

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Continuous pagination/
Pagination continue
- Includes index(es)/
Comprend un (des) index

Title on header taken from: /
Le titre de l'en-tête provient:

- Title page of issue/
Page de titre de la livraison
- Caption of issue/
Titre de départ de la livraison
- Masthead/
Générique (périodiques) de la livraison

Additional comments: /
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
						/					

The Canadian Entomologist.

VOL. XIII.

LONDON, ONT., JULY, 1881.

No. 7

ON THE EARLY STAGES OF *HYPENA SCABRA*, FABR.

BY D. W. COQUILLET, WOODSTOCK, ILL.

EGG.—Globular, slightly flattened above, more decidedly so below; lower half smooth; upper half deeply grooved, the interspaces rounded and marked with fine transverse impressed lines; whitish, the upper half sometimes dotted with dark brown; transverse diameter nearly $\frac{1}{2}$ mm. [The top of this egg closely resembles that of the unarmed Rustic (*Agrotis saucia*) figured in Riley's 8th Report, page 37, fig. 24.]

LARVA.—First Stage: Body green; a dark colored dorsal line, edged each side with a whitish line; a white subdorsal and stigmatal line; piliferous spots green, each bearing a short black hair; venter green; head polished green; body provided with only 14 legs. When jarred from their perch the larvæ hang suspended by a silken thread. I observed only two moults in these larvæ, and the color and markings after each moult are the same as in the first stage. Length at maturity about one inch.

CHRYSLIS.—Of the usual form, dark brown; length about 14 mm.

On the 15th of May, 1880, I enclosed a moth of this species in one of my breeding cages in which some red clover was growing; the next day it deposited about 50 eggs, placing them singly on the under side of the leaves, and rarely upon the stems of the clover, sometimes consigning several eggs to the same leaf. They hatched out on the 23rd of the same month, and all of the larvæ reached maturity at about the same time, and then crept beneath dead leaves, etc., and spun their cocoons. The first moth issued June 28, and the last one July 2.

On the 6th of July of the same year I obtained another laying of eggs, and the larvæ from these, like those from the first laying, all reached maturity at about the same time.

A larva which I found July 11, 1879, spun its cocoon August 22nd, but died before producing the imago; another spun its cocoon September 6th, disclosing the imago Sept. 18th. On the 30th of October, 1880, I

found a fresh female of this species in a shock of corn ; the moth was killed the same day and her ova were found to be undeveloped, from which fact, and the situation in which the moth was found, it is very probable that the imago hibernates. The moth from which I obtained the first laying of eggs was very much faded and worn, and presented all the appearance of having hibernated. Prof. C. V. Riley also holds the opinion that the imago hibernates, and adds* that in more southern localities the chrysalids also hibernate, as he has taken them under bark in the winter. He states that the larvæ also feed upon *robinia*, but I have never taken them upon any other plant than clover (*Trifolium pratense*).

There appears to be only two broods produced in one season in this latitude ; I have never taken the larvæ later in the season than the first week in September, and female moths enclosed in my breeding cages at this time refused to deposit their eggs, although earlier in the season they deposited eggs readily in confinement.

Scabra is very abundant in this locality, frequenting clover meadows in company with *Plusia precatonis* and *Drasteria erecta*. When flushed it flies very rapidly a short distance and then suddenly alights upon a leaf and quickly crawls to the under side, concealing itself as much as possible from sight.

Below is given the time passed by this species in its different stages :—

From deposition of egg to hatching,	- - -	4 to 6 days.
“ hatching to first moult,	- - -	17 “
“ first to second moult,	- - -	3 “
“ second moult to spinning cocoon,	- - -	5 “
“ spinning cocoon to imago,	- - -	12 to 14 “

ENTOMOLOGY FOR BEGINNERS.

THE RED-HUMPED APPLE TREE CATERPILLAR.

(*Notodonta concinna*)

BY THE EDITOR.

This insect appears in the perfect or moth state (fig. 9) during the latter part of June. When its wings are expanded it measures from one inch to one inch and a quarter across. The fore wings are dark brown

* Bulletin No 3, U. S. Ent. Commission, p. 27.

on the inner margin and grayish on the outer margin with a dot near the middle, a spot near each angle and several longitudinal streaks along the hind margin dark brown. The hind wings of the male are brownish or dirty white, those of the female dusky brown; the body is light brown, the thorax of a darker shade.



Fig. 9.

The female deposits her eggs in a cluster on the under side of a leaf during the month of July, where they shortly hatch into tiny caterpillars, which at first consume only the substance of the under side of the leaf, leaving the upper surface unbroken, but as they increase in size they devour the entire leaf. When not eating they lie closely together on the twigs and sometimes entirely cover the branches they rest on; they attain their full growth during August or early in September. When mature the larva presents the appearance shown

in fig. 10. The head is coral red and there is a lump on the back on the fourth segment of the same color; the body is traced lengthwise by lines of black, yellow and white, and has two rows of black



Fig. 10.

spines along the back, and other shorter ones upon the sides from each of which there arises a fine hair. The hinder segments taper a little and are always elevated, as shown in the figure, when the insect is not crawling. It measures when full grown about one and a quarter inches long.

