

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.
- Additional comments:/
Commentaires supplémentaires:

- 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

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
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The Canadian Entomologist.

VOL. XXV. LONDON, FEBRUARY, 1893.

No. 2.

CANADIAN HYMENOPTERA—No. 2.

BY W. HAGUE HARRINGTON, OTTAWA.

COLEOCENTRUS CANADENSIS, n. sp.

Female.—Length, 20 mm. Black, with red legs. Head transverse, as wide as thorax; cheeks as wide as eyes; face slightly swollen below antennæ, clothed with short pubescence, and with the inner orbits faintly yellowish below; palpi and inner edges of mandibles and labrum rufous; vertex and cheeks polished, the area of the ocelli without noticeable depressions or sutures; antennæ long and moderately thick, the joints about forty and subequal. Thorax polished above; the lobes of the mesothorax prominent, the central sulcate; pleuræ and pectus rugose or subaciculate, but without definite striæ; scutellum moderately large and elevated; metathorax with acute carinæ; the area enclosed by the two discal carinæ about twice as long as wide; in the area enclosed by the two lateral carinæ the elongate spiracle may be plainly seen almost in centre; the areas between lateral and discal carinæ transversely rugose; legs slender with robust coxæ, entirely rufous with exception of hinder tibiæ and tarsi, which are somewhat brownish; wings faintly yellowish, stigma and nervures brown, areolet small, triangular and pedicellate, receiving the recurrent nervure at outer angle. Abdomen sessile, robust, brown rather than black; first segment twice as long as wide, not much expanded posteriorly, faintly sulcate above, with indistinct lateral carinæ; remaining segments shorter, subequal, margined at apex (except last) with pale yellow; the terminal segment compressed and curved so as to partly embrace the ovipositor; ventral scale very large, partly covering three apical segments; ovipositor as long as body, piceous, the sheaths piceous black, very finely pubescent.

Captured at Casselman, about thirty miles south-west from Ottawa, on the 26th June, 1883.

I have much pleasure in describing this insect, as the species of *Coleocentrus* are rare in collections. All the American forms have been described from Canada, and so far these insects seem to have been found, with one exception, only in our territories.

During a visit to Sudbury, on the 16th of last June, with Mr. Fletcher, we were so fortunate as to take five examples of the fine species described by Mr. Cresson in Vol. I., page 35, of the CANADIAN ENTOMOLOGIST, and named after Mr. Pettit. I find no record of its occurrence during the score of years which has since elapsed, and the two females taken by Mr. Fletcher and the three males which I secured are therefore highly prized. The females were flying near the ground among the fallen timber, upon which they were also seen to alight, and in addition to those captured two or three escaped owing to the rough nature of the ground. The males were hovering about bushes, and were not at first recognized as belonging to this genus, as they differ so much in the shape of the abdomen and in method of flight. A female was also taken by Mr. Evans during our stay with him. As the male has not been described, if indeed previously captured, I append its description in such characters as it differs from the female.

COLEOCENTRUS PETTITII, Cress.

Male.—Length, 17 to 20 mm. Black, shining. Face below antennæ, scape of antennæ beneath and palpi yellow. Antennæ black, nearly as long as the body, the joints both longer and more numerous than in ♀. Legs varying slightly in colour but much paler than those of ♀; the anterior and middle legs, including the tips of coxæ, are almost yellow, as also the posterior tarsi; posterior femora and tibiæ pale rufous, with a more or less defined black stripe down the tibiæ behind. Abdomen slender and compressed laterally, as in some *Ophionids*; the first segment much narrower than in the ♀; the apex of the last dorsal segment shaped as in ♀.

The posterior tibiæ of the females are not black as in the specimen described by Cresson, but rufous or brownish with a black line externally, as in the ♂.

Our species may be tabulated as follows:—

Head, thorax and abdomen mostly rufous *C. rufus*, Prov.

Head and thorax black; abdomen black or brownish.

Antennæ with yellowish annulus *C. mellipes*, Prov.

Antennæ black.

Legs, including coxæ, brownish fulvous. *C. occidentalis*, Cress.

Legs rufous, coxæ black. *C. Pettitii*, Cress.

Legs rufous, coxæ rufous. *C. Canadensis*, n. sp.

Of the above species, *occidentalis* is recorded from Vanc. Island, and has been taken in California by Mr. Koebele; *mellipes* from the Rocky Mountains; *rufus* from Quebec (?), and *Pettitii* and *Canadensis* from Ontario.

Another fine genus of the Pimplinæ is *Ecthrus*, the species of which in general appearance much resemble those of *Coleocentrus*. The females, however, may be readily distinguished by the absence of the large ventral scale, and by their inflated anterior tibiæ. The shape of the areolet and of the last dorsal segment of the abdomen will separate the males.

ECTHRUS RUFOPEDIBUS, n. sp.

