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# The Canadian Entomologist.

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No. 3

## ALYPPIA MACCULLOCHII, KIRBY.

BY WILLIAM COUPER, MONTREAL, P. Q.

On plate iv. of the "Fauna Boreali-Americana," Kirby gives a figure of the ♀ of the above species. In June, 1878, while collecting at the Godbout River, Lower St. Lawrence, I captured two males of this species, both on the same day. While *Alypia Langtonii*, Couper, were abundant in the same locality, no other specimens of *A. MacCullochii* were seen. I visited the place daily for a month in order to procure the female, but no more of either sex of the latter appeared. I therefore conclude it is a rare species on that coast. I am not aware that the male of *A. MacCullochii* has been hitherto described, and as it differs in some respects from Kirby's description of the female, it may be interesting to the readers of the CANADIAN ENTOMOLOGIST.

### *Alypia MacCullochii* ♂.



Fig. 7—Upper Side.



Fig. 8—Under Side.

Expansion of wings 1 inch. Wings and body black. Antennæ with numerous white rings, and gradually clubbed towards the apex. Orbit of eyes externally clothed with pale yellow hairs; four spots of same colored hairs on anterior portion of thorax, and a tuft of longer yellow hairs at base of primary wings. Legs mottled with white and yellow hairs. Primary wings with two, sometimes three spots in some specimens; the one near the base is cream-colored, divided longitudinally by a black line slightly forked where it approaches a small cream-colored spot which curves from the upper outside edge. The second is a transverse large white spot, traversed by five black lines dividing it into five, sometimes

six oblong spots; the same spots and lines are visible on the under side of the wings. There are two white spots on the secondaries; a triangular one near the base, divided by two or three black lines, and another transverse spot similar to, but smaller than that on the primary, also divided by black lines, making five or six oblong spots; the lowermost is only a small point.

The above remarks on the male, together with Kirby's description of the female, now published in No. 8, Vol. xi., CAN. ENT., will doubtless serve to make this rare *Alypia* better known. The illustrations were made by my esteemed brother entomologist, G. J. Bowles, of this city. The figures are so accurate that the student need not refer to the description. However, there being a distinction in the markings of the sexes, reference must be made to Kirby's description in order to determine them.

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## TWO NEW SPECIES OF ICHNEUMONIDÆ.

BY G. H. FRENCH, CARBONDALE, ILL.

### MICROGASTER UTILIS, n. sp.

Length .11 of an inch. Head, thorax and abdomen of the males uniform black, the females the same with the exception that the under side of the second and third basal joints of the abdomen are tawny. Antennæ fuscous, somewhat rufous at base. Legs and feet tawny, rather pale, the knees of the hind pair dusky, the most so in the males. Wings hyaline; costa, stigma and veins fuscous, except the two extending from the sub-stigmatal cells to the outer margin, which are hyaline. Ovipositor partially exerted. All parts of the body, wings and antennæ, moderately covered with a very short whitish pubescence, to be seen on the wing only with the aid of the microscope.

The cocoons are compact, except a little loose silk round the outside usually only partially surrounding the dense portion. When spun the most of them are detached from the caterpillar in which the larvæ have been parasites, and they are not placed together in any regular order.

Described from 11 males and 4 females reared from the larva of *Sphinx* (*Macrosila*) *Carolina*, and 5 males and 7 females reared from a larva of a species of *Leucania*.

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**MACROCENTUS IRIDESCENS, n. sp.**

Length .13 of an inch. Head piceous, the mouth parts, including the clypeus, tawny; antennæ rufo-cinereous, the basal joint yellowish. Thorax light rufous, darkest on posterior part, paler beneath; wings hyaline with strong iridescence, the veins, costa and stigma fuscous; feet and legs straw color, the last tarsi of hind feet a little darker. Abdomen rather slender, rufo-piceous, under side of middle joints slightly tawny; ovipositor not exerted. Under the microscope a fine grayish pubescence is seen on all parts of the insect, sparse on the abdomen and legs, but profuse on the antennæ and wings, not interfering with the iridescence on the latter. Pupa with the host.

Described from 5 males and 7 females reared from two larvæ from an elm tree, that were taken to be *Eugonia subsignaria*.

I wish to acknowledge here my indebtedness to E. T. Cresson, of Philadelphia, for generic determination of these species, and for other valuable information and suggestions.

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**ON THE EARLY STAGES OF SOME MOTHS.**

BY D. W. COQUILLET, WOODSTOCK, ILL.

In the following descriptions I have made use of certain terms which will need explaining. The subdorsal line is midway between the dorsal line and the spiracles; the stigmatal line includes the spiracles; the subdorsal space lies between the dorsal and subdorsal lines; the stigmatal space is between the subdorsal line and the spiracles.

The moths of the following larvæ were determined for me by Mr. A. R. Grote.

The first larva described below is provided with only 14 legs; all of the others have 16 legs.

**HYPENA SCABRA, Fabricius.**—Body green; a dark green dorsal line, faintly edged with white; a white subdorsal and stigmatal line; venter pale green; head smooth, green; length 1 inch. Feeds on clover; July 1 to September 10. Enters the earth to pupate.

Mr. Grote writes me that the moth into which this larva is finally transformed is the *Hypena humuli* of Harris; but the larva which Harris described as *H. humuli* is that of the moth *Hypena evanidalis* of Robinson.

CALPE CANADENSIS, Bethune.—Body bluish white; a stigmatal yellow stripe; a dorsal row of transverse black dashes; a row of transverse black dashes just above the yellow stigmatal stripe; some of the black dashes in this row unite with some of those in the dorsal row, forming transverse black bands; venter black, or deep green; thoracic legs brown, the others black; head shining yellow, marked with two black spots on upper part of face, three black spots near the jaws, and a black spot on each side of the head; length  $1\frac{1}{4}$  inches. Feeds on Meadow-rue (*Thalictrum*). April 20 to August 10. Spins a cocoon.

PSEUDOGLOSSA LUBRICALIS, Geyer.—Body dull purplish brown; on the back are two rows of alternate black and yellow tubercles, the black ones situated on the anterior part of the segment; the tip of each tubercle is bent over at nearly right angles, the tips of the black ones being bent backward, and those of the yellow ones forward; some of the black tubercles are ringed with yellow at the base; on the sides of the body are a few piliferous spots, each giving rise to a short bristle; head dirty blackish; length  $\frac{7}{8}$  inch. Feeds on grass. Usually found beneath pieces of wood lying upon the ground. June 15 to July 20. Spins a cocoon.

SCEPSIS FULVICOLLIS, Hübner.—A dark colored dorsal line, then a pale greenish stripe on which is a row of small warts; next to this stripe is a pink line, then a pale yellow line, then a dark greenish, slate-colored stripe on which is a row of small warts; the spiracles are situated on the lower part of this stripe, below the warts; below this stripe is a pale yellow line; between this line and the legs are two rows of small warts; from each of the above warts proceeds a thin, spreading cluster of whitish hairs; venter pale greenish-yellow; head shining yellow; length 1 inch. Feeds on grass; June 15 to August 1. Spins a cocoon.

CHYTOLITA MORBIDALIS, Gueneé.—Body somewhat flattened beneath and broadly convex above, reddish, mottled with yellow; a dark colored dorsal line; segment 1st darker than the others, dotted with black; on each side of each of the segments 2 and 3 are seven piliferous spots, the first four arranged transversely, the next two obliquely, the lowest one

singly ; on each side of each of the segments from 4 to 9 inclusive are eight piliferous spots, the first two arranged obliquely, the next three in a curved transverse row, the lowest three in the form of a triangle ; one of these spots is sometimes wanting ; head small, dark flesh or grayish ; length  $\frac{7}{8}$  inch. Feeds on grass and the leaves of Hazel. April 1 to May 5, and June 1 to July 20. Spins a cocoon.

*HYPOPREPPIA FUCOSA*, Hübner.—Body dark reddish-brown, or brownish-black ; a dorsal, stigmatal, and indistinct subdorsal yellow line ; stigmatal space mottled with yellow ; warts black, and from each proceeds one or two stiff black bristles ; head brownish-black, with a few short whitish hairs on the face ; length  $\frac{5}{8}$  inch. Feeds upon the moss, *etc.*, which grows on Oak trees. May 15 to July 1, and August 1 to September 15. Spins a cocoon.

*PARORGYIA CLINTONII*, Grote and Robs.—Body dark gray ; on top of each of the segments 4, 5, 6 and 7 is a wide tussock of mouse-colored hair, sprinkled with white ; on each side of the first and last segments, and on top of segment 11, is a pencil of long black hairs which are knobbed at the outer end ; on top of segments 9 and 10 is a small reddish wart ; hair on sides of body quite long, mouse-colored ; head shining black ; length  $1\frac{1}{4}$  inches. Found on Oak trees, May 20 to July 1. Spins a cocoon.

*BOTIS PENITALIS*, Grote.—Body pale yellow ; on each side of segment 1 are two black piliferous spots ; on each side of segments 2 and 3 are five black piliferous spots, the first two arranged transversely, the next two longitudinally, the last one singly ; on each side of each segment from 4 to 11 inclusive are five black piliferous spots, the first two arranged obliquely, the other three in a curved transverse row ; below the lowest of these is sometimes an additional piliferous spot ; cervical shield brownish, or white dotted with black ; venter whitish ; head whitish, dotted and marked with black ; length  $\frac{5}{8}$  inch. Feeds on Indian Hemp (*Apocynum cannabinum*). Lives in a nest of leaves which are fastened together with silken threads. June 20 to August 1, and August 20 to October 1. Assumes the chrysalis form in its nest.

*ARSILONCHE HENRICI*, Grote.—A black dorsal stripe dotted with white, then a yellow stripe, then a pale yellow stripe dotted with white ; the spiracles are situated on the lower part of this stripe ; below this stripe

is a pale yellow line ; on each side of each segment are about six deep yellow warts, from each of which proceeds a thin spreading cluster of blackish hairs ; venter dark colored ; head black, dotted with white, with two white streaks on top, and a yellow v-shaped mark on the face ; length  $1\frac{1}{2}$  inches. Feeds on Smartweed (*Polygonum*). June 1 to July 10, and August 20 to October 1. Spins a cocoon.

I should like to request those persons who intend to publish descriptions of larvæ to always give the number of legs with which the larva is provided ; and also to give the location of the lines or spots with which the larva is marked—that is, to state whether they are dorsal, subdorsal or stigmatal, or whether they are on the subdorsal or stigmatal space.

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## A LIST OF DIURNAL LEPIDOPTERA INHABITING THE STATE OF ILLINOIS.

BY C. E. WORTHINGTON, CHICAGO, ILL.

The following list is furnished in compliance with the request of the Editor of the CANADIAN ENTOMOLOGIST, published some time ago, some unsettled questions regarding species and distribution having delayed its preparation from time to time.

The list is intended to be as complete as possible, and to include all described species known to have been taken within the State limits, or so nearly adjacent thereto as to certainly belong to the Illinois Fauna.

In order to roughly designate the distribution within the State I have attached an \* to all species from the northern portion, of whose capture I have personal knowledge, and have further affixed a † to such species as are not known to occur in the southern portion of the State.

Several species of *Pamphila*, viz., *Pamphila pontiac*, *dion*, *hianna*, *bimacula*, *pottawattomie* and *ursa*, appear to be limited to the north-east corner of the State, *Chrysophanus dione* and several northern forms to the north-west portion, and presumably *Agraulis vanilla* and other southern forms are merely occasional visitors to the extreme southern end.

I have refrained from including *Pamphila uncas*, *Amblyscirtes vialis* and *Pyrgus centaureæ*, which doubtless belong to our Fauna, and are likely to be taken when the proper localities are fully explored,

I have further omitted *Thecla augustus*, *Chrysophanus epixanthe*, *Lycaena lucia* and *Grapta gracilis* of former lists, for want of authentication, and because, in my judgment, they are unlikely visitors. These genera are specially confusing to amateurs, and it is not unlikely that some allied species may have been mistaken for these.

I acknowledge assistance of value from Messrs. W. H. Edwards, Geo. H. French and Thos. E. Bean, who have aided me much in the preparation of this list.

## PAPILIO, L.

- Ajax, L.  
 \* dim. var. *Walshii*, Edw.  
 \* " *Telamonides*, Feld.  
 \* " *Marcellus*, Bd.-Lec.  
 \* *Philenor*, Cram.  
 \* *Asterias*, Fab.  
 \* *Troilus*, L.  
 \* *Turnus*, L.  
 \* dim. var. ♀ *Glaucus*, L.  
 \* *Cresphontes*, Cram.  
 PIERIS, Schrank.  
 \* *Protodice*, Bd.  
 \* dim. var. *Vernalis*, Edw.  
 †\* *Oleracea*, Bd.  
*Virginiensis*, Edw.  
 \* *Rapæ*, L.  
 NATHALIS, Bd.  
*Iole*, Bd.  
 ANTHOCARIS, Bd.  
 †\* *Olympia*, Edw.  
*Genutia*, Bd.  
 CALLIDRYAS, Bd.  
 \* *Eubule*, L.  
*Sennæ*, L.  
*Philea*, L.  
 COLIAS, F.  
 \* *Caesonia*, Stoll.  
 \* *Eurytheme*, Bd.  
 \* dim. var. *Keewaydin*, Edw.

## COLIAS, F.

- \* *Philodice*, Gödt.  
 TERIAS, Swain.  
 \* *Lisa*, Bd.  
 \* *Nicippe*, Cram.  
 DANAIS, Latr.  
 \* *Archippus*, F.  
 AGRAULIS, Blanch.  
*Vanillæ*, L.  
 ARGYNNIS, F.  
 †\* *Idalia*, Drury.  
 \* *Cybele*, F.  
 \* *Aphrodite*, F.  
 †\* *Alcestis*, Edw.  
 †\* *Atlantis*, Edw.  
 †\* *Myrina*, Cram.  
 †\* *Bellona*, F.  
*Diana*, Cram.  
 EUPTOIETA, Doub.  
 \* *Claudia*, Cram.  
 MELITAEA, Fab.  
*Phaeton*, Drury.  
 PHYCIODES, Doub.  
 \* *Harrisii*, Scud.  
 \* *Nycteis*, Doub.  
*Carlota*, Reak.  
*Tharos*, Drury.  
 \* dim. var. *Marcia*, Edw.  
 \* " *Morpheus*, F.



## GRAPTA, Kirby.

Interrogationis, F.

\* dim. var. Umbrosa, Lint.

\* " Fabricii, Edw.

Comma, Harr.

\* dim. var. Harrisii, Edw.

\* " Dryas, Edw.

Faunus, Edw.

\*Progne, Cram.

\*J-Album, Bd.

VANESSA, F.

\*Antiopa, W.

† Milberti, Godt.

PYRAMEIS.

\*Atalanta, L.

\*Huntera, Drury.

\*Cardui, L.

JUNONIA, Doub.

\*Lavinia, Cram.

LIMENITIS, F.

\*Ursula, F.

†\*Arthemis, Drury.

† dim. var. Proserpina, Edw.

\*Dissippus, Godt.

APATURA, F.

Celtis, Bd.

Clyton, Bd.

PAPHIA, West.

Audria, Scud.

NEONYMPHA, West.

\*Eurytris, F.

Sosybius, F.

\*Canthus, L.

Gemma, Hüb.

DEBIS, West.

\*Portlandia, F.

## SATYRUS, West.

Alope, Bd.

dim. var. Alope, Bd.

\* " Olympus, Edw.

LIBYTHEA, F.

\*Bachmanni, Kirt.

CHARIS, West.

\*Borealis, Gr.-Rob.

THECLA, F.

M-album, Bd.-Lec.

\*Humuli, Harr.

Strigosa, Harr.

\*Calanus, Hüb.

\*Edwardsii, Saund.

\*Acadica, Edw.

Smilacis, Bd.

Poeas, Hüb.

Irus, Godt.

Niphon, Hüb.

\*Titus, F.

FENISECA, Grote.

Tarquinius, F.

CHRYSOPHANUS, Doub.

† Dione, Scud.

\*Thoe, Bd. Lec.

\*Americana, D'Urban.

LYCAENA, F.

Lygdamas, Doub.

†\*Scudderii, Edw.

Pseudargiolus, Bd.-Lec.

\* dim. var. Pseudargiolus, B.-L.

\* " Neglecta, Edw.

\* " Violacea, Edw.

\*Comyntas, Godt.

ANCYLOXYPHA, Feld.

\*Numitor, F.

THYMELICUS, Speyer.

†\*Garita, Reak.

## PAMPHILA, Fab.

- †\*Massassoit, Scud.  
 †\*Ursa.<sup>1</sup>  
 \*Zabulon, Bd.-Lec.  
 \*Sassacus, Scud.  
 Leonardus, Har..  
 \*Huron, Edw.  
 Phylaeus, Drury.  
 †\*Pontiac, Edw.  
 †\*Dion, Edw.  
 Egeremet, Scud.  
 \*Peckius, Kirby.  
 \*Mystic, Edw.  
 \*Cernes, Bd.-Lec.  
 Manataaqua, Scud.  
 \*Metacomet, Harr.  
 Verna, Edw.  
 †\*Bimacula, Gr.-Rob.  
 Viator, Edw.  
 Vitellius, Sm.-Abb.  
 \*Delaware, Edw.  
 †\*Hianna, Edw.

## PAMPHILA, Fab.

- †\*Pottawattomie.<sup>2</sup>  
 AMBLYSCIRTES, Speyer.  
 Vialis, Edw.  
 Samoset, Scud.  
 PYRGUS, West.  
 Tessellata, Scud.  
 ΘΑΝΑΟΣ, Bd.  
 \*Brizo, Bd.  
 \*Icelus, Lint.  
 \*Lucilius, Lint.  
 \*Persius, Scud.  
 \*Martialis, Scud.  
 \*Juvenalis, F.  
 PHOLISORA, Speyer.  
 \*Catullus, Cram.  
 \*Hayhurstii, Edw.  
 EUDAMUS, Swain.  
 \*Pylades, Scud.  
 \*Bathyllus, Sm.-Abb.  
 \*Lycidas, Sm.-Abb.  
 \*Tityrus, F.

## I. PAMPHILA URSA, n. s.

Description, Female—Above dark brown, head, thorax and abdomen concolorous. Primaries with three minute yellowish interspaceal dots in line, the anterior one adjacent to costa at about one-fourth of its length from apex; two larger yellowish spots about the middle of wing on outer edge of disc. Secondaries with a row of elongate paler spots crossing discal space on veins; fringes of all wings conspicuous and purplish.

Beneath paler than above, with a purplish lustre, all spots re-appearing with more distinctness, veins slightly paler than spaces, the minute spots and the row of spots on secondaries distinctly visible. The elongate spots on secondaries above very indistinct and fairly visible only in certain lights.

Lake Co., Ind., near Ills. line, 2 females, July, 1879. Expands 32 cm. Allied in shape of wings and antennæ to *P. massassoit*; differs strikingly from any form known to me, and readily recognizable by the

purplish lustre of inferior surfaces. I have included this in the foregoing list, as it was taken very close to the line and undoubtedly belongs to our Fauna.

2. PAMPHILA POTTAWATTOMIE. n. s.

Description, Female—Above dark brown, head, thorax and abdomen concolorous; primaries with seven yellowish translucent spots arranged as follows: three small oblong interspaceal spots in line, anterior one adjacent to costa at about one-fourth its length from apex; nearly in a line between apex and middle of inner edge of wing three more, the first small and indistinct, nearly behind the posterior oblong spot, the second larger, saggitate, the base outward, the third and posterior one irregularly quadrangular, much larger than the second; near the costal angle of this a smaller quadrangulate spot. All translucent spots bordered more or less with brassy scales having a metallic lustre. Near middle of inner edge a nearly lunate spot, opaque, consisting of brassy scales.

Beneath slightly paler than above, all spots re-appearing except the opaque lunate spot, which is represented by a pale shade bounded by the divergent veins and extending nearly to margin.

Spots on secondaries above and below very faint and distinctly visible only in certain lights. Expands 34 cm.

From the neighborhood of the Chicago massacre, Cook Co., Ill., and Lake Co., Ind., July, 1879; 3 females. Allied to *otho*; may be recognized by its smaller size and greater number of spots, and by the translucency and brassy edges of spots.

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## ON THE NEURATION OF EUSTROTIA SECTA.

BY A. R. GROTE, BUFFALO, N. Y.

EUSTROTIA SECTA Grote, CAN. ENT., xi., 199.

This species, which is frail and wide-winged, has much the appearance of a *Thalpochares*, but the primaries have an accessory cell. The fore wings are 12-veined, 8 out of 7, 9 out of 8, 7 out of the extremity of accessory cell, running for more than a quarter of its length before it throws off 8. Hind wings 8-veined with vein 5 equally strong. Discal cell open on both wings. A fuscous species washed with whitish, with the narrow median space brownish and an internal patch containing black scales on the margin. Massachusetts.

## ON CERTAIN SPECIES OF SATYRUS.

BY W. H. EDWARDS, COALBURGH, W. VA.

(Continued from Page 32.)