They entirely consume the leaves of the branch on which they are placed, and when these furnish insufficient food to bring them to maturity, the adjoining branches are laid under tribute. When handled they discharge from their bodies a transparent fluid of a strong acid smell, which doubtless serves as a defence from their enemies, especially birds, since their habit of feeding openly in large flocks renders them particularly liable to attack from these active foes.



Fig. 11.

When full grown they all disappear about the same time, descending from the trees to the ground, where they conceal themselves under leaves upon or slightly under the earth. Here, after a long time, the larva changes to a brown chrysalis, fig. 11, and remains in this condition until late in June or early in July of the following season. They are very

generally distributed, but seldom abundant, and while very partial to the leaves of the apple tree, feed also on those of the plum, pear, cherry, rose and thorn.

As they feed in flocks during their entire existence, these larvæ can easily be gathered and destroyed either by cutting off the limbs on which they are feeding and burning them, or by dislodging them by suddenly jarring the limbs, when the larvæ fall to the ground and may be trampled under foot.

PTEROPHORIDÆ.

BY CHARLES FISH, OLD TOWN, MAINE.

(Continued from Page 74.)

CEDEMATOPHORUS LUGUBRIS, n. s.

Front of head and palpi very dark fuliginous, the vertex slightly lighter. Form of palpi as in *O. Baroni*. Antennæ dotted above with white and blackish scales, tawny brown beneath. Thorax color of vertex. Abdomen slender, with scales slightly raised at extremities of joints, dark fuliginous brown, rather copiously sprinkled with black scales. Legs dark brown gray, the middle tibiæ whitish just before the middle and end bands, and all the tarsi whitish at base of joints; spurs also whitish at base. Fore wings dark smoky gray, with a dusting of black scales; inner margin and second lobe with a tinge of brown. An obscure blackish spot before base of fissure bordered posteriorly by gray scales. A longitudinal black spot on costa opposite base of fissure, embracing the costal cilia, and obscurely connected with the spot before base of fissure. Faint indications of two smaller black spots on costal margin of anterior lobe. Cilia brownish fuliginous, with a few white hairs on inner margin of anterior lobe near apex; also some of the cilia of inner margin of posterior lobe tipped with white. Hind wings and cilia, as well as under side of wings, cinereous.

Alar expanse 27-29 mil. California, Hy. Edwards, O. T. Baron.

This species is allied to *O. grisescens* Wlsm., but differs in the more slender body, and the almost entire absence of white in the markings, thus giving the entire insect a very sombre appearance. The hind tibiæ

and tarsi are much darker, the latter being lightened only at the base of the joints, while in *griseus* they are whitish, and darkened only at end of joints; still it may ultimately be found to be only a strongly marked variety of Walsingham's species.

LIOPTILUS GRANDIS, n. s.

Head, thorax, palpi, antennae, abdomen and both pairs of wings, including their cilia, of nearly a uniform pale cinnamon color. Legs of about the same color as the wings, with tarsi somewhat lighter. Fore wings less than one-third cleft, with the anterior lobe extending into a falcated point which reaches over the shorter and broader posterior lobe. No markings except faint dots of a darker brown in some examples at the extremities of the veins on the posterior lobe. Under side of wings same as above. The largest *Lioptilus* at present known. Alar expanse 34 mil. California, Hy. Edwards, J. Behrens, Dr. J. S. Bailey.

LIOPTILUS KELLICOTTII, n. s.

Head ochreous brown, whitish between antennae. Palpi rather long and slender, second joint with a small tuft of raised scales at the extremity on upper side, third joint bending downward, ochreous brown. Antennae whitish above, pale brownish beneath. Thorax and abdomen pale brownish ochreous, the latter striped longitudinally with pale brown lines. Anterior and middle legs pale brown exteriorly, pale brownish ochreous interiorly. Posterior legs whitish ochreous, tarsi nearly white.

Fore wings pale brownish ochreous, some examples dusted more or less with dark brown scales in the median space. A dark brown dot exactly at base of fissure, two on costa and one on inner margin of first lobe near the apex; usually four at end of second lobe tipping veins 2, 3, 4 and 5. None of these dots extend into the cilia. Cilia of fore wings concolorous. Hind wings and cilia, also under side of both pairs, cinereous brown with a silky lustre. Alar expanse 28-30 mil. Buffalo, N.Y. Bred by D. S. Kellicott, from larvae infesting the stems of some species of *Solidago*. A full account of the larval habits can be found in an article by Prof. Kellicott in CAN. ENT., vol. xii., No. 6. I will state in passing that the other plume moth mentioned in the same article, the larvae of which feed upon the foliage of the same plants, is *Aciptilus montanus* Wlsm.

ACIPTILUS BELFRAGEI, n. s.