Female. Length, 20 mm. Black, with red legs. Head entirely black; face rugosely punctured and opaque; cheeks and vertex polished, but distinctly punctate; labrum and mandibles polished; palpi black; antennæ long and slender; third, fourth, and fifth joints long, subequal, a white annulus extending from middle of sixth joint nearly to apex of tenth. Thorax immaculate; lobes of mesothorax prominent, polished and punctate, as is also scutellum; pleura and metathorax coarsely rugosely sculptured, posterior transverse carina of metathorax distinct, but areas of disc not clearly defined; wings sub-hyaline, nervures and stigma black, areolet large, pentagonal; coxæ, trochanters and femora rufous, front tibiæ inflated, white, their tarsi almost rufous, middle tibiæ and tarsi brownish, the posterior tibiæ and tarsi black. Abdomen stout, basal segments strongly punctured, the first without distinct carinæ; ovipositor as long as body, rufous, sheaths black, scarcely pubescent.

This fine species was captured by Mr. Winn at Montreal on the 14th June, 1890.

I have prepared the following table for convenience in separating the twelve species of the genus.

FEMALES.

Wings smoky. *E. ? maurus*, Cress.

Wings banded.

Legs rufous. *E. nubilipennis*, Cress.

Legs black. *E. luctuosus*, Prov.

Wings hyaline, or subhyaline.

Abdomen red *E. abdominalis*, Cress.

Abdomen red and black *E. Provancheri*, Prov.

Abdomen black and white *E. pediculatus*, Prov.

Abdomen black.

Antennæ brown, anterior coxæ black . . . *E. rubripes*, Prov.

Antennæ black, anterior coxæ red . . . *E. nigricornis*, Prov.

Antennæ annulate with white.

Ovipositor long.

Legs black *E. niger*, Cress.

Legs red *E. rufopedibus*, n. sp.

Ovipositor short.

First abdominal segment carinate,

. *E. annulicornis*, Walsh.

First abdominal segment not carinate,

. *E. canadensis*, Prov.

MALES.

Abdomen red *E. abdominalis*, Cress.

Abdomen black.

Legs black *E. niger*, Cress.

Legs red *E. nigricornis*, Prov.

Two of the species are described from the United States, viz., *annulicornis* from Illinois and *nubilipennis* from the Rocky Mountains in Colorado. Ottawa has furnished two, viz., *niger* and *abdominalis* communicated to Mr. Cresson by the late Mr. Billings, and described in CAN. ENT., Vol. I., page 37. Of the former of these, *niger*, I have taken 4 ♀ and 1 ♂, and have found the female ovipositing in decaying maples in June. Provancher also records this species from St. Hyacinthe, Que. The second, *abdominalis*, I have not succeeded in finding here yet, but I was so fortunate as to take a fine female at Sudbury on the occasion of the visit already mentioned. I have also received this species from Rev. G. W. Taylor, of Victoria, B.C., and his specimen agrees in every particular with that from Sudbury. The species *maurus* (doubtfully referred to this genus by Cresson) was described from Victoria, and *Provancheri* was also obtained by Mr. Brodie from Vancouver. The species now described, *rufopedibus*, is from Montreal, and the remaining species, all described by Provancher, are presumably also from the Province of Quebec.

SYNOPSIS OF THE ASILID GENUS *BLACODES*.

BY D. W. COQUILLET, LOS ANGELES, CAL.

Up to the present time but a single species of *Blacodes* has been described from the United States: *B. bellus*, Loew, from Texas. I give herewith descriptions of three other species, and present a table to aid in identifying them:—

- | | | |
|---|--|---------------------------|
| 1 | Wings largely hyaline, abdomen and femora black | 2 |
| | Wings black, abdomen and femora red | <i>bellus</i> Lw. |
| 2 | Thorax destitute of a crest of hairs, scutellum bearing only two
bristles, tibiæ yellow | 3 |
| | Thorax furnished with a crest of hairs, scutellum bearing four bristles,
tibiæ black | <i>cristatus</i> , n. sp. |
| 3 | Anal cell open, second submarginal cell appendiculate
..... | <i>truncus</i> , n. sp. |
| | Anal cell closed, second submarginal cell not appendiculate
..... | <i>clausus</i> , n. sp. |

Blacodes cristatus, n. sp., ♀.

Wholly black, the tibiæ slightly piceous. Head light gray pollinose, that in middle of the front dark brown; face moderately convex, mystax black and white, very dense and extending nearly to the antennæ; first joint of antennæ slightly longer than the second; third joint lanæolate, three times as long as the second joint; style slender, slightly over half as long as the third joint. Thorax very convex, gray pollinose and marked with a broad blackish-brown geminate median stripe, which is considerably dilated outwardly behind the middle; on each side of this stripe is a broad, irregular, blackish-brown stripe extending but little in front of the middle of the dorsum; the median brown stripe bears numerous black and light yellow pile, which, on the anterior portion, forms a nearly erect crest; bristles of thorax black and light yellow; pleura mottled light gray and dark brown pollinose, the pile white; the fan-like row of bristles in front of the halteres is white. Scutellum brown pollinose and densely white pilose, the four marginal bristles black. Metanotum shining black, a large silvery white spot each side. Abdomen shining bluish-black, marked with light gray pollen as follows: A spot on sides of first segment, a transverse anterior and two posterior lateral