PEGALA.—At the extreme south, and restricted principally to the southern part of the Gulf States and Florida, this species appears. Fabricius described it in 1775, in Syst. Ent.; says it is fuscous, the fore wing with a rufous (rufa) band and a single ocellus; the hind wing with a single ocellus above, 6 below, with ferruginous irides and white pupils. Although the single ocellus on fore wing is one of the principal characteristics of *Pegala*, both ocelli are occasionally found in the female, and more often the second ocellus is represented in both sexes by a black dot or a small round spot. One of these two-eyed examples seems to be figured in Boisduval and LeConte, after Abbot, for *Alope*. Dr. Boisduval says in the text that he regards *Pegala* as a one-eyed variety of *Alope*, and I think he has given a two-eyed *Pegala* for *Alope* in his plate. The larva is represented as having one broad and one narrow white band, the intervening space being gray. This is considerably unlike *Alope*, which has one yellow band over the feet, and no gray at all, all the surface being green. The chrysalis of the plate has two ocellar prominences, while the head case of *Alope* is truncated and rounded, with no prominences.

I was informed by Mr. James Ridings, who collected one season in Georgia, some years ago, that in its habits *Pegala* differed considerably from *Alope*, flying in the pine forests and alighting on the bark of trees. When disturbed it would fly about for a while and eventually return to the same spot. It seemed to him to resemble Debis *Portlandia* in habits rather than the species of its own genus. Mr. W. H. Ashmead, of Jacksonville, Fla., writes me: "*Pegala* is quite common in hummocks, along fences and in the outskirts of forest, from about the middle of July to October. When chased they fly high and alight on the side of a tree, and are seldom seen in open fields." Dr. A. W. Chapman writes: "*Pegala* is or was common in the open pine woods back of this city (Apalachicola). It seemed to like a hot sandy exposure, but I never saw one in my garden or in the fields. They always alight on the naked bodies of the pines with head up, down, or sideways." I cannot learn that *Pegala* and *Alope* fly in the same localities or even in the same districts. There appears to be a belt in the cotton States, or from Georgia to Mississippi at

least, in which *Alope* is unknown, and beyond the northern border of which it does not pass. And while *Pegala* may here and there inhabit this belt, it is not common except to the south of the belt, or in the country adjacent to the Gulf, and in Florida. How far to the northward along the Atlantic coast it flies I am not advised, but perhaps as far as Virginia. It inhabits St. Simon's Island, Ga.

A single diminutive (as if from a starved caterpillar) *Pegala* ♂ has been sent me by Prof. Lewis R. Gibbes, of Charleston, S. C., which was taken some ten years ago on the line of the Charleston & Augusta R. R., 60 or 70 miles inland; and Prof. Gibbes states that he has had two or three other examples in his collection, one of which he believes was taken at Charleston. He also sent me an *Alope*, which with a few others was taken Sept., 1878, in S. C., about 25 miles inland. Evidently *Pegala* is rare about Charleston. Rev. Dr. Jno. G. Morris tells me that he has never known of *Pegala* being taken along the coast of Maryland or of Virginia. Prof. Riley has made inquiries of entomologists in Washington, and all agree that the species is unknown there. There are so very few collectors of butterflies along the Atlantic coast from Georgia to New Jersey that only scanty information can be obtained on this subject. A single male, of the Florida type, was taken by Mr. Laitloff, near Jersey City, and kindly sent to me for inspection; but I can hear of no other having been taken or seen in the Middle States. I believe *Pegala* and *Alope* are kept apart by the nature of their food plants. *Alope* feeds on meadow grasses, which not being found in the cotton belt, the species is checked. On the other hand, the coarse grasses which grow along the Gulf and in Florida, and along the sea coast, must form the food of *Pegala*. The two species could come together only by accident, as after a storm; or the eggs or larvæ might be transported artificially. I have taken the semi-tropical species, *Sphinx Ello*, in the Catskill Mountains, and many butterflies which live in the Gulf States have occasionally been taken on Long Island, and along the coast of New England. Jersey City is close to the salt meadows, and the grasses which flourish thereon would be allied to those of the southern coast, and be the proper food of *Pegala*. Mr. Ashmead says: "I have never seen or heard of *Alope* being taken in Florida, nor do I think it is found here." Prof. J. E. Willet, of Macon, Ga., informs me that he has neither *Alope* nor *Pegala* in his collection, which is a local one, and does not know of them in his district. Mr. Chas. T. Jameson writes from Oxford, Northern Miss.: "I have not seen

*Alope* in this State. *Pegala* flies in some portions, but rarely. I do not think *Alope* is found here." The late Dr. O. C. Sparrow resided some time at Valdasta, Lowndes Co., Southern Georgia, and sent me thence several examples of *Pegala*. He wrote 13th July, 1877: "I have never taken *Alope* here." On 7th Aug. he says: "I have seen a good many *Pegala*. In a stroll to-day I took 3 males." Dr. Chapman says: "I have never seen *Alope* anywhere in the south. Our grasses here are all hard and coarse, and we have no cultivated ones like the Blue grass, Red-top, English grass, &c. The kinds of grass which grow here in the pine woods are found in nearly all the States which have what we call the 'pine-barrens.'"

Messrs. Boll and Belfrage, professional collectors, long resident in Texas, can give me no information about *Pegala*. Mr. Belfrage writes: "It is not found in Bosque Co., and so far as I can remember, I have not seen it in Texas. *Alope* is common in my locality." Mr. Heiligbrodt, at Bastrop, Texas, says that *Alope* at times has been common, but he does not know *Pegala*. Mr. Otto Meske tells me, however, that in 1876 he received a *Pegala* male from Bastrop, the only one he ever saw from Texas.

Not only therefore do I find no evidence that *Pegala* and *Alope* fly (i. e. habitually) in the same districts, but there are no intergrades forthcoming. There are no doubtful examples as in the case of *Alope* and *Nephele* in the belt of dimorphism before spoken of. If they were varieties of one species as some have asserted, or forms of one species, there would be a belt of territory inhabited by the typical forms and all manner of intergrades. On the contrary, there is a belt which separates these forms and is in effect inhabited by neither. The distinction between the two is as clear as between some unquestioned species in almost every genus of butterflies. They are separated by their markings, their habits, and by the food of their larvæ. Also, according to Abbot, if the figures in Bois. and Lec. were drawn from *Pegala*, as supposed, by differences in larvæ and very important differences in chrysalids.

There are in my own collection and in those of friends to whom I have written, 29 examples of *Pegala*, 21 ♂, 8 ♀. Of these males, 14 have one ocellus on fore wing, 6 have one ocellus and a black dot, 2 have one ocellus and a small black spot. Of the 8 ♀, 5 have one ocellus, 1 has one and a small spot, 2 have two complete pupilled ocelli.

Of 21 ♂, 17 have 6 ocelli beneath the hind wing, 3 have 5, and 1 has 5 on one wing and 6 on the other.

Of 8 ♀, 6 have 6 ocelli, 1 has 5, 1 has 5 on one wing and 6 on the other.

Every one of both sexes has a small ocellus at inner angle of hind wing, on upper side.

The uniformity of these characters—the ocellus at inner angle always present, and the number of small ocelli, which are scarcely ever less than 6 and never below 5—in so many examples brought together from various quarters contrasts strikingly with the great variability of *Alope* and *Nephele* in the same points.

Besides these eastern forms are others allied to them from the far west. On the eastern side of the Rocky Mountains the Illinois type seems to prevail. I have received it from Montana, Colorado and New Mexico. On the Pacific side we have *Boopis* Behr, 1864, *Ariane* Bois., 1852, *Paulus* Edw., 1879, *Gabbii* Edw., 1870, and *Wheeleri* Edw., 1873.

BOOPIS.—Dr. Behr, Proc. Cal. Acad. Sci., 1864, distinguished *Boopis* from *Nephele* by the absence of ocelli on under side of hind wings. The male is dark brown and the ocelli on fore wings have nearly always a yellowish ring, often faint. In the female this ring is enlarged and sometimes the field is yellow tinted. I have one example in which it is nearly clear yellow, and makes a broad clouded band. So far it approaches *Alope*. Of 5 ♂, 4 have 2 obsolescent ocelli beneath hind wings, 1 has 1. Of 7 ♀, 1 has 3, 5 have 2, 1 has 1. Undoubtedly some *Nephele* females are closely like *Boopis* ♀, if not undistinguishable from it, but the difference between the males is more marked, one showing a full complement of small ocelli in most cases, and less than four very rarely, the other never reaching four so far as I am aware. *Boopis* flies from Arizona to British Columbia.

PAULUS.—This species stands midway between the two groups into which the American species of this genus may be divided, the lesser group comprising *Phocus*, *Silvestris* (*Oetus* Bois.), *Meadii* and *Charon*. I described *Paulus* from 2 ♂, 1 ♀ taken by Mr. Morrison in Nevada, 1878, but have since received a ♀ from Mr. Graef, taken in Utah, and a ♂ taken at Soda Springs by Mr. Behrens, and 1 ♂, 1 ♀ from Olympia, from Mr. Morrison. I have also recently received a fine series of perfect examples of *Silvestris*, taken by Mr. Baron in Northern Cal., and some of

these are of larger size, especially in the female, than any I have before seen. Placed by the side of *Silvestris*, *Paulus* resembles it closely in both sexes, as to upper side, but the male lacks the black sexual dash which is characteristic of *Silvestris*. Both species have about the same expanse of wing, the ♂ of *Paulus* measuring 1.75 inch, the ♀ 1.8 in. The males are black-brown, the females are lighter by several shades. The former have two black spots on fore wing, small and unpupilled except in one instance, there being then a white dot on the anterior spot. On neither is there a spot at anal angle. The females have two large ocelli, in yellow rings and with white pupils. One has a complete ocellus at anal angle, the other nothing. On under side the males have a yellow tint, and are suffused with gray, especially noticeable on the outer half of each wing. The females are decidedly whitish-gray, and the black edges of the discal band on hind wing are very clear on this light ground. The outer edge of the band takes nearly the same course as in *Ariane* in the males, and in one female, but in the other it is cut up by small crenations, quite unlike any example of *Ariane* I have seen. The ocelli are normally six, but in nearly every case are partly obsolete, only brown patches indicating them; the Utah ♀ has 5 black spots varying in size, each with white pupil. In *Silvestris* the outline of the discal band is different, there being long jaws projected at cell, with a deep and narrow sinus between them. So it is with the other members of the *Silvestris* group, and this peculiarity forms a good character for the division of the genus. The ocelli also in *Silvestris* are never complete, at most only white dots inside a few black scales, and usually these are wanting. (Until I received Mr. Behrens' examples of *Silvestris*, I had supposed *Oetus* Bois. to be a distinct species, with naturally obsolescent markings on under side. This is the character of Dr. Boisduval's type, which I have, and Mr. Henry Edwards has assured me that he never has seen specimens which were otherwise. But those sent me by him were all worn, as is the type. The fresh examples sent by Mr. Baron make it plain that *Oetus* is only a worn and faded *Silvestris*).