Front of head ochreous brown, vertex pale brownish gray. Palpi brown above, whitish underneath. Antennae pale brown. Thorax pale brownish gray, tegulae whitish. Abdomen pale brownish ochreous, striped longitudinally with fine white lines, and copiously marked with short blackish streaks. Anterior and middle femora and tibiae striped longitudinally with whitish and dark brown lines, tarsi cream color with brown shading on one side. Posterior tibiae and tarsi cream color; spurs cream color tipped with brown.

Fore wings cleft about two-fifths, brownish gray, dusted with dark brown scales. There is an oblique brown patch at base of fissure, bordered posteriorly with white; a small brown spot midway between the last and base of wing, two longitudinal brown marks on the costa of first lobe and one or two brown dots on inner margin of the same lobe near the apex. Cilia of the fissure pale brown, at apex of second lobe whitish, on inner margin pale brown. Hind wings brownish cinereous with pale brown cilia. Under side of wings brownish cinereous, at the extremities of the lobes gray from admixture of white scales. Alar expanse 18 mil.

Described from one ♀ taken at Clifton, Texas, May 16, 1879, by G. W. Belfrage, to whom the species is respectfully dedicated.

TRICHOPTILUS OCHRODACTYLUS, n. s.

Head and palpi pale ochreous. Palpi cylindrical, extending horizontally beyond the head by about half its length, second joint somewhat thickened all around by raised scales, third joint rather stout, longer than the second joint, pointed. Antennae with a longitudinal brown line above, bordered by a fine white line on each side, beneath pale ochreous. Anterior part of thorax concolorous with head, posterior portion and abdomen light cream color, the latter nearly pure white beneath. Legs white, striped longitudinally with pale brownish ochreous; posterior tibiae with a band of raised ochreous scales before each pair of spurs; spurs brown on one side, white on the other.

Fore wings very narrow, cleft rather more than half, the anterior lobe tapering to a very fine point, posterior lobe linear, almost thread-like. Color pale ochreous, approaching to cream color, with a very slight brownish tinge on anterior lobe. A minute brown spot at base of anterior lobe reaches from base of fissure half-way to costa. Costal cilia of anterior lobe brownish ochreous, with a longitudinal white spot at the

basal third, another at the basal two-thirds, and a smaller one just before the apex. Cilia of fissure ochreous with a tinge of brown just beyond the middle and some white hairs near the apices. Cilia of inner margin pale ochreous, with a white patch at about the middle of posterior lobe, beyond rather dark brownish with a streaklet of white just before the apex. Hind wings brown, cilia slightly paler; third lobe on basal half pale brownish ochreous. On the inner margin of third lobe just behind the middle is a small patch of dark brown scales in the cilia, and from this to base of wing extends a row of slender club-shaped white scales. Under side of wings brownish ochreous. Alar expanse, 17 mil. Texas, G. W. Belfrage. Described from one example taken May 22, 1879.

NOTES ON A PARASITE OF PYRAMEIS CARDUI.

BY CAROLINE E. HEUSTIS, CARLETON, ST. JOHNS, N. B.

I send you a few specimens of an insect which I have found parasitic on the larvæ of *P. cardui*. For several successive summers I have reared a number of these caterpillars, with which our thistles in most seasons abound. I observed variations in size and color of the larvæ found feeding on the same plant, which led me to suppose that they might not belong to the same species. I have always observed that a large proportion were almost black, and much smaller than those from which I had obtained good specimens of *cardui*, but until the last summer my efforts to raise these were not attended with success, all the small black larvæ dying before they had attained their full growth, although they fed well for a time.

Last season I collected from a group of thistles of the same species fifteen caterpillars, and put them in breeding boxes. They all ate voraciously and one after another went into chrysalis, except two, which died on the bottom of the box, after having made several ineffectual efforts to suspend. Those which died were black. I carefully marked those which I supposed other than *cardui* as they suspended, and watched for the advent of the butterflies. I observed that the chrysalids of the black specimens were bright golden, and smaller than those of the bright and healthy-looking larvæ. The chrysalids of the latter were grey, ornamented with white stripes along the sides.

In due time two butterflies appeared from the striped chrysalids, and simultaneously with them a large ichneumon fly with bright blue wings and saffron body.* I felt some surprise at finding it in the box, and did not at first suspect where it came from; but when others appeared I examined the chrysalids and found several tenantless. Eight of the fifteen were infested. These flies are very sluggish, clinging closely to the sides of the box, and making no effort to fly unless disturbed.

LARVÆ OF CERURA OCCIDENTALIS LINT., AND C.
BOREALIS, Bd.

BY G. H. FRENCH, CARBONDALE, ILL.

During the past season I have had an opportunity of raising the larvæ of these two interesting species of insects, and as I do not know of any easily accessible description of either in the larval state, I give below the descriptions from my note book for the benefit of the readers of the ENTOMOLOGIST.