oblique spots on each remaining segment, the anterior spot obsolete on the last two segments, the posterior spots uniting with the gray lateral margin except on the second segment, each extending obliquely inward from the posterior angle of the segment and reaching at least a third of the distance across the segment, those on the sixth segment united; pile of dorsum very short, sparse, depressed, mostly light yellowish, that of the sides and venter longer and white. Pile of legs white, the bristles light yellow; front and hind tibiæ and their metatarsi densely bright yellow pubescent within; spur of front tibiæ rather slender, middle tibiæ also furnished with a strong, nearly straight black spur at the tip within. Wings pure hyaline, the extreme apex gray, a large brown cloud on veins at bases of the first and second submarginal cell, of each posterior cell and of the discal cell; all posterior and the anal cell open, second submarginal cell destitute of a stump of a vein. Halteres black. Length, 11 mm. Ventura County, Cal. A single specimen, in April.

Blacodes truncus, n. sp., ♂ ♀.

Same as *cristatus*, described above, with these exceptions: Tibiæ, extreme apex of femora, and base of each joint of the tarsi, yellow. Pollen of front light gray, mystax very sparse, white; third joint of antennæ almost linear, nearly four times as long as the second. Thorax destitute of a medium crest of pile, scutellum not densely pilose, bearing only two marginal bristles, metanotum uniformly gray pollinose, destitute of silvery spots. Pollen of abdomen, consisting of an anterior cross band on each segment, dilated each side so as to reach the posterior angle of the segment. Brown clouds on wings very faint; base of second submarginal cell furnished with a long stump of a vein. Halteres yellow. Length, 9 mm. Los Angeles County, Cal. Two males and two females.

Blacodes clausus, n. sp., ♂ ♀.

Differs from *truncus* only as follows: In the female the pollen on the abdomen is much more extended, covering nearly the entire dorsum, but in the male it is confined to the anterior end and sides of each segment, that on the sides being greatly dilated inward at the posterior corner of each segment. Base of second submarginal cell destitute of a stump of a vein; anal cell closed and short petiolate; brown clouds of wings obsolete or wanting. Length, 7 to 9 mm. Orange County, Cal. Three males and six females.

NOTES ON SOME INJURIOUS INSECTS OF TEXAS.

BY F. M. WEBSTER, WOOSTER, OHIO.

The following fragmentary contributions to a knowledge of a few of the destructive insects of this most interesting State are given here, not so much on account of their present individual value, as for the purpose of drawing attention to the riches in store for the entomological worker who may drift within its borders. In new countries travellers, in passing through, blaze or bark a tree here and there along the way to guide those who may follow after. These notes may be but blazes, but if they prove of aid to others in the future, they will have served their mission. The major portion of the material for this notice has been sent me from time to time by my friend, Prof. Geo. W. Curtis, of the A. & M. Collège, while others have been received from various other correspondents. To these I have occasionally added some of my own observations, when they seemed to augment the value of those made by others.

Early in May I received a number of twigs of Fig, in which were burrowing numerous larvæ and adult beetles. Of these last there were *Amphicerus bicaudatus*, Say, *Trogoxylon parallelepipedum*, Mels., and a single *Sinoxylon basilare*, Say. The *Trogoxylon* have continued to appear throughout the summer up to date (Sept. 29), while one of the larvæ of *Sinoxylon* has only transformed to an adult within the last few days. As I saw adults on Mesquite, burrowing into the wood, in Llano County, in March,* it would appear that their season of appearance is somewhat protracted, especially as I have since reared them from this same lot of Fig twigs in May, June, August and September.

In April, specimens of *Blapstinus auripilis*, Horn, were sent me from the vicinity of Galveston, where they were said to be destroying watermelon vines, the beetles being found in great numbers on the ground beneath the vines, while the plants withered and died. The beetles were alive when received, and, having no melon vines, I placed them on cucumber, which they refused, but ate the young plants of *Polygonum* which were growing among them. The accusation in regard to the destruction of melons, however, will need to be sustained by further observation, as they might have died from some bacterial or other disease, the beetles, though present, having nothing to do with the disease.

Chinch bugs, *Blissus leucopterus*, Say, were reported abundant in the central southern portion of the State in April, but I have no information

*Insect Life 3, 454.

of any serious depredations later in the season. An attack on Alfalfa was reported, but, unfortunately, the cause of the trouble was lost in transit, and I can only suspect, from the nature of its work, that it was some species of lepidoptera, probably a Pyralid, though I hardly think it could be *Eurycreon rantis*. The method of attack on Alfalfa resembles that of the Parsnip web-worm, *Depressaria heradiana*, De G., on parsnip, in that the terminal leaves and stems of the plant are drawn together and held by a web, and within the enclosure thus formed the caterpillar evidently lives, feeding from the tender growth, thereby dwarfing the plants. Prof. Townsend, of Las Cruces, New Mexico, writes me of reports of similar injury in that section of the country, but he has not yet been able to secure specimens of the depredator.

Considerable injