDNESS FOR WATER—HINTS TO BEGINNERS.

BY C. G. SIEWERS, NEWPORT, KY.

Last spring, while collecting beetles under the bark of decayed logs, I met with numbers of the larvæ of *Arctia isabella* (hairs brown in the middle, black at each end of larva,) about to spin up. Not knowing their hybernating habits, they had always baffled me, and under the impression that they would require another season to mature, had been turned loose. I collected some twenty, put them into a box with cotton and paper scrap, and they at once spun up, all but four. These wandered up and down for a week, having some want, and wasting away. It

struck me they might want water. Wetting a sable, I proffered a drink. They all drank greedily, grasping the brush with their fore-legs, and even following it around. I watered them two or three days, but tired of this and threw them out. The same day they were found spinning up on the fence. This spring I collected another lot, and gave them some curved bark to spin in. About one half refused to spin. I soured them with water. Two remained contumacious, but another wetting brought them to terms. The black larva of the Great Leopard Moth, *Ecpantheria*, hibernates also, spins up about the first of June, and emerges about the 15th with us. Feeds on Poke-berry plant, and will eat cabbage. I failed to winter some twenty this season. Either they dry up in the house, or mould in the cellar. They should be wintered out-doors, in a box without bottom placed on the ground and half filled with leaves and brush, exposed to the weather, but having proper drainage. They come out of the leaves in the spring distended by moisture. Whether they feed before spinning is uncertain. I collect them in the fall at the foot of willow trees, when digging up the pupa of *Smyrinthus geminatus*.

It is generally claimed that moist leaves will induce scouring in the *Bombix mori*, but out-door larvæ get abundance of rain and dew, and may require it. In confinement they fail to get their full growth. Their food should be sprinkled daily. The great difficulty of keeping the food fresh deters many from rearing larvæ. To such I would say, try tin boxes or glass jars. Clean daily and keep moist. Two or three drops of water are sufficient. I have had a lot of empty fruit cans capped, and have kept food fresh in them for ten days. When the nearest food plant is three miles distant this is some object. I find that they do not require light, and but little air. When they cease feeding, remove to spinning or ground boxes. The ground must be kept moist, or the larva will be unable to remove the skin around the thorax, and strangle. If they find it too dry they will come out and try to escape. Many wander about for a day or two before burying themselves. Covering the ground with sod often expedites matters. When ten days have passed they may be sifted out to give place for others, and laid out in another ground box on top, as it is preferable to have them in sight, on account of vermin. Never pull larvae from their food, especially when moulting in changing food. Clip the old food off around them, and they will change themselves. Placing some hungry *Apatura clytons* three inches from fresh food, they struck a bee line for it.

Raising larvæ is by far the most instructive feature of Entomology, and very interesting. Entirely too little attention is paid to it. We want the whole life. How utterly ignorant we are, for instance, about the larvæ of *Catocala*? Let all faulty females be confined, and they may lay impregnated eggs; try the young on willow, walnut or oak leaves. The female is known by the heavy body tapering to a point; the male terminates in a pair of claspers. Some species are readily determined by their antennæ, the males being more broadly pectinated than the females.

The larvæ of wood-boring beetles can be raised in tin or glass on wet saw-dust (not pine); any mixed hardwood or poplar will do. I have kept them so six and eight months, changing the saw-dust once a month. But they are very tiresome, as one may have to keep them a year or two.

ON A NEW SPECIES OF COSSUS.

BY J. A. LINTNER, N. Y. STATE MUSEUM NAT. HIST., ALBANY.

Five years ago, I discovered at Center, in the trunks of poplar trees (*Populus tremuloides*) several pupal cases of a *Cossus*, which, by their differing from the other cases known to me, of *C. Robinie* and *C. querciperda*, I had reason to believe was an undescribed species. This year, on the 14th of June, on examining some infested trees, several pupal cases were discovered projecting half-way from the trunks, and an imago, which had apparently just emerged, and was resting on the stump of a broken limb. The colors of the moth so exactly simulated the surface on which it rested that it was with difficulty observed, even when looking directly at it. The moth, in all probability, is an undescribed species, for, from the description given by Walker of a *Cossus* found at Hudson's Bay, and named by him *C. populi*, it must differ from that species.

In recognition of the very large number of rare Lepidoptera which the Center locality has yielded and still continues to give to persistent exploration, I propose for it the name of *Cossus Centerensis*.

The female, in its appearance, approaches nearer *C. querciperda* than any other of our species. The collar and thorax are black, edged with grey scales. The abdomen is black above, interspersed with grey scales toward its tip, and more thickly beneath. The primaries are black over rather more than their inner half, with some grey scales a little within the centre of the wing; the centre portion of the wing beyond the reniform is greyish. The wing is traversed by broken, black, transverse lines, of which twenty or more can be counted on the costal margin; three or four of those on the outer portion are more continuous and conspicuous than the others. The fringe is marked with black scales opposite the veins. The secondaries are nearly transparent, darker along their inner margin, showing some faint reticulations, which are more conspicuous beneath.

The male strongly resembles the female, instead of presenting the marked contrasting differences found in *C. robinia* and *C. querciperda*. Its wings are only a little more projected apically than in the other sex.

Expanse of wings of the pair in my collection, ♂ 2 inches; ♀ 2.5 inches. Length of body, ♀ .95 inch.; ♂ 1.20 inch.

Subsequently to the capture of the above, several additional examples have been taken in the same locality. On the 18th June four specimens were collected by Mr. Meske.

NOTICE OF MR. BUTLER'S REVISION OF THE SPHINGIDÆ.

BY A. R. GROTE,

Director of the Museum, Buffalo Society Natural Sciences.

The object of this notice is to call the attention of American Entomologists to a most excellent and complete "Revision of the Family Sphingidæ," by Arthur G. Butler, of the British Museum, which has appeared in the Transactions of the Zoological Society, London, in quarto form. A proper arrangement of the Sphingidæ of the world is a work requiring both extensive material and great experience and tact, of which

Mr. Butler has shown himself to be equally possessed. It is not my intention at this time to discuss minor points (such as Mr. Butler's citation of *Philampelus satellitia* Harris to Linné's species of that name instead of to *pandorus*, where it belongs), or the larger questions as to the number of groups, Mr. Butler separating the *Ambulicine* from the *Cheerocampina*, while Grote and Robinson in 1865 left them united. The arrangement, indeed, is virtually that of our synonymical catalogue of 1865; the genus *Acherontia*, not represented in America and left out of consideration by ourselves, is made into a separate sub-family *Acherontiine* by Mr. Butler. I wish merely to note here the changes which I am at present willing to admit in the arrangement proposed in the "Check List of North American Sphinges" published by myself in 1875.

Haemorrhagia G. & R.

I do not admit that *Buffaloensis* and *uniformis* are identical. The former is smaller sized and there is a slight toothing or unevenness of the inner margin of the terminal band of the primaries. The discal cell is reduced and the transverse scale line tends to be absorbed by the scales clothing the median vein. Nor do I admit that Kirby's *ruficaudis* is the same as *uniformis*; I have shown that Kirby's description boldly contradicts it. There is some warrant for believing that Kirby intended *diffinis* or a species of *Hemaris*, as I have shown, CAN. ENT., 6, 170. Mr. Butler's *ruficaudis* is probably *uniformis*. The Albany collectors take both *Buffaloensis* and *uniformis* (Mr. Lintner has reared *Buffaloensis*), and we may look for further careful and consequently decisive information from them in regard to these points. Although Mr. Butler speaks adversely, and perhaps a little vexatiously, on p. 518, as to the validity of the genus; on p. 521 he says of *Haemorrhagia*: "This may, perhaps, be a genus, the species being more densely scaled than in *Hemaris*, and having consequently a somewhat different aspect; on the whole, however, I prefer to regard it for the present as a section." The reason, if I remember rightly, that we were not certain of the generic position of *radians* was that we did not know the species, nor have I seen it since 1865.

Callenyo Grote.

This term should be employed, I think, for *carinata* as distinguished by Mr. Butler from *Aleuron* (*chloroptera*, etc.).

Everyx Boisd.

Having in 1865 restricted Walker's term *Darapsa* to *rhodocera*, I should not again have used it for this genus. I abandoned my restitution of Hübner's term *Otus* for this genus because the term is preoccupied in ornithology. Boisduval's term must stand for the species; which are apparently four in number, *syriacus* from Asia, and *charilus*, *myron* and *pholus* (W. J.) from America.