(To be Continued.)

CONTRIBUTION TO THE COLLECTIONS OF THE ENTOMOLOGICAL SOCIETY OF ONTARIO.—Mr. V. T. Chambers, of Covington, Kentucky, has kindly donated to our Society two boxes of named Tineids, chiefly from Texas and Kentucky, many of them with their gold and silver deckings perfect gems. We are greatly indebted to Mr. Chambers for this generous gift.



## ENTOMOLOGY FOR BEGINNERS.

*The Common Woolly Bear (Spilosoma virginica).*

BY THE EDITOR.

The caterpillars known under the common name of "woolly bears" belong to the family of Arctians, and most of the species in the moth state are very pretty objects. The commonest of all the species is *Spilosoma virginica*, a pure white moth which appears on the wing in May, when it deposits its clusters of round yellow eggs on the under side of the leaves of many plants. In a few days these hatch into minute hairy caterpillars, which for a time feed in company and devour at first the under

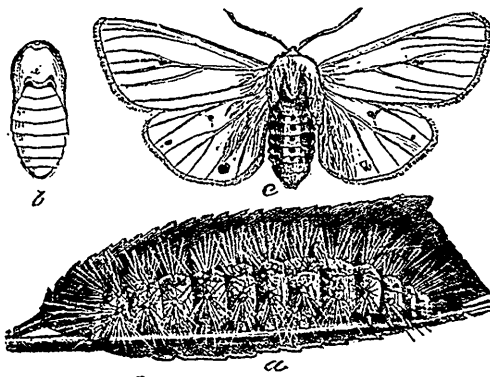


Fig. 9.

side of the leaf only so that it assumes a scorched and withered aspect. In a short time, however, they part company, each one choosing his own course, and blessed with good digestive powers, they eat freely of all parts of the leaf. The full grown caterpillar (fig. 9, a) is nearly two inches long, thickly clothed with hair usually of a yellowish color, but not always so, for some are light brown and others a darker brown. The head and feet are usually yellow, and the hairs arise in little tufts from small yellow tubercles arranged nearly in rows across the body. In the spaces between the segments there are darker lines, sometimes brown or dark brown, and occasionally nearly black; there is a dark line along each side, and the under surface is also of a dark shade.

When full grown the caterpillar seeks some sheltered nook in which to change to a chrysalis, attached to the under side of a board, under the bark of a tree or in some crevice in a fence, wherever it is dry and secluded. Having fixed on a suitable locality, the larva proceeds to divest its body of the covering of hairs, and with these woven together with

silken threads, it constructs the slight cocoon which is to shelter the chrysalis, and here in a short time the change takes place. From the chrysalis (*b*, fig. 9), which is of the usual brown color, in a week or two the perfect moth appears, soon to deposit fresh patches of eggs, from which in a few days the second brood of larvæ are hatched, which attain maturity and enter the chrysalis state before winter comes, and remain in this quiescent condition until the following spring.

The moth (fig. 9, *c*) measures when its wings are expanded from one inch and a half to two inches. The figure represents a female; the males are somewhat smaller. Both sexes have the wings snowy white with a few black dots which vary much in number in different specimens; in some there are two on each front wing and three on each hind wing, as in the figure, while in others the spots are almost wanting, and there is every gradation between these extremes. On the under side the spots are more distinct than on the upper, and sometimes the white surface is slightly tinged with yellow. The antennæ are white above, dark brown below, the head and thorax white. The abdomen is orange colored, sometimes streaked across with white, and has three rows of black spots, one above and one on each side; the under side of the abdomen is white, sometimes tinged with orange.

This species is attacked by several parasites, which destroy immense numbers every year; were it not for this we should soon be overrun with them.

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## ON THE DESCRIBED N. AM. SPECIES OF THALPOCHARES.

BY A. R. GROTE,

*Director of the Museum, Buffalo Society Natural Sciences.*

THALPOCHARES PATRUELIIS Grote, CAN. ENT., viii., 27.

The fore wings are 12-veined, no accessory cell, 9, 10 out of 8, costal nervules rather crowded, cell open. Hind wings 8-veined, vein 5 a little weaker than the rest, independent. This little species, of which I have both sexes, is rusty ochrey, the hind wings sub-pellucid, washed with

ochrey externally. The fore wings are pale ochrey with an oblique whitish stripe, bordered by rusty ochreous, running from just before apices to internal margin at about the middle. The costa is straight, apices pointed. Alabama and Texas (v. Meske). This species is referred to *Thalpochares* in Check List, ii., 46.

It seems probable that *Tarache patula* Morr. belongs to *Thalpochares*. It must resemble *patruelis*, but cannot be the same since it is described as having "broad oblique ferruginous fasciæ, the first fascia extends from the inner margin, about one-third of the distance from the base to the inner angle, to the apex, it gradually decreases in breadth and at the apex becomes linear; the second fascia extends from a point on the inner margin, about two-thirds of the distance from the base to the inner angle, to the apex; it is of nearly equal breadth throughout." In *patruelis* the usual lines are obsolete or hardly to be made out, and a single pale oblique fascia, lined outwardly with a dusky ochrey or rusty shade, extends from near apices to internal margin at within the middle. The oblique stripe runs at variance with and crosses the posterior line, which latter, with the anterior line, is fine, even, and more or less discernible. These fine lines are both slightly inwardly oblique, pale and dark. The general color inclines to pale ochreous, the wing shaded exteriorly more or less with reddish or rusty. The Alabama specimen is more reddish and a little larger than the Texas material before me. In Mr. Morrison's description of the "posterior wings" there is a confusion with the "anterior wings" which makes his remarks unintelligible.