Cerura occidentalis.—Length when full grown 1.25 to the bifurcation of the anal segment. It is of nearly uniform size, a trifle enlarged anteriorly. In about the middle of the subdorsum of joint 1 is a prominent projection on each side, the body sloping from these down to the rather small head. There is but little sloping from these back to joint 9; from this there is a rapid sloping to the anal segment, this ending in two projections extensible at pleasure, instead of anal legs. When withdrawn these are a little more than a quarter of an inch, but may be extended to three-quarters. These are usually carried elevated backwards, but when extended are often thrown over the back as though used for defence. The general color is clear bright green, the sides spotted with clear purple brown, the spots round the stigmata and at the base of the legs and prolegs the largest. The back is marked with lilac, varying in shade and arranged as follows: From the two small contiguous tubercles on the back of joint 2 to the head is a somewhat diamond shaped space, the

* This insect has been kindly determined by E. T. Cresson, of Philadelphia, as *Ichneumon rufiventris*.—Ed. C. E.

broadest part at the subdorsal tubercles on joint 1. From the tubercles on joint 1 to those on joint 2 the lilac is bordered by bright brownish purple with a white line outside of this. In the middle of this diamond is a little green shading. From the tubercles on joint 2 to the extremity of the body is another parti-colored space lighter than the anterior one. This gradually expands so as to include the stigmata on joint 7, then decreases in width to the anterior part of the anal segment, expanding a little in the middle of this, but contracting again at its posterior part. The lilac of this is like the first, considerably suffused with green on the back, and is bordered with brownish purple and white, though the colors are a little lighter posteriorly. These two dorsal patches are not continuous, but are separated on joint 2 by a distinct though small patch of green. The posterior projections are mostly brownish purple, though with somewhat greenish annulations, and when extended a ring of white near the extremity. Head dark lilac. The body is a little thicker vertically than from side to side.

These were found feeding on willows (*Salix nigra*, I think) from September 9th of last year to October 5th, nearly full grown. I noticed that previous to the last moult the tubercles on joint 1 were covered with little spines.

They were kept in a room of moderate temperature during the winter and transferred to the wood-house as soon as no more freezing was apprehended. The imagines began to appear April 30th, and the last emerged June 3rd.

Cerura borealis.—Of the same size, shape and general marking as the preceding. The head is brown. The sides of the body are yellowish green, the dorsal dark color not being so distinctly separated on joint 2 as in the first. The back, instead of being parti colored, is brown, somewhat suffused with green on the back at the widest places and darker along the edges. Previous to the last moult the sides are bright green and the brown a little less dull.

Two of these were found feeding on wild cherry the 17th and 18th of September, one nearly full grown which spun up Sept. 23rd. Only one produced an imago, and that emerged April 21st.

LIST OF N. AMERICAN SARCOPHAGIDÆ, EXAMINED BY
R. H. MEADE, ESQ., BRADFORD, ENGLAND.

BY DR. H. A. HAGEN, CAMBRIDGE, MASS.

The Deyrolle carton containing the specimens, which are in the same position as returned by Mr. Meade, bears the inscription by the Baron von Osten-Sacken: "This collection was arranged at my request by Mr. R. H. Meade, especially with a view of ascertaining whether any of the species are common to Europe and N. America." I have published this list for the same reason as the Anthomyidæ. The division of the species is so far advanced that not much is left for the future monographer, except to draw up the descriptions and to name the species. Both are not done by myself for obvious reasons. The 27 species with 115 specimens are indeed all the contents of the collection of the Museum and those of the Baron. The Loew's collection contains about 24 species not labeled (except for the 3 species given) nor even arranged after the species. About half of them are from Cuba. My additions are given in []; I have tried to compare the species as carefully as possible, but I should remark that the types of only 12 European species are at hand. Of the species are from N. England 13, from N. York 14, from Canada 7, from the Antilles 5.

SARCOPHAGA.

A. *Anus red or yellow.* (*First division.*)

B. No spines upon the second longitudinal veins.

C. Posterior tibiae of male bearded on their inner sides.

D. Second abdominal segment without central spines.

E. Thorax with four dorsal bristles behind suture.

Spec. 1. *S. aegra?* Walk.; does not correspond to any British species.

[8 specim. M., male and female, Cambridge, Mass., June 22; Catskill Mts., N. Y., July, 1874, O.S.; Denison, Crawford Co., Iowa; Brit. Amer. In Loew's coll., 4 male and female, Ill.; Minn.; Wisc. Two types from Mo., labeled by O. S. *Sarcophaga sarraceniæ* Riley, which have not been seen by Mr. Meade, are identical; the species was formerly believed to be *S. carnaria* Comstock's Rep. 1879, p. 304.]

