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# The Canadian Entomologist.

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No. 8.

## IBALIA MACULIPENNIS, HALDEMAN.

BY W. HAGUE HARRINGTON, OTTAWA.

The genus to which this very interesting species belongs differs so widely from the rest of the Cynipidæ that it has been separated from them as a sub-family, under the title *Ibaliinæ*. Its members can be readily recognized by the cultriform abdomen and more strongly veined wings, as well as by their greater size. The cultriform—*i. e.*, knife-shaped—abdomen is in itself remarkable enough to attract the attention of all who may chance to see the insects.

From Canada two species are recorded: *ensiger* Nort., ♀, and *maculipennis* Hald., ♀. The former I have not yet been able to find here, but Provancher (Faune Ent. Can., II., 554) records it as frequently seen. Both species were described from the United States (Pa.), with four others: *anceps* Say. (Ark.), *Montana* Cress. (Col., ♀), *rufipes* Cress. (Nev., ♀), and *scapellator* Westw. (Ga., ♂). The last is the only species of which the ♂ appears to be known. The present species was described by Haldeman (Proc. Acad. Nat. Sci., Phil., III., 127) as follows:—*Ibalia maculipennis* ♀.—Yellow; meso and meta-thorax black, except the scutel and two longitudinal bands above, and a spot beneath the wings; eyes, apex of antennæ, base of coxæ and middle of femora (the greater part of the posterior ones) black; posterior tibiæ blackish toward the apex; wings yellow, apex and a central spot fuliginous. Seven lines long, eleven expanse. South-eastern Pennsylvania, in May and June."

A more detailed description of the ♀ is given by Provancher (Faune Ent. Can. Add., 165), and it is figured in the report of the U. S. Entomologist for 1877, but so far as I know there has been published no description of the ♂. It differs from the ♀, however, but slightly in general appearance, except in being darker in colour, especially the thorax. The abdomen is nearly straight above, instead of being curved as in the ♀, and the terminal segments are slightly swollen, so that,

viewed from above, the apical third of the abdomen appears thicker than the middle segments.

The antennæ have 14 joints, those of the ♀ having only 13. The third joint is longer and considerable stouter than the succeeding ones, and is deeply and obliquely excavated on the outer side, a little beyond the middle. Can this groove be of any use for holding the antennæ of the ♀? The object of the present note is to call attention to the habits of the species, and to indicate where it may be looked for; points upon which little, if anything, is known, I believe. Mr. Ashmead, to whom I sent a pair of these insects, wrote to me in regard to them:—"I know nothing of the habits of the *Ibaliina*, excepting what Giraud wrote, "Il est tres vraisemblable que sa larve vit parasite de quelque grande Coléoptère lignivore." "

The fact that an entomologist so well acquainted with the Cynipidæ, and the literature treating of them, had to make this admission, induces me to think that the few observations I have been fortunate enough to make (incomplete as they are) will be welcome to students of these insects, and may, perhaps, furnish a clue to enable other entomologists to work out the full life histories of the members of this anomalous and interesting sub-family.

My first acquaintance with *Ibalia maculipennis* was made in 1883, as I find by the following memo. in a note-book:—"June 28th. Two Hymenoptera, apparently ovipositing in maple." The note is illustrated by a rough sketch of the insect, sufficient to identify it. At this time my attention was given chiefly to Coleoptera, and other orders were only incidentally collected, so that no special value was attached to the observation. The following summer a specimen was taken on 26th June, but its label does not give any particulars, and no record of its capture is found in my note-book.

In 1886 I was fortunate enough to capture six specimens, of which three were ♂ and three ♀. My friend, Mr. Guignard, had taken a ♀ upon an old maple on 16th June, but it was five days later that I found my first two ♀ ♀. They were ovipositing upon an old, badly decayed maple; and in one instance the ovipositor was deeply inserted. Upon the same tree I captured another female, also ovipositing, on the 23rd June; and upon the same day secured my first male upon another old

maple about 100 yards away. The other two males were taken on 25th June.

None of the insects were seen in 1887, although carefully looked for in that locality, but during the past season they were again observed upon a different kind of tree and in a different locality. On 10th June, Mr. Fletcher captured two females ovipositing in a beech, and on the 24th June, while with him we each took a female upon beech trees in the same grove. That taken by myself was dead, having met with an accident while ovipositing.

Having thus recorded the dates of capture of the specimens coming under my observation, a few remarks may be made upon the manner of oviposition. When the ovipositor is not in use it forms a complete coil within the abdomen, which is really but a flat sheath to contain it, and so transparent that it is perfectly visible. The triangular ventral scale, which is the full length of the abdomen, closes into it like a knife-blade into its handle, and the ovipositor is completely protected. When the ventral scale is deflexed the abdomen has much the outline of a lobster's claw, and the ovipositor when protruded is seen to be fully an inch in length, or longer than the insect itself.

During the act of oviposition, the insect, by means of its long legs, keeps its body far enough from the surface of the tree to enable it to deflex the ventral scale at a right angle to the body, with the tip touching the bark. A perfect support is thus formed for the ovipositor, which is gradually worked into the tree in much the same manner as that of *Thalessa*.