Elibia Walk.

To this genus Mr. Butler refers *Chaerocampa versicolor* of Harris.

Smerinthinae.

The genera proposed by myself are for the most part adopted. I am not now prepared to accept the extension of *Calasymbolus*. The following change seems to be proper:

Triptogon Brem.

To this genus should be referred the *Smerinthus modesta* of Harris.

[Since writing the above, Mr. Butler has kindly replied to my note to him conveying the substance of the foregoing remarks as to *C. astylus*. I feel authorized to take *S. geminatus* as a new generic or sub-generic type under the name *Eusmerinthus*, differing from *ocellatus* of Europe and *ophthalmicus* of California in the shorter subcostal nervules of fore wings, the angulated external margin, while the median vein runs close to the subcostal for one-third its length; while the median branches are shorter, the wing may be seen to be markedly distinct in form. In the hind wings the apices are more rounded and the outline differs by the indentation before anal angle. The antennae are comparatively shorter. I am indebted to Mr. Butler for sketches and notes defining this group, in which I would include *cerisii*, *coccus* and *Kindermanni*.]

Sphinginae.*Isognathus* Feld.

Mr. Butler omits to note that I adopted this genus for *rimosa* and *congratulans*, Tr. Am. Ent. Soc., 185. I am not now in possession of any of my material of the species of *Dilophonota*. I think that Mr. Butler has been rash in his conclusions, in view of the fact that he had no material from Cuba before him. Boisduval adopts my identification of

oenotrus, and, on the whole, I am decidedly of opinion that Mr. Butler has again brought confusion into the difficult group by his synonymy, which is at variance with that given by Dr. Boisduval and myself.

Protoparce Burm.

As having priority over *Macrosila* Walk., Mr. Butler refers our species to this genus of Burmeister's. Boisduval claims the term *Macrosila* for *tetrio*, but for this species *Pseudosphinx* has priority.

LIST OF CANADIAN DIPTERA.

BY WM. COUPER, MONTREAL, P. Q.

The following list of Canadian Diptera has been compiled from British Museum catalogues for 1848 and '49. The greater number of the species were described by the late Francis Walker. Those from Hudson's Bay were collected by Geo. Barnston, Esq., of Montreal, when residing at St. Martin's Falls, Albany River. The material from Nova Scotia was presented by Lieut. Redman to the British Museum. I have not included the species collected by Mr. Doubleday in the United States, nor those recorded as coming from North America. A few species from Newfoundland and New York Factory are also omitted.

FAM. I. TIPULARIÆ.	<i>Chironomus nigritibia</i> , Hudson's B.
<i>Sec. I. Culiciformes.</i>	“ <i>albistria</i> “
	“ <i>crassicollis</i> “
<i>Culex stimulans</i> , Nova Scotia.	“ <i>unicolor</i> , Nova Scotia.
“ <i>impatiens</i> , Hudson's Bay.	“ <i>lasiomerus</i> , Hudson's B.
“ <i>punctor</i> “	“ <i>festivus</i> “
“ <i>impiger</i> “	“ <i>lasiopus</i> “
“ <i>implacabilis</i> “	“ <i>attenuatus</i> “
“ <i>provocans</i> , Nova Scotia.	“ <i>flavicingula</i> “
<i>Chironomus bimacula</i> , Hudson's B.	“ <i>fimbriatus</i> “
“ <i>confinis</i> “	“ <i>trictiomerus</i> “