E. Thorax with three dorsal bristles behind suture.

- Spec. 2. Not like any British *Sarcophaga*.
[10 spec. M., male and female, Cambridge and Dorchester, Mass.; Trenton Falls, July, O.S.; Long Island, O.S., July, Sept.; Manlius, Comstock, all N. York; Canada; Illinois. There are similar specimens in L. coll., but I am not sure of the identity.]
E. Thorax with only two large bristles behind suture.
- Spec. 3. Seems identical with *S. nurus* Rond.
[11 spec. M., male and female, Cambridge, Mass.; N. York; Pennsylvania; Canada; Twin Lake, Color., Lieut. Carpenter. In Loew's coll. is at least one specimen labeled *S. dimidiata* from N. Y., bearing the same No., 325, with two seen by Mr. Meade. The number was used by O. S. to identify later specimens sent by him to Loew. One specimen seen by Mr. Meade from Mr. A. Agassiz' collection is labeled *S. georgiana*, and probably to be considered as the species mentioned by Th. W. Harris, as most of Mr. A.'s specimens were determined by him. I can not compare *S. nurus* Rond.]
- Spec. 4. Very similar to *S. crustata* Meig.
[2 spec. M., male and female. Nahant, Mass. I cannot identify with them spec. in L. coll.]
- Spec. 5. Similar to *S. nurus* Rond., only both anal segments red.
[3 spec., Cambridge, male; Cuba, Ch. Wright, female. In Loew's collect. 3, Distr. Columbia, a number from Cuba marked "viviparous, out of rotten land cray-fish," one fr. Bahia.]
- Spec. 6. *S. Lherminieri*? R. Desv.
[One female, M. collect. on a voyage fr. Aspinwall to N. York by W. Holden; loc. incert.]
C. Posterior tibiae of male without beard.
D. Second abdominal segment with two central spines.
E. Thorax with four dorsal bristles behind suture.
- Spec. 7. Differs from any British species.
[2 spec. M., one N. Conway, N. H., male, August 17, O. S.; the other marked "doubtful spec.," female, S. Franc., Cala., Holden. I am not able to see the two spines in the centre of the edge of the 2nd segment.]
E. Thorax with three dorsal bristles behind suture.
- Spec. 8. Corresponds with *S. erythrura* Mgn.

[2 spec., male and female, M., Cambridge, Mass.; Cayuga Lake, N. Y., Comstock, June 19.]

D. 3. Second abdominal segment without central spines.

E. Thorax with four bristles behind suture.

Spec. 9. Differs from any British species.

[25 spec. M., male and female. Cambridge, Mass.; Long Isl., N. Y., O. S., Manlius, N. Y., Aug. 26, Sept. 28, Comstock, swept from grass, in woods; Fabyan's Nock., N. H., Sept., O. S.; Illinois, Allen; Brit. Amer., Scudd.; Huds. Bay Terr., Kennicott; Pacific Slope, Color., Lieut. Carpenter. In Loew's coll. fr. Illinois, Nebraska.]

Spec. 10. Not like any British species.

[2 spec. M., male and female, Long Island, N. Y.; O.S.]

E. Thorax with three bristles behind suture.

Spec. 11. Differs from all European species.

[7 spec. M., male and female, Cambridge, Mass.; Long Island, Cayuga Lake, May 25; Manlius Sept. 6, all N. Y.]

Spec. 12. Not like any British species.

[3 spec. M., male and female, Manlius, N. Y.; Maryland, Oct. 20; Grand Anse, Hayti, Uhler.]

Spec. 13. Very similar in structure to *S. haematodes* Meig.

[2 spec. M., female, Kentucky.]

E. Thorax with only two large bristles behind suture.

Spec. 14. Not like any British species.

[5 spec. male and female, Dorchester, Mass.; Englewood, N. J.; South Park, Colorado; Grand Anse, Hayti.]

Spec. 15. Not like any British species.

[2 spec. M., male, Cuba; Distr. Columbia.]

B. Both second and fourth longitudinal veins of wings with spines.

D. Second abdominal segment without spines.

E. Thorax with four dorsal bristles behind suture.

Spec. 16. Differs from any British species.

[7 spec. M., male and female. Canada; Mass.; Long Island and Manlius, N. Y., end of August.]

E. Thorax with three dorsal bristles behind suture.

Spec. 17. Differs from any British species.

[9 spec. male and female. Cambridge, Mass.; Long Island, N. Y., O. S.; Grand Anse, Hayti, Uhler. The four larger specimens from

Cambridge and New York are *S. pachyprocta* Loew, var. *major*; the other ones from New York and Hayti are *S. pachyprocta* Loew, var. *minor*. The labels in Loew's handwriting are on the pins, and two corresponding specimens with the same numbers and labels in Loew's collection; there are specimens from Cuba and Pennsylvania in L. coll.]

Spec. 18. Not like any British species.

[1 spec. M.; Manlius, N. Y., Aug. 18, Comstock.]

A. Anus black or gray. (Second division.)

B. Second longitudinal veins of wings spineless.

C. Posterior tibiæ of male bearded.

E. Thorax with four dorsal bristles behind suture.

D. Second abdominal segment without central spines.

Spec. 19. Closely resembles *S. similis* Mihi.

[3 spec. M. male and female, Lake Superior, Agassiz; South Park, Color., Lieut. Carpenter. See about this species O. S. Catalogue, p. 257: "I am doubtful whether any of the N. Am. species is absolutely identical with *S. carnaria*, unless it be with *S. similis*, etc." Mr. Meade.

E. Thorax with three bristles behind suture.

Spec. 20. Very similar to female of *S. albiceps* or *S. atropos*.

[1 spec. M., Detroit, Mich., June 3, Hubbard.]

C. Posterior tibiæ of male smooth.

D. Second abdominal segment with two central spines.

Spec. 21. Corresponds closely with *S. juvenis* Rond.

[2 spec., male and female, M.; Manlius, N. Y., Aug. 12, Comstock; Detroit, Mich., July, Hubbard.]

Spec. 22. Corresponds closely with *S. nigriventris* Meig.

[1 spec. M., Sturgeon Isl.; Brit. Amer.; N. Red River; Scudder.]

Spec. 23. Not like any British species.

[1 spec., Cambridge, Mass.]

Genus *Phrissopoda* (Peskia Desv., Meade.)

Spec. 24. *imperialis*? Desv.

[1 spec. M., Cuba; some spec. in L. coll.]

Gen. *Cynomyia* Desv.

Spec. 25. Spec. uncertain.

[1 spec. M., Fabyan House, N. Hampsh. O.S.]

Gen. *Theria* Desv.

Spec. 26, 27; can not name the two species.

[6 spec.; all N. York, Manlius, Aug. 21-27, Sept. 6; Cayuga Lake, June 19; Comstock.]

Family Tachinidæ.

Sectio. Phasina.

Gen. *Xysta* Meig.

Spec. 28. One female spec., N. Hampsh.

[This specimen is different from the type of *X. didyma* Loew. The type described was a male from Illinois; the only male in L. coll. with label on the pin has a white square label with an R., similar to those with green square label from Red River of the North. Besides stands a female from Texas, less than half as large; perhaps not belonging here.]

Family Dexidae.

Gen. *Proscna*.

Spec. 29. One spec. from Cuba. [Differs from Loew's type, *P. mexicana*.]

Genus *Miltogramma* Meig.

Spec. 30. [There are 5 spec. from Cambridge and Dorchester, Mass.; Trenton Falls, N. Y.; Colorado Mts., Carpenter; probably belonging to different species.]

Spec. 31. [*Sarcophaga nudipennis* Loew.; bred from mud cells of *Pelopæus* by W. H. Patton, Waterbury, Conn., Aug. 24; see Packard's Guide p. 408. One of the spec. by Mr. Meade labeled *Miltogramma* Meig., the other one *Miltogramma?* Meig. There are in Loew's two spec. with corresponding number, and label in his handwriting.]

ON SIMULIUM.

BY DR. H. A. HAGEN, CAMBRIDGE, MASS.

I have received from Mr. H. G. Hubbard some larvæ and pupæ, with the case, labeled as follows: "The *Simulium* larvæ and pupæ were collected on the rocks at the foot of the falls of Michipicotin River, Lake Superior, in shallow pools and gutters of rapid water. There were large patches of rock surface densely covered with either the larvæ or pupæ, so

closely packed as to resemble a growth of aquatic vegetation. The black flies were very abundant in the woods."

The pouch or case is similar to that described by me for *S. pictipes*. The nymphae and larvae seem to be the same, but that the pupa has on each side nine filaments instead of eight, as stated for *S. pictipes*. I made a new examination of my material and found this number variable, without possibility to ascertain that one filament is broken off. I see nymphae with eight or with nine filaments on both sides, and have ascertained in one specimen nine on one side and eight on the other. I think more material is needed to decide if one filament in such cases is perhaps wanting as a consequence of a previous mutilation. The flies sent by Mr. Hubbard, without certainty to belong to the pupae, are only half the size of *S. pictipes*, and differ in the color of the legs. But the few specimens of *S. pictipes* which I have seen are newly hatched and in alcohol. The flies sent by Mr. Hubbard are considerably smaller than those described by Mr. Barnard, and differ also by the color of the legs. (Amer. Entom. iii., No. 12.)

To prevent later uncertainty about the types of *Simulium* in the collections of the Museum, I have to state that the collection of O. Sacken contains named only *S. vittatum*, and the collection of Loew only *S. venustum* and *S. quadrivittatum*. *S. invenustum* and *piscioidium*, though starred in the catalogue of O. S., have not been found in his collection. There is without name only one specimen from Hudson's B. Terr. (none in Loew's), and no specimens from Mumford, N. Y. Only two later collected from Goat Isl., and one labeled by myself from Trenton Falls. Loew's collection has no species from N. Y. In both collections are a number of unnamed specimens, and Mr. Hubbard's species seems to agree with one from the Saskatchewan River.

LIST OF NORTH AMERICAN BOMBYCIÆ OF HUBNER.

BY A. R. GROTE.