All the insects observed ovipositing have been on the trunks of large trees, at an average distance of about two feet from the ground. The six individuals seen in 1883 and 1886 were all upon old maples, near Hull, on the Quebec side of the Ottawa river. The trees were old and rapidly decaying (in two instances already dead), having a diameter of nearly two feet, and with the bark proportionately thick, so that the ovipositor was none too long to reach the wood, unless the insect availed itself of crevices in the bark. The insects taken last June were all ovipositing upon large beeches in a grove within the city limits, and within a few minutes' walk of my own house. Mr. Fletcher informs me that each of those captured by him had the ovipositor deeply inserted, and that he had much difficulty in pulling it out—breaking it, indeed, in one instance. My own specimen,

as before stated, had died at its post, where it was held by the inserted ovipositor.

Here, unfortunately, our observations end, and we can only form conjectures as to the life of the larvæ. Provancher remarks of the genus that, "Their larvæ live as parasites in the body of other larvæ;" and with reference to *insiger*, he says: "We have frequently met this insect in company of Braconids, upon trunks of dead fir-trees, searching without doubt to deposit its eggs in the body of lignivorous larvæ." His authority for the first statement is not given, but probably he has accepted the conjecture of some European Entomologist.

Prof. Riley has demonstrated, in the case of *Thalessa*, how unsafe it is to accept conjecture as fact, however probable it may seem. Still, in the absence of a complete knowledge of an insect's life, one must often fill in by conjecture the missing links, and wait for further investigations to prove their value. As regards *Ibalia maculipennis*, there are two ways in which the larvæ may live, viz., either directly upon the dead, or decaying woody tissues of the tree, or in or upon the bodies of larvæ which do so subsist.

The former course seems less probable, and I am inclined to think with those who believe that it is parasitic upon lignivorous larvæ. What species, then, is it likely to be parasitic upon? The maple trees upon which it occurs are badly infested by *Tremex columba*, *Xiphydria albicornis* and *Dicerca divaricata*, and in a less degree by other insects. The beech trees are also infested by the *Tremex* and *Dicerca*, and like the maples are much frequented by *Thalessa*. Is *Ibalia* parasitic upon its Hymenopterous (closely connected) relatives, or upon the Coleoptera?

Now that its time and place of occurrence are known, I hope that its history may soon be worked out in full. Its season of appearance is apparently brief, as all the specimens from this locality have been taken in June—the earliest upon the 10th, and the latest on the 28th. The insect might thus readily escape notice, even when not rare, as they are by no means conspicuous, either when ovipositing or crawling upon the rough trunks they frequent. But, if systematically searched for during the month of June upon old trees, they would probably be found by many of our entomologists.

While not abundant, these insects cannot be classed as especially rare, for besides the specimens mentioned in this note, I have seen several which

were in the collection left by the late Mr. Billings, of this city, and which were probably captured in this vicinity. I have also found a ♂ among some *Hymenoptera* sent to me for examination by Mr. Evans, of Trenton, Ont., and have been informed by Provancher that a specimen (without abdomen) was shown to him some years ago at St. Hyacinthe, Que.

One female taken in 1883 had the cavity of the abdomen swarming with small mites, which also covered the ventral scale, and were thickly scattered along the protruded ovipositor. They appear to belong to species distinct from any yet noticed, although I have found many insects which infest decaying wood to be subject to the attacks of such parasites.

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## A LIST OF THE BUTTERFLIES OF PHILADELPHIA, PA.\*

BY HENRY SKINNER, M.D., AND E. M. AARON.

(Continued from page 131.)

*Pyrameis Cardui*.—Usually common; some years quite rare.

*Junonia cœnia*.—Quite local; never very common. Mr. Scudder, on page 501, speaks of its "rapid, strong and enduring flight." This would seem to indicate that the habits of this insect in the New England States differ materially from those in this locality or further south. It is rare that this butterfly is here observed over a foot from the ground, and then its flight is most erratic, and usually consists of a few fluttering strokes of the wing followed by an idle sail. This is also the manner of flight from Virginia to Florida, according to the observations of E. M. Aaron.

*Limenitis ursula*.—Rare.

• *Limenitis disippus*.—Common.

*Neonympha canthus*.—Rare. A few specimens have been taken near Gloucester, N. J.

*Neonympha eurytris*.—Common in restricted localities.

*Satyrus pegala*.—Exceedingly rare; taken at Mount Holly, N. J., by E. M. Aaron in 1884. It is recorded as from Gloucester, N. J., by the collectors of twenty years ago.

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\* The Authors wish to state here that as they belong to the two opposing schools in the matter of the capitalizing of specific names, they have left that matter to the judgment of the Editor. [The Editor sent the MS. unchanged to the printer.]

*Satyrus alope*.—Rare ; but few specimens known to have been taken nearer than Westville ; also at Mt. Holly, N. J., where it is quite common at times.

*Libythea Bachmanni*.—Exceedingly rare. Two specimens taken in West Fairmount Park.

*Thecla halesus*.—Very rare. Two or three were taken some years ago near Westville, N. J.

*Thecla M-album*.—Mr. Edwards, in his catalogue of 1884, records this species from Pennsylvania ; but, though taken on the New Jersey coast, we are not aware of its having been taken in this portion of our State.

*Thecla humuli*.—Not common.

*Thecla calanus*.—Not common.

*Thecla smilacis*—Exceedingly<sup>1</sup> rare.

*Thecla Augustus*.—Rare. Westville, N. J.

*Thecla irus*.—Rare. Only reported from Westville, N. J.

*Thecla Henrici*.—Rare. Westville, N. J.

*Thecla niphon*.—Rare. Fairmount Park and Westville, N. J.

*Thecla Titus*.—Exceedingly rare. Cobb's Creek.

*Feniseca Tarquinius*.—Very local ; never common. As a sample of its extremely local distribution, it may be stated that at Chamounix, in West Fairmount Park, this species is found flying around one tree, where, perhaps, 90 per cent. of all known to us to have been taken in this vicinity have been captured. There are several large beech trees there on which considerable numbers of *aphidæ* are nearly always to be seen.

*Chrysophanus hypophleas*.—Common. An albino form of this species was taken in Fairmount Park several years ago.

*Lycæna pseudargiolus*.—This species and its varieties are moderately common.

*Lycæna comyntas*.—Very common. Mr. Scudder quotes rather doubtfully the statement made by E. M. Aaron, in Vol. IX. of this journal, that this species was observed depositing its eggs on ragweed (*Ambrosia* sp.). Such, however, was the case.

*Ancyloxypha numitor*.—Common.

*Pamphila massasoit*.—Local ; never very common. Swamps west of George's Hill and Westville, N. J.

*Pamphila zabulon*.—Very local ; not common. The form *hobomok* is not so rare ; occasionally it is found in considerable numbers along Cobb's Creek. *Pochahontas* is a much rarer form.

*Pamphila sassacus*.—Very rare. West Park.

*Pamphila Huron*.—Exceedingly rare. Cobb's Creek.

*Pamphila phyleus*.—Rare. West Park and Cobb's Creek.

*Pamphila otho*.—The typical form is only known to have been taken in one example near the Bartram Garden. The form *egeremet* is not common, though occasionally taken in some numbers near George's Hill reservoir.

*Pamphila Peckius*.—Exceedingly common. An odd form of this usually very constant species was taken near Benedict Arnold's house, in East Park. It is characterized by a marked suffusion of the black ground colour above, leading to a nearly complete obliteration of the markings on the secondaries, and the greatly restricted area of the light coloured markings, beneath which stand out separate spots rather than suffused areas, as is usual.

*Pamphila mystic*.—Though this species is not known to have been taken in the immediate vicinity of Philadelphia, we have thought it well to record it as having been captured in several examples at Penn's Manor, above Bristol, Penn.

*Pamphila cernes*.—Very common.

*Pamphila manataagua*.—Not common.

*Pamphila verna*.—Moderately common. The form *pottawattomie* has occasionally been taken here.

*Pamphila metacomet*.—Not common.

*Pamphila accius*.—Very rare. Cobb's Creek.

*Pamphila panoquin*.—Very rare. Cobb's Creek and George's Hill.

*Pamphila ocola*.—Very rare. Cobb's Creek and Eastwick's.

*Pamphila Pontiac*.—Very rare. West of George's Hill.

*Pamphila Delaware*.—In his original description, Mr. W. H. Edwards states that his types were taken in Philadelphia by Mr. Newman. This is the only authority that we have for attributing this species to our fauna.\*

\* Since the above was written, a single faded female specimen was taken, June 21st, by Master Joseph M. Aaron, at George's Hill Reservoir.



*Pamphila fusca*.—Not common, but has been taken in limited numbers in West Park and at Cobb's Creek. Mr. Edwards gives only "Gulf States" as the locality.

*Amblyscirtes vialis*.—Rare. Very local.

*Pyrgus tessellata*.—Common. The form *communis* has been taken in some quantity at Cobb's Creek and Fairmount Park.

*Nisoniades brizo*.—Rare. Westville, N. J.

*Nisoniades icelus*.—Very rare. Three or four examples have been taken near West Laurel Hill.

*Nisoniades ausonius*.—Not common.

*Nisoniades martialis*.—Very rare. George's Hill reservoir.

*Nisoniades juvenalis*.—Common.

*Pholisora catullus*.—Common.

*Eudamus pylades*.—Not common.

*Eudamus Nevada*.—Rare. Several specimens of this species have been taken in Fairmount Park. One of these is in the collection of E. M. Aaron, and, besides agreeing entirely with Mr. Scudder's description, has been determined as *Nevada* by Mr. W. H. Edwards.

*Eudamus bathyllus*.—Common.

There seems to be good reason to doubt the specific worth of these last three forms. It is quite likely that careful rearing will prove them to be forms of one widely spread species.

*Eudamus lycidas*.—Rare. Very local. Cobb's Creek and west of George's Hill.

*Eudamus tityrus*.—Very common.

*Eudamus proteus*.—Extremely rare. One specimen from East Park and two at Cobb's Creek.

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In addition to the above list of eighty-six species the following are added here as accredited to this region, but are rejected by us on account of insufficient testimony :

*Vanessa J-album*.—In his latest work Mr. Scudder credits this species to our fauna as "rare," (Blake)." Mr. Blake informs us that he has

only taken this species in one specimen in Venango County, this State, and is not aware whence Mr. Scudder derives his information.

*Thecla acadica*.—This species is also referred to this locality by Mr. Scudder, and Messrs. Blake and Edwards are quoted as authorities. We fail to find anyone who has taken it or knows of its capture in this vicinity.

*Chrysophanus thoe*.—This species is attributed to this region by Mr. Scudder as “‘rare,’ (Blake).” As in the case of *J-album*, Mr. Blake is sure that he has never seen the species in this locality.

*Chrysophanus epixanthe*.—In this case Mr. Blake is quoted by Mr. Scudder as stating that this species is “neither common or rare.” Mr. Blake is not aware that it has ever been taken hereabouts, but he has taken it at DaCosta, N. J., thirty miles from Philadelphia, on the Camden & Atlantic R. R.

*Hesperia unna*.—This species, not yet incorporated in any of our catalogues, is described as a new species from “Philadelphia,” by Carl Plötz, in his “Die Hesperinen-Gattung *Hesperia* Aut. und ihre Arten.”—Stettin Entomologische Zeitung, Vol. XLIV., p. 204, 1883. This species is not compared with any of its congeners, and the description is vague and meagre. It is placed between *brettus* and *phylæus* in Herr Plötz's arrangement of this genus. We are in doubt as to which of our known species it can be, but do not think it possible that it can be new.

While we feel, certainly with justice, that this list of eighty-seven species is a remarkable one for so restricted a locality, we do not suppose that it is entirely complete. If any of our entomologists can add to it or throw further light on the localities or numbers captured, we shall be glad to receive such information.

In closing, we desire to bear testimony to the great value of the work on our Eastern Butterflies, now being published by Mr. Scudder, a work that should be in the library of every student of the Lepidoptera. Our few critical allusions to this work above are made necessary, simply because the extreme care taken by Mr. Scudder to avoid error make those that have crept in the more observable, and, consequently, the more deserving of the pointing out.

Philadelphia, May 16, 1889.

## POPULAR AND ECONOMIC ENTOMOLOGY—No. 4.

BY JAMES FLETCHER, OTTAWA.

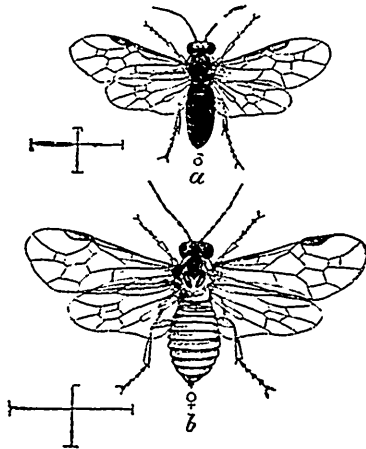
THE IMPORTED CURRANT SAW-FLY—(*NEMATUS RIBESII*, Scop.).

FIG. 7.



FIG. 8.

Amongst insects which every year make their presence noticeably apparent by their injuries, and thus win the distinction of being "First-class Pests" to the fruit-grower, not one, perhaps, is better known, nor, when not checked in its operations, more annoying, than the currant worm, the larval state of the imported currant saw-fly, *Nematus Ribesii*, Scop. (= *N. ventricosus*, Klug).

This is a European insect, which, although it has only been noticed in America for thirty years, has already spread over a large proportion of the settled parts. Early in the spring when the buds are bursting upon the currant and gooseberry bushes, active yellowish four-winged flies will be seen flying around the bushes or crawling over the unfolding leaves. These are the parents of the currant worms. The two sexes differ a good deal in appearance. At Fig. 7, they are both represented enlarged. The hairlines at the sides show their natural sizes. The male is shown at *a*. It is slightly the smaller, and is much darker in color. The head and thorax are almost black, with some dull yellow spots. The abdomen is dark above but yellow beneath and at the tip. The wings are glossy

with dark veins. The males are equally abundant with the females, but are not so often observed, from the fact that they are seldom found on the bushes, but fly near the ground and beneath the bushes as if to welcome the females when they emerge from the soil, beneath which they have passed the winter in their snug cocoons. The females are larger than the males, and of a bright honey-yellow color.

The greenish-white glossy eggs which are about  $\frac{1}{20}$  of an inch in length, are laid along the main ribs, beneath the leaves of gooseberries and currants, as shown at Fig. 8 (1). As soon as the young larvæ hatch, they at once attack the leaves upon which the eggs were laid, and eat small holes, as shown at Fig. 8 (2 and 3). They are very voracious, and their growth is very rapid indeed, little more than a week sufficing for them to pass through all their stages. These characteristics added to the large number of eggs laid by each female, make constant vigilance on the part of the fruit-grower a necessity, or he will find his gooseberry and currant bushes stripped of every leaf in a few days.

When the young larvæ come out of the eggs, they are about one-twelfth of an inch in length, with large heads and a semi-translucent body. At first they all remain on the same leaf, but as they grow large they separate and spread in all directions over the bush. They are green at first, then dark blueish green, covered with small black dots, each one of which bears a bristle, and lastly, after the last moult, pale green with yellow extremities.

When full grown they spin smooth oval brown cocoons, which, however, are sometimes of a greenish white colour. Those of the summer brood are generally on or near the surface of the ground, but at a considerable depth beneath it in the brood which passes the winter inside cocoons. The chrysalis state is assumed at once in the summer brood, and the perfect flies appear in about a fortnight. The autumn brood, however, passes the winter in the larval state inside the cocoons, and the larvæ only change to chrysalises a short time before the flies appear in the spring.

Notwithstanding that this insect is attacked by a host of parasitic enemies, it is generally necessary for the fruit-grower to apply active remedies. Of these, "White Hellebore" is the best. One or two ounces of this powder mixed in a little hot water at the bottom of a pail, and then

filled up with cold water, will give a sufficient quantity of the mixture to sprinkle a large number of bushes. This is most conveniently done with an ordinary clothes whisk. The powder may also be used dry; when mixed with four times its bulk of common flour, it should be puffed over the bushes after rain, when the dew is on them, or after they have been sprinkled with water. This is most conveniently done by means of the small hand-bellows, now obtainable at all chemists. With regard to the danger of using this material, I will quote from an excellent and very complete article upon this subject by Prof. W. Saunders, which appeared in our Ent. Soc'y, of Ont. Rep. for 1871-2, p. 32.

"It has been urged against hellebore that it is poisonous, and great outcries have been made against it on this account. It is quite true that hellebore is poisonous when taken internally in quantities, but if used in the manner we have indicated, no fear need be entertained of the slightest injury resulting from it. Examined immediately after a thorough sprinkling with the hellebore mixture, the quantity on any bunch of fruit will be found to be infinitesimal, and the first shower of rain would remove it all. If it be found necessary at any time to apply the mixture to bushes where the fruit is ripe and just ready to be picked, it might then be washed in water before using, which would readily remove every trace of the powder. During the past ten years many thousands of pounds of hellebore have been used in Europe and America for the purpose of destroying this worm, and we know of no case on record where injury has resulted from its use."

Another insect of the same family, and with very similar habits to the above, is the Larch Saw-fly, *Nematus Erichsonii*, the larvæ of which are now spreading rapidly over the Eastern United States and Canada. I have received enquiries concerning it from several of our members in different provinces of the Dominion, particularly from Nova Scotia and Quebec. The eggs of this species are embedded in the soft wood of the young shoots of the tamarac when growth first begins in June. The growth is stopped on the side where the eggs are deposited, and the twig becomes distorted and is eventually destroyed. This injury, however, is slight compared with the destruction of the foliage. There are at the present moment in Canada, from the Atlantic coast as far west as Ottawa, thousands of acres of tamaracs entirely stripped of their leaves. In a later number a fuller account of this injurious insect will be given.

## ADDITIONS TO THE CANADIAN LIST OF LEPIDOPTERA.

BY J. ALSTON MOFFAT, HAMILTON, ONT.

These names I have obtained from various sources :—

- Glaea inulta* Grote.  
*Nonagria fodicens* Guen.  
*Plusia Ni.* Hub.  
*Acidalia insularia* Guen.  
*Cymatophora humaria* Guen.  
*Glaucopteryx caesiata* Borkh.  
*Botis adipaloides* G. & R.  
*Eurycreon sticticalis* Linn.

For the following I am indebted to the kindness of Prof. Fernald :—

- Conchylis floccosana* Walk.  
*Ecopsis olinaceana* Fern.  
*Steganoptica fasciolana* Clem.  
*Gelechia alasella* Clem.  
*Gelechia bilobella* Zell.  
*Gelechia vagella* Walk.  
*Carposina cressentella* Wlsm.  
*Blabaphanes dorsistrigella* var.  
*flavivittellus* Fitch.

The collecting season of 1888 was, in this locality, somewhat peculiar. It opened up about the 10th of May with great promise—early moths appearing in considerable numbers. This was soon reversed—cool, dry weather setting in; and not until the second week of June did the weather become warm enough to produce a marked development of insect life. About that time I obtained some fine moths new to me: several of them being but single specimens of a kind are yet undetermined. Fall hunting was quite productive of some kinds of good moths. I spent the first two weeks of September sixteen miles south of the city. I could find nothing of any value by hunting in daytime; plenty would come to light when the evenings were warm; but these were mostly so cool that it was necessary to keep the doors closed for comfort, thereby reducing my chances. It was at this time that I secured a pair of fine, fresh *Glaea inulta*, a large and handsome moth, and the first of the genus reported to have been taken in Canada. I got the name of it from Mr. Hulst, by sending to him a specimen that had been given to me by Mr. Hanham, which he had captured in Missouri.

## THE NOCTUIDÆ OF NORTH AMERICA AND EUROPE.

*(Second Paper.)*

BY A. R. GROTE, A. M., BREMEN, GERMANY.

2.—Sub-family *Noctuinae*.Tribe *Bombycoïdi*.

The sub-family *Noctuinae* embraces the typical *Noctuidæ*, and we may take the genera *Agrotis* or *Hadena* as normal forms, from which we have a mass of more or less divergent structural groups. The characters which are made the basis of generic sub-division, according to a natural system which I find most plainly indicated in the writings of Stephens and Lederer, need not delay us here, for the reason that I have exposed them in previous writings. It remains for me to briefly point out that I have changed the basis for a classification of our North American genera from that of Guenée to that of Lederer, commencing in my first synonymical list, Buffalo, 1874, to bring them together in a preliminary shape. When, nearly thirty years ago, I commenced my study of these forms, there were not a dozen species named in any collection, public or private, in America. In my last (MS.) list are over 1,500 names, and three-fourths of this number are taken from my descriptions or identifications. This represents continuous work; for large collections were not at first in existence, and the new forms came in singly, or in small parcels, and had to be classified; so that, from this fact, the generic determinations were often tentative. Added to this, the difficulty of determining the species described by Guenée and Walker, and the absence of illustrations, produced a state of affairs in our knowledge of the *Noctuidæ*, which the student of to-day is largely exempted from. And *la verità è la pin ingrata delle dulcinee*.

The main mass of the *Noctuidæ* falls into three divisions, or sub-family groups, only separable by their comparative form. These are: the typical *Noctuidæ* (*Noctuinae*), the *Noctuæ nonfasciatae* of Borkhausen; the geometriform *Noctuidæ* (*Catocalinae*), the *Noctuæ fasciatae* of Borkhausen; and the pyralidiform *Noctuidæ* (*Deltoidinae*). The fact that the latter are not separable from the *Noctuidæ*, and are not *Pyralidæ*, was first shown by Herrick Schæffer.

In *one* North American genus, I have shown that vein 5 is midway

between 4 and 6 on the primaries. This is contrary to Lederer's definition, and, so far, is a single instance; vein 5 being, in all others examined by me and as laid down by Lederer, nearer 4 than 6 on both wings, while on the secondaries it is often weaker than the rest, or wanting. I do not feel sure that the neuration should absolutely guide us; it does not seem certain that, in the species not yet examined, it will precisely agree. The absence of an accessory cell is, in the *Noctuidæ*, exceptional, and as yet it cannot here, or in other families, be used as a character, except in a general way. In the *Sarothripinæ* and *Chloephorinæ*, for instance, sub-families of the *Bombycidae*, it seems to be wanting, as also in some *Lithosiinæ*, i. e.; *Nudaria*; but, as a general character, it may be said to be either usually wanting or usually prevalent, until every species has been examined and the neuration compared, which is far from the case. In my papers I used it as a general character, not describing particular forms; hence, while the statement may be modified from a larger knowledge of the neuration of all the genera and species, it does not imply a distinct error, such as was committed in the original description of the neuration of the genus *Cerathosia*, where vein 5, on hind wings, was stated to be absent, whereas it is present, and where the configuration of the accessory cell and emanating veins on fore wings were inaccurately given. The neurational distinctions given by Lederer, will not, then, positively distinguish the *Thyatirinæ*, which, in other respects, seem true *Noctuidæ*.

The sub-family *Noctuinae*, or typical *Noctuidæ* is, then, founded on comparative form, the hind wings being usually unbanded and the body hairy or tufted. I have divided it into various tribes, founded on comparative characters, grouping about some representative genus. The first of these is the *Bombycoidea* of Authors, in which the larvæ are hairy or bombyciform, and are often singular in appearance or habit. The moths often present some resemblances to the genus *Bombycia*, and again to the *Dasychininae*. In this tribe the head is usually sunken, the labial palpi short, often hanging (and this character marks bombyciform moths); the thorax has a posterior tuft, while the legs are unarmed. This latter character will warrant my reference of *Copablepharon* to the *Agrotini*. The caterpillars make cocoons, and are 16-footed. The European genera *Diloba*, *Eogena* and *Clidia*, with single or few species, do not seem to occur in North America. If we have a true species of *Demas* (Mr. Morrison's *Demas* is a Hadenoid form), then this European genus has a



representative, but I only know it from a description. The European genus *Trichosea* (for *ludifca* = *Diphthera*, incorrectly credited to Ochsenheimer, see Check List, 1876, p. 36) seems allied to the forms I have separated under *Charadra*, Walk. *Raphia*, Hubn, is represented by our two species, *frater* and *abrupta*—one with white, the other with fuscous or gray secondaries. Instead of *Panthea*, we have the American genus *Platycerura* of Packard, which has strong resemblances to the *Dasychirinae*. In *Arsilonche*, we have either a representative or identical species. So far as this tribe is concerned, the resemblance between the faunæ may be considered nearly as great as in the *Thyatirinae*.

#### Tribe *Apatelini*.

It seems difficult to separate the following genera from the preceding tribe. The labial palpi seem less dependent; there is still a posterior thoracic tuft, and the larvæ are still hairy or peculiar; some bore into wood or pith to pupate; a cocoon is generally made. But the form is smoother, approaching the typical *Noctuidæ*. *Diphthera* Hübn. (= *Moma* Auct., not Hübn.) has a representative species in our well-known *D. fallax*. *Apatela* Hübn, the typical genus, is resolvable into a number of groups, based chiefly on the larval form. I do not think that Butler is warranted in considering the species generically separable. He would refer the moths on this account to actually different families. But the moths are very similar in color and structure; and I consider the larvæ have undergone independent modification. The leading European groups are represented, and such species as the American *A. occidentalis*, *A. funeralis*, *A. vulpina*, described by myself, may be considered as a strictly "representative" species. The character of the genus is changed, and its limits perhaps reach with the Californian groups *Merolonche*, and the Eastern group *Eulonche*, not found in Europe. Our American forms outnumber the European three to one, and this preponderance will be found in most of the leading genera of the *Noctuidæ*, such as *Apatela*, *Hadena*, *Mamestra*, *Agrotis*, *Catocala*. Whether we can separate the *Bryophilini* as a distinct tribe, is doubtful. The passage seems to be formed by the American genera *Harrisimemna*, *Cerma*, *Polygrammate*, *Microcoelia*. These forms seem peculiar, as also the genus *Chytonix*, which follows *Bryophila*, although, I am not certain of this. Guenée has apparently described the type as a species of *Apamea*, and thus related to *Hadena*. The thoracic vestiture is, however, more like that of *Bryophila*, a lichen-feeding genus of

which we have one Eastern species, the *Bryophila lepidula* Gr. On the whole, the resemblance of the two faunæ is here, again, quite close. Genera with single species, peculiar to each fauna, occur, but the parentage is obvious, and but small modifications seem to be offered. These first tribes of the *Noctuinae* seem to belong to the circumpolar element in our moth fauna, with the *Thyatirinae*. The position formerly given by me to the American *Dicopini* seems susceptible of a change. If we place the *Agrotini* where Lederer puts them, these Dicopid genera, with a claw on the front tibiæ, seem to fall in better between the *Agrotini* with spinose, and the *Hadenini* with unarmed tibiæ. They have, especially *Dicopis*, a decided resemblance to the *Hadenini*; but the larvæ are apparently unknown, and may assist our classification by offering determinative characters.

The following table will assist in giving an approximate idea of the correspondence between the two faunæ. Allowance must be made that the North American fauna is less exhaustively known:—

EUROPE.	NORTH AMERICA.
<i>Diloba</i> 1 sp.	
<i>Simyra</i> 3 sp.	
<i>Arsilonche</i> 1 sp.	<i>Arsilonche</i> 1 sp.
<i>Eogena</i> 1 sp.	
<i>Clidia</i> 2 sp.	
<i>Raphia</i> 1 sp.	<i>Raphia</i> 2 sp.
<i>Demas</i> 1 sp.	<i>Demas</i> 1 sp.
	<i>Platycerura</i> 1 sp.
<i>Trichosea</i> 1 sp.	<i>Audela</i> 1 sp.
	<i>Charadra</i> 5 sp.
<i>Panthea</i> 1 sp.	<i>Momaphana</i> 1 sp.
<i>Diphthera</i> 1 sp.	<i>Diphthera</i> 1 sp.
<i>Apatela</i> 15 sp.	<i>Apatela</i> 54 sp.
	<i>Harrisimemna</i> 1 sp.
	<i>Cerma</i> 1 sp.
	<i>Microcoelia</i> 2 sp.
<i>Bryophila</i> 9 sp.	<i>Bryophila</i> 3 sp.

## OBSERVATIONS ON SOME NORTHERN DERBIDÆ.

BY E. P. VAN DUZEE, BUFFALO, N. Y.

The small group of Homopterous insects included by Fabricius in his genus *Derbe*, but now separated as a sub-family from the other Fulgoridæ under the name of *Derboidea Spinola* or *Derbida*, Stal, have always been objects of interest to students of this order, partly on account of their delicate form and peculiar structure, but their almost universal rarity has doubtless added much to their attractiveness. A series of these frail North American forms, differing in several respects from their tropical allies, were first made known in 1819 by Mr. Kirby, who arranged them under two genera—*Otiocerus* and *Anotia*, describing under the former eight, and under the latter one species; to *Otiocerus* three species from the United States were added by Dr. Fitch in 1851 and 1856, and one by Dr. Stal from Cuba, in 1859; to *Anotia* Dr. Fitch added three species in 1856. Thus, as the genera now stands, *Otiocerus* has twelve North American species, and *Anotia* four, but future study will probably result in placing two or three of these as mere varieties. As has been stated, *Otiocerus* was established by Kirby in a paper read before the Linnean Society of London, in 1819. This paper appeared in Vol. XIII. of the Transactions, published as a whole in 1822, but probably somewhat earlier as a separate. In 1821, Germar, in the fourth volume of his *Magazin der Entomologie*, characterized his genus *Cobax* for a specimen of Kirby's *O. Stollii*, which he had received from Bahia, describing the species as *C. Winthemi*. Notwithstanding the fact that he claims the presence of ocelli for his genus, it seems to be equivalent to Kirby's *Otiocerus*, in which they are apparently absent, and is consequently placed as a synonym. In 1832, Burmeister, in his *Handbuch der Entomologie*, redescribed *O. Degeerii* as *Hynnys rosea*, differentiating his genus from *Otiocerus* by the extension of the elytra at their inner apical angles; but this character is now considered as of but subgeneric value at most. Genus *Anotia* was founded by Kirby on a single female example of *Bonneti*, and judging from a male in my collection, would seem to need modifying to include both sexes.

I propose in the present paper, after recording brief observations on a few species of *Otiocerus*, to describe a pretty little form occurring here, for which I find it necessary to establish a new genus, intermediate in character between *Anotia* and *Mysidia*.

*Otiocerus Degeerii*, Kirby. This, our largest species, is not uncommon here through July, August, and September. In color it varies from pale reddish to brownish purple, but always shows the white line on the suture before the appendix, and at the tip of the elytra. The antennæ, which are comparatively small, have but one appendage in both sexes. The males are a little smaller than the females, and are less frequently met with.\*

*Otiocerus Stollii*, Kirby. One specimen, a male, beaten from an oak near this city, August 18, 1888. This small species is of the same dark color we find in the preceding. A pale rosaceous vitta occupies the vertex, the middle of the thorax, and the elytral suture, as far as the tip of the clavus, beyond which is a pale line at the base of the appendix, as in *Degeerii*. The two carinæ, which are closely approximated on the point, diverge slightly just before the apex; on the vertex they are a little arched above the eye, and their edge is finely crenated. The antennæ are larger than in *Degeerii*. This insect must have a wide distribution, as it was described from Georgia by Kirby, and from Bahia, Brazil, by Germar. It is quite distinct from the *O. Stollii* of Spinola (*Ann. Soc. Ent.*, Fr. VIII., p. 385), and of Amyot & Serville (*Hemip.*, p. 514), which Dr. Fitch considers equivalent to his *Amyotii*.

*Otiocerus Coquerbertii*, Kirby. This, our most beautiful, as it is our most abundant species, occurs here with *O. Degeerii* from July to Sept. on various trees and bushes, especially on the beech, maple, oak, and hickory. Its two appendages exceed the antennæ in length. In size it approaches *Degeerii*, but represents another facies of the genus; distinguished by a pale ground color, relieved by a broad vitta of red or fuscous, extending from the tip of the head across the eye and thorax, and along the elytra near the suture to the tip of the clavus, where it forks, one branch bordering the internal apical margin, the other deflected to the apex of the costa. Their wings are clear or white, immaculate, and the frontal keels are approximate on the lower part of the face. Here belong *Signoreti*, Fitch; *Reaumurii*, Kirby; *Wolfii*, Kirby; and *Amyotii*, Fitch.

(TO BE CONTINUED.)

\* Since writing the above, M. Provancher has (*Petite Faune Ent. du Canada*, Vol. III. *Hemip.*, p. 217, May, 1889) described an insect as *Amphixepa* (!) *Coquerbertii*, referring it to Kirby's species with hesitation. From his description it cannot be the *Coquerbertii*, but it agrees in every particular with pale examples of *Degeerii* that not infrequently occur here, and probably should not be considered as deserving even a varietal name.

## ON EARLY STAGES OF SOME LEPIDOPTERA.

BY WM. BEUTENMÜLLER, NEW YORK.

*Chionobas Macounii*, Edw.

EGG.—White, subglobose, slightly flattened above and below, with about seventeen longitudinal ridges, which are connected by numerous fine transverse ridges. Length, about 1.2 m.m. Width, about 1 m. Laid July 11. Emerged July 27.

YOUNG LARVA.—Head whitish, globose, rather large, finely punctured, mouth parts black. Body above bright pink, with a series of four whitish longitudinal stripes on each side; those on the dorsal region are very broad, with the intervening spaces very narrow. The lateral stripe very fine, and the one below the spiracles very broad. The spaces between these stripes rather broad. Spiracles black. At the posterior extremity of the body is a short, fork-like process. Underside of body pinkish, without markings. Length, about 2 m.m. Food-plant—Grass (*Setaria pratensis*). I very much regret not to have been able to raise the larvæ to maturity, but hope that Mr. James Fletcher, from whom I received the eggs, may have further notes upon this interesting species.

*Ancyloxypha numitor*, Fabr.

EGG.—Semi-spherical, yellow, rounded at the side and top, base flattened. After two days the egg became dirty-whitish, speckled with bright red. Length, about 1.5 m.m. Width, about .75 m.m. Laid on Grass (*Setaria op.*), Sept. 8.

*Arzama Obliquata*, G. & R.

MATURE LARVA.—Head, subcaudate; rugose, chestnut brown, sometimes jet black; shining. Cervical shield, rugose, chestnut brown, sometimes black. Body above, shining olive brown, with numerous very fine transverse wrinkles, which are hardly visible to the naked eye; posterior segment much depressed. Spiracles black. Body beneath, dirty brownish white, including the abdominal legs, which have a chestnut brown or jet black patch on the outer side of each, and the extremities black. Thoracic feet chestnut brown or jet black. Length, about 55 m.m. Found several full grown specimens under decaying stumps, Sept., 1888.

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Mailed August 1st.