Chironomus brunneus, Hudson's B.	Mycetophila parva, Hudson's Bay.
" pellucidus "	" plebeja "
Tanypus decedens "	" obscura "
Ceratopogon transiens "	" despecta "
" parvus "	Sciara exigua "
" obscurus "	" robusta "
Asthenia americana "	" atrata "
Lasioptera parva "	" perpusilla "
Cecidomyia spongivora "	" polita "
Psychoda degenera "	" abbreviata "
Pedicia albivitta, Nova Scotia.	Simulium decorum "
" contermina "	" invenustum "
Limnobia simulans, Hudson's Bay.	Scatopse nitens "
" badia, Nova Scotia.	" obscura "
" cana, Hudson's Bay.	" pusilla "
Tipula triplex, Nova Scotia.	Arthria analis "
" duplex "	Penthetria atra "
" borealis "	Dilophus serraticollis "
" maculipennis "	" fulvicoxa "
" frigida "	Bibio humeralis, Nova Scotia.
" dorsimacula "	" scita "
" alterna "	" vestita "
Ptychoptera metallica, Hudson's B.	" fumipennis, Hudson's Bay.
Hesperinus brevifrons "	" striatipes "
Bittacomorpha clavipes, N. S.	" gracilis, Nova Scotia.
Anisomera longicornes, Hudson's B.	
Chionea aspera "	FAM. II. XYLOPHAGI.
Trichocera bimacula, Nova Scotia.	Beris quadridentata, Hudson's Bay.
Asindulum tennipes, Hudson's Bay.	Xylophagus fasciata "
Diomonus nebulosus "	
Sciophila rufilatera "	FAM. III. TABANII.
Leja unicolor "	Tabanus calens, Nova Scotia.
" varia "	" Tarandi, Hudson's Bay.
" trifasciata "	" flavipes, Nova Scotia.
Mycetophila bifasciata "	" affinis, Hudson's Bay.
" propinqua, Nova Scotia	" zonalis "
" contigua "	" melanocerus "
" lata "	

Tabanus vicinus, Hudson's Bay.	Thereua conspicua, Nova Scotia.
“ incitus “	“ senex “
“ frontalis, Nova Scotia.	
“ intermedius, Hudson's B.	SUB-ORDER—PROBOSCIDEÆ.
“ imitans “	
“ gracilis, Nova Scotia.	FAM. VII. BOMBYLIARII.
“ marginalis “	
“ simulans “	Anthrax oedipus, Nova Scotia.
Chrysops vittatus “	“ fascipennis “
“ furcatus, Hudson's Bay.	“ analis “
“ moereus, Nova Scotia.	“ vestita “
“ sepulchralis, Hudson's B.	“ fulviana “
“ carbonarius, Nova Scotia.	“ bastardi “
	“ lateralis “
FAM. IV. LEPTIDES.	Bombylius pygmaeus, Hudson's B.
	“ major “
Rhagio intermedius, Hudson's Bay.	Dasyopogan sexfasciata, Nova Scotia.
“ mystacea, Nova Scotia.	“ argenteus “
Leptis proxima “	“ falto “
“ reflexa “	“ lutatius “
“ quadrata “	Laphria ætatus, Hudson's Bay.
“ fumipennis “	“ posticata, Nova Scotia.
Atherix variegata, Hudson's Bay.	“ thoracica “
	“ sericea “
FAM. V. XYLOTOMÆ.	“ sacrorator “
	Asilus lecythus “
Thereua vicina, Nova Scotia.	“ apicalis “

A NEW PLUSIA ALLIED TO HOCHENWARTHII.

BY A. R. GROTE,

Director of the Museum, Buffalo Society Natural Sciences.

M. C. R. v. Osten Sacken has been kind enough to send me a few Noctuidæ collected by himself in Colorado and the West. Among them

is a new *Plusia*, allied to *alticola* and the yellow-winged European species, which I dedicate to its discoverer under the name of *Plusia Sackenii*. It is larger than its allies, and to be at once distinguished by the transverse posterior line being inwardly bent opposite the cell. Fore wings dark gray, with the median space below the median vein rich brown, reminding us of *ampla*. Interior line golden, arcuate, interrupted on cell, inaugurated on costa by an interior golden patch. Cell shaded with light pinkish gray. Reniform moderate, upright, apparently open to costa, with fine golden annulet, preceded by a dusky costal shade. Metallic mark smaller than in allied forms, and open or v-shaped outwardly. Beyond it an elongate pale golden spot separate. These metallic marks are set in a richer brown. Transverse posterior line geminate, concave, slightly trembled superiorly, below median vein (or rather vein 3) with a fine golden interior line and edged by reddish brown on median space, while there is a spot of same color outside the line at its rounded termination near internal angle. Subterminal line indicated by difference in shade color, dentate. Hind wings light yellow above and below, with a moderate black marginal band. Costa beneath somewhat brownish, and a small discal dot is apparent; above the base is dusky and there is a faint and narrow lunule.