I regard *patruelis* as structurally a typical *Thalpochares*, while Mr. Morrison seems to "hesitate to found a new genus" for *patula*. But one ground for the probable affinity of the two species is the fact that they were both described under *Tarache*, and referred there provisionally. While there can be no doubt that the species are distinct, from the opposing characters of ornamentation given in the descriptions, there seems to me sufficient reason for referring *patula* to *Thalpochares*, rather than leaving it in *Tarache*, where it is out of place according to its describer.

The following is a list of our described North American species of *Thalpochares* :

- carmelita* Morr., Proc. Acad. N. S. Phil., 1875, 434, Texas.  
*elegantula* Harvey, Can. Ent., viii., 55, Nevada.

<i>arizonæ</i> Hy. Edw., Proc. Cal. Acad., 1878,	-	Arizona.
<i>aetheria</i> Grote, N. Am. Ent., I., 47, -	-	Florida.
<i>patruelis</i> Grote, Can. Ent., viii., 27,	-	Ala., Texas.
<i>patula</i> Morr., Proc. Ac. N. S. Phil., 1875, 69,	-	Texas.
<i>mundula</i> Zeller, Beitr., I., 14, Tab. 2, fig. 4,	-	Texas.
<i>orba</i> Grote, Can. Ent., ix, 68,	-	Alabama.

Of these species I have only been able to examine the neuration of *aetheria* and *patruelis*, from want of material. Three of them, *patula*, *elegantula* and *arizonæ*, are not represented in my collection. *Aetheria* and *patruelis* agree in having no accessory cell, but differ by veins 8 and 7 being separate in *patruelis*. Whereas in *aetheria* 8 springs from 7 and 9 from 8, in *patruelis* 9 springs from 8 and 10 from 9. Prof. Zeller seems somewhat uncertain as to whether *mundula* can remain under *Thalpochares*, and I am equally so with regard to *orba* until I can obtain more material from which to study the neuration, which is a guide in this and allied genera.

#### CORRESPONDENCE.

DEAR SIR,—

It may be of interest to note the occurrence of the following species: In July last I found the pupa skins of a *Cossus* protruding from the trunks of Poplar trees at Corunna, Mich. One of these skins sent to Dr. J. A. Lintner was said by him to be identical with that of *C. centerensis* (vol. xi.—1). The exact locality is a grove of Poplars divided by the branch railway to the coal mine, a short distance before the river is reached: I obtained a half dozen of these shells in less than an hour's search. The moth should be sought from the 1st to the 15th of June.

*Nephoptyx Zimmermani* I found in the same locality common enough, both in cultivated and forest pines; it was especially abundant and destructive to small pines and spruces ornamenting the cemetery. I took eight pupæ from the trunk of one of these spruces; these trees had been visited by the axe. I also found the larvæ in force at Gowanda, N. Y., early in June.

D. S. KELLICOTT, Buffalo, N. Y.

## FLIGHT OF BUTTERFLIES.

DEAR SIR,—

In the course of the last two or three years several accounts have appeared in *Nature* of flight of Lepidoptera in large numbers. I observed a similar phenomenon in 1870, which may present sufficient interest to be put on record. In the summer of that year, in the month of August as well as I remember, I was crossing the harbor of this city in the 3 p. m. trip of the stem-packet boat between the city and Moultrieville, on Sullivan's Island, at the entrance of the harbor, a summer resort of the inhabitants of our city. The distance is between four and five miles, and when about half way or perhaps two-thirds, the steamer passed through an immense stream of butterflies crossing the harbor towards the S. W. They were all of the genus *Callidryas*, whether *C. eubule* or *C. marcellina* (if indeed they be different species) I could not determine. The wind was light, and from the rapid motion of the vessel, it was difficult to say whether the insects were aided or opposed by it in their transit. As the vessel passed obliquely through the stream, their rate of motion could not be determined, and the dimensions of the stream only roughly estimated; it seemed to be six or eight yards wide, about as many high, and extended an hundred yards or more on each side of the vessel. Whence they came or whither they went could not be ascertained; they seemed to be crossing the harbor in a direction nearly parallel to the general travel of the coast.

LEWIS R. GIBBS, Charleston, S. C.

## NOTES AND QUERIES.

DEAR SIR,—

I notice in the February number of the ENTOMOLOGIST some notes by Mr. Mundt, of Fairbury, Ill., in which he mentions breeding wood-boring insects. If Mr. Mundt and some other entomologists would give some information on the mode of keeping such insects, I am sure it would be most acceptable to the "Beginners in Entomology." Breeding specimens is of course one of the most important branches of the science which treats of their study, and heretofore very little has been done I believe with the wood-borers. I frequently find larvæ of Buprestidæ and Cerambycidæ in splitting cordwood, but so far I have signally failed to rear any of them. They either dry up or are attacked by mould. I think the chief points requiring attention are the temperature and the amount of moisture and air.

J. FLETCHER, Ottawa, Ont.