Since I first catalogued our species of *Bombyciæ*, under Herrich-Schæffer's later designation of *Cymatophorinae*, in the Proc. of the Entomological Society of Philadelphia for May, 1863, there have been but few additions to the group. Nor have the then debatable points been settled

The validity of *expultrix* as a "species" is still doubtful. I have taken a considerable number of both sexes of *expultrix* and *cymatophoroides*, and while the latter show a considerable variation in the distinctness of the finer markings of the fore wings and in the depth of ground color, the specimens of the former remain always nearly alike and uniform, and never show the black lines of the typical *cymatophoroides*. Notwithstanding I am inclined to revert to my original opinion that the two are but forms of one species. Since 1863 the typical genus of the group has been discovered in this country. Both the described species of *Bombycia* are from the Pacific Coast, and are additional examples of the resemblance of our Western fauna with that of Europe. Of one, *semicircularis*, I have seen only the female; in the smooth abdomen with its single dorsal tuft and the basal patch on primaries it resembles *Thyatira*. In ornamentation and cut of wings it is like *improvisa* and the European species.

In the present list I leave the genera as formerly recognised, but I am aware that they need more careful study. This cannot be undertaken until fuller material from the Pacific is received. Mr. Hy. Edwards reports *expultrix* from British Columbia; if this locality is correct we have a wide range for this species. I suspect that under the name *derasa*, the same author reports *scripta* from Alaska and Victoria. The members of this group seem single brooded, and in New York I have taken *scripta* and the two forms of *Pseudothyatira* in May and June at sugar. The larvæ await discovery and description.

LEPTINA *Guenée*.

dormitans *Guen.*, R. I.; N. Y.

ophthalmica *Guen.*, Wisc.; N. Y.; Mass.

Var. australis. Texas; Alabama.

This form is narrower winged and the markings are more effaced than the type. The black curved mark inaugurating the s. t. line in the type is here straighter, shorter, in one specimen thicker. The black marks at internal margin of the same line are disconnected dashes; the line itself is interrupted. The basal patch is whitish. This is not improbably a distinct form, but the variations of the species of *Leptina* are not understood. *latebricola* *Grote.* Wisc.; N. J.

N. B.—I have only seen one more specimen than my type, which latter is in Coll. Ent. Soc. Phil., and which I have not been able to compare since describing it.

Doubledayi *Guen.*, Mass. (in July); N. Y.; Penn.

BOMBYCIA Hubn.

improvisa *Hy. Edw.* Wash. Territory.

semicircularis *Grote.* Wash. Territory.

N. B.—Mr. Walker describes a "*Cymatophora caniplaga*" from Canada; I do not know it and the type must be examined to see if it belongs here.

THYATIRA Ochs.

lorata *Grote.* Wash. Territory.

pudens *Guen.* Anticosti; Can. to Penn.

PSEUDOTHYATIRA Grote.

cymatophoroides *Guen.* Can. to Penn.

expultrix *Grote.* Same localities, also B. Col. (teste Hy. Edw.)

HABROSYNE Hubn.

scripta *Gosse*; *abrasa* *Guen.*, Alaska?; Victoria? (*derasa* *Hy. Edw.*)
Canada to Pennsylvania.

N. B.—This species is very near the European *derasa*, but is considered distinct from a comparison of the imago by Gosse and Gueneé. I have given the differences as they appear to me (Proc. Ent. Soc. Phil., 2, 58). It seems to me better where differences occur to keep distinct names for these "representative species" or "geographical varieties." They are connected with the series of distinct species by forms differing more or less notably, and in this case it is difficult to decide where the "species" commences and the "variety" ends. But it is quite unexact to lump species in the moths as has lately been attempted in the pages of the Brooklyn Ent. Society's periodical, without exact information and merely on the general principle that there are too many "species" in our lists. This may indeed be the case, but the way to prove it does not lie in slurring over noted characters or quoting opinions which do not rest on solid foundation. More confusion is created by throwing together distinct forms under one name than in keeping varieties under specific titles.

MEETING OF THE ENTOMOLOGICAL CLUB OF THE
AMERICAN ASSOCIATION FOR THE ADVANCEMENT
OF SCIENCE.

The Entomological Club of the American Association for the Advancement of Science was formed last year into the Entomological Sub-Section of Section B of the A. A. S., and will therefore hold no separate meetings hereafter. It will meet with the Association at Cincinnati, Ohio, on Wednesday, 17th August, 1881, at 10 a. m. All persons interested are invited to attend its meetings and participate in its discussions.

B. PICKMAN MANN, Secretary. JNO. G. MORRIS, President.

ON THE APHIDIDÆ OF FLORIDA, WITH DESCRIPTIONS
OF NEW SPECIES.

(Paper No. 1.)

BY WM. H. ASHMEAD, JACKSONVILLE, FLA.

In the April number of the CANADIAN ENTOMOLOGIST I described a new Aphis affecting *Pinus australis* belonging to the Section *Lachnini*.

Having been studying the Aphididae of Florida for the past two years, a quantity of new material has accumulated on my hands, representing nearly all the known North American genera.

This I now propose bringing to the notice of the Entomological world, at the same time giving a list of all the known North American species in a series of short papers, through the columns of the CAN. ENT.