This species was taken at Idaho Springs, Colorado, on Aug. 15th; the specimen bears the number "2." It differs strongly by the ornamentation of the primaries from any known species of the yellow-winged group. The internal margin of primaries is more sinuate and the habitus is rather that of *ampla* and allied forms with dusky secondaries. The new species expands 34 mil.

I avail myself of this opportunity to correct two errors in certain of my previous communications. On page 89 of this volume I should have given Prof. Lintner and not Mr. Hill the credit for the observation on *edusa* and *lunata*. We owe very much to the patient investigations of Prof. Lintner with regard to our moths, and I need no excuse to praise his carefulness nor the superb condition of the Albany collections under his charge.

On page 106 a correction must be made: for *vautalis*, read *rantalís*.

BOOK NOTICES.

Economic Entomology, by Andrew Murray, F. L. S., London, England. Aptera, 8vo., pp. 433, profusely illustrated with wood-cuts.

This useful volume is the first of a series of hand-books which are intended to serve as guides to the different departments of the collection of Economic Entomology in process of formation at the Bethnal Green branch of the South Kensington Museum, and also as practical treatises for the use of the public generally. In order the better to serve its primary purpose of guide to the collection, the contents of the several cases are described in this volume in the order in which they present themselves to the visitor, containing in some instances other specimens than insects. The work opens with a short chapter on Crustaceans likely to be mistaken for insects; for example, species of *Oniscus*, *Porcellio* and *Armadillo*. Next in order are the Myriapods—Julidæ and Scolopendridæ; then Scorpions and their allies; Spiders, Mites, Lice, Thysanura (Spring-tails) and Lepismidæ. Three new genera and thirteen new species are described in this volume.

The descriptions are briefly and plainly written, and the habits and life history of the species are delineated in a pleasing and popular manner. The work is well printed in good, clear type, and most of the illustrations are excellent. Already we have found it very useful, giving in a condensed form a vast amount of information not otherwise readily obtainable. We heartily commend this work to our readers, and trust that the talented author may be spared to complete the series proposed, which will appear in the following order: 2nd vol., Bugs; 3rd, Locusts, Grasshoppers, Cockroaches and Earwigs; 4th, Two-winged Flies; 5th, Bees, Wasps, &c.; 6th, the Dragon Flies and May Flies; 7th, Butterflies and Moths, and lastly, the Beetles.

Ninth Annual Report of the Noxious, Beneficial and other Insects of the State of Missouri. By Chas. V. Riley, State Entomologist, March, 1877; 8vo., pp. 129, with 33 illustrations.

We welcome the ninth of this series of valuable reports with much pleasure. The following are the subjects treated of in the order in which they appear: The Gooseberry Span Worm; the Imported Currant Worm; the Native Currant Worm; the Strawberry Worm; Abbott's White Pine

Worm ; LeConte's Pine Worm ; the Colorado Potato Beetle ; the Army Worm ; the Wheat-head Army Worm ; the Rocky Mountain Locust ; the Hellgrammite Fly, and the Yucca Borer. The bulk of the report, sixty-seven pages in all, is occupied with details in reference to that terrible scourge of the West, the Rocky Mountain Locust, *Caloptenus spretus*, the other and less important subjects being much more briefly treated of. These reports contain an immense fund of valuable information, and have done much to popularize Entomology in America.

Harpalus caliginosus from Nature, by Franklin C. Hill ; two plates. We are indebted to Mr. Franklin C. Hill, of Princeton College, N. J., for copies of these excellent plates, recently published. They are beautifully finished and conveniently mounted on cards, 5 x 8, with all the organs and divisions both of the under and upper surface, distinctly named. They will prove a valuable help to beginners, and indeed to all who are not already familiar with the names of the different portions of the body of Coleopterous insects.

CORRESPONDENCE.

AN INSTANCE OF RETARDED DEVELOPMENT.

On the 24th of September, 1875, I took a great many large caterpillars of a reddish buff color, with a dark dorsal stripe, feeding on willow. They soon went down to the soil and spun themselves up in hard brown cocoons, when I put them away for the winter. In the spring of 1876 I brought them to the heat, and after waiting some time and nothing appearing, I opened one of them and found the caterpillar alive and as fresh in color as when it first spun up. In this condition they continued until the fall, when I again put them away for the winter. In the spring of 1877 I again examined them, and found them fresh and with signs of life, but as the season advanced I opened some and found them dead, and the remainder having assumed a shrivelled look, I laid them aside as hopeless. On the 17th of June my attention was attracted by a scratching noise, which I found came from these cocoons, which were now reduced

in number to six. On lifting, I found one of them rattling and shaking with great vigor; I returned it to the box and waited three days, when nothing appearing, I broke it open and a fully developed fly walked out in a very feeble condition. Its length was 1 inch, expanse $1\frac{3}{4}$ inches. Head, thorax and legs black, antennæ and feet yellow; abdomen brown; a yellow spot between thorax and abdomen; wings light smoky brown.

J. A. MOFFAT.

Hamilton, June 26th, 1877.

MELITAEA PHAETON.

I have caught this summer over fifty specimens of *Melitaea phaeton*; they have been extremely common here. I saw a gentleman recently from Ottawa who told me that he could have caught them by the hundred in that neighborhood, they were so very abundant.

GEO. W. PEARSON, JR., Montreal.

HOW TO DESTROY CABINET PESTS.

There is nothing more annoying to the experienced, or more discouraging to the young collector, than to have his specimens destroyed by mites, by the *Anthrenus*, or by the larva of *Dermestes*. Against the ravages of these enemies there is no security. Paste and paper fail to exclude them; camphor is only a partial protector, and the only safeguard of our cabinets is constant vigilance, and the instant destruction of the offenders when observed.

For this purpose many methods have been suggested—saturation with turpentine, immersion in alcohol or benzine, exposure to a heat of 210 degrees in a drying closet or oven, &c.; but most of these ways are apt to injure, or even destroy the specimens, while the last is often ineffective. Having, however, found a certain and rapid method of dealing with these intruders, I desire, through your pages, to make it known to my brother naturalists.

Some two years ago, I had a magnificent female *Platysamia* (*Saturnia*) *cecropia*, measuring $6\frac{7}{8}$ inches across the wings when set out, which came out of a chrysalis in my breeding box. I succeeded in killing and stretching it without damage, and when dry, transferred it to my interim box, which hung against the wall. In about a fortnight I was annoyed to

see its antennæ cut off, the head and thorax denuded of most of their down, and some large holes made in the abdomen. After some consideration, I placed a gallipot, containing about 25 grains of cyanide of potassa roughly bruised, with a very little water, in the bottom of the case. I then introduced six drops of sulphuric acid, and let down the glass. In less than a minute I had the satisfaction of seeing a fine, stout *Dermestes* larva writhing in the death agony on the bottom of the box. Since that time I have tried the same several times, and always with the same success. It is equally applicable to the extermination of moths, &c., in stuffed birds and quadrupeds, as no animate being can inhale this gas and live.

JAMES T. BELL, Belleville, Ont.

[NOTE.—Great caution would be necessary in using this remedy, not to inhale any of the highly poisonous gas which by the use of the ingredients named would be rapidly generated.—ED. C. E.]

In October, 1875, I found *Meloe angusticollis* Say in large numbers in our potato fields, but could not find any feeding on the vines. About 25 or more found their way into our gardens, and almost completely devoured a few plants of *Anemone japonica* (*Ranunculaceæ*). We have a large collection of annual and perennial plants, but the *Meloes* could find nothing to suit their tastes but these *Anemones*. We had no *Ranunculus acris* on our grounds.

Yours respectfully,

CHAS. D. ZIMMERMAN, Buffalo, N. Y.

LIMENITIS PROSERPINA.

Limenitis proserpina has been taken in this locality now and again, but rarely more than one in a season, and always in connection with *arthemis*.

J. A. MOFFAT, Hamilton, Ont.

CAPTURES AT SUGAR.

I have taken at sugar at Morristown, N. J., *Ellibia versicolor*, *Everyx choerilus* and *E. myron*.

GEO. W. PECK, New York.

AGROTIS FENNICA WANTED.

I very much want four or six good specimens of *Agrotis fennica*. I believe the insect, though certainly not common, is by no means a rarity in some localities in Canada, but I am at a loss to whom to address myself.

W. T. DOBREE, Hull, England.