I desire to express my thanks to my friend, Mr. Allen H. Curtiss, of this city, and to Dr. A. W. Chapman, of Apalachicola, for assistance in determining the plants upon which these feed. In classification I shall follow Prof. Cyrus Thomas.

Section LACHNINI.

Genus *Lachnus*, Illiger.

The species of this genus already described from North America are as follows :

- | | |
|-------------------------------------|-------------------------------------|
| 1. <i>L. salicicola</i> , Uhler. | 6. <i>L. abietis</i> , Fitch. |
| Syn. <i>Aphis salicti</i> , Harris. | 7. <i>L. alnifoliae</i> , Fitch. |
| 2. <i>L. dentatus</i> , LeBaron. | 8. <i>L. quercifoliae</i> , Fitch. |
| 3. <i>L. caryae</i> , Harris. | 9. <i>L. salicelis</i> , Fitch. |
| 4. <i>L. strobi</i> , Fitch. | 10. <i>L. longistigma</i> , Monell. |
| 5. <i>L. laricifex</i> , Fitch. | 11. <i>L. australi</i> , Ashmead. |

To these I add the following :

12. *LACHNUS QUERCICOLENS*, n. sp.

Wingless female.—Length .05 inch. Ovale. Reddish, becoming brown with age. Vertex of head brown; beak reaching to middle coxae, reddish at base, yellowish in middle and brown at tip; antennae 7-jointed, reaching to honey tubes, whitish, basal joint reddish, joints annulated at tip with black, apical joint short, black; honey tubes almost obsolete, as wide as long, whitish; style hardly visible, whitish, pubescent; legs pubescent, posterior pair dark brown or black, middle and anterior pair reddish yellow, feet infuscated.

Winged individual.—Length .05 inch. Same as apterous female excepting abdomen is lighter in color, middle femora and coxae dark brown, and wings hyaline, with the stigma and veins green.

This species was found early in February, feeding on the under surface of the leaves of the live oak, *Quercus virens*. Winged specimens, however, were not taken until April.

Genus *Phyllaphis*, Koch.

The only species so far known belonging to this genus is

1. *Phyllaphis fagi*, Linn.

To this I now add

2. *PHYLLAPHIS NIGER*, n. sp.

Wingless female.—Length .05 inch. Ovale and of a shining black color. Head broad, nearly as long as wide, slightly arcuate in front and with two longitudinal depressions on vertex.

Beak long, reaching beyond hind coxae, black at base, but becoming reddish towards tip and slightly pubescent; antennae 7-jointed, situated very widely apart and not on tubercles, brownish in color with the terminal joint very minute; metathorax a broad, smooth, shining, convex plate; abdomen wider than long, sides flattened to honey tubes, slightly pubescent; honey tubes black, almost obsolete, as wide as long; style not visible, anus pubescent; legs dark brown, approaching black, pubescent, posterior pair long.

This, in some respects anomalous *Aphis*, was detected feeding on a tender shoot of the willow oak, *Quercus phellos*, variety *laurifoliae*. No winged specimens could be found.

The broad head, slightly pubescent abdomen and other characters would seem to exclude it from the genus *Lachnus*. I have therefore placed it provisionally in *Phyllaphis* genus, to which it seems most closely allied.

DESCRIPTION OF A NEW SPECIES OF TROCHILIUM.

BY HERMAN STRECKER.

TROCHILIUM GRANDE, n. sp.—General appearance of *T. Ceto* (*Melittia Cucurbitæ* HARR.) but very much larger, expanding $1\frac{3}{4}$ inches.

Antennæ blackish. Palpi reddish orange. Head white in front, dark lustrous greenish gray on top. Collar red. Thorax above dark greenish same as top of head. Abdomen red, each segment outwardly edged with black. Beneath whole body reddish orange; on the abdomen a row of black ventral spots. Posterior legs heavily clothed with red hair, accompanied by a narrow ridge of black, above, towards the abdomen; tibial spurs black edged with white hair inwardly. Fore and middle legs red, tarsi black and white ringed.

Primaries. Upper surface same dark silky gray as back of thorax. Secondaries transparent, broadly fringed on exterior edge with same color as primaries; some orange hairs at abdominal margin and base of wing.

Under surface. Primaries shining orange red shading somewhat into gray towards exterior margin. Fringe gray. Secondaries as on upper surface, but with some red scales along costa.

Hab. Texas.

Allied to *Desmopoda Bombiformis*, Feld., *Trochilium Astarte*, Westw., but still more closely to our smaller indigenous species *T. Ceto*, above alluded to, and to a species from Mexico lately described by Hy. Edwards as *Melittia Gloriosa*; this latter differs from all those mentioned in having opaque hind wings.

As the description of Hübner's genus *Melittia*, in which the Americans place *Ceto*, is much too vague and uncertain ("The fore wings partly, the hind wings entirely transparent; the feet very thickly haired.") I have preferred to adopt Prof. Westwood's infinitely better determined genus *Trochilium*.

May 4th, 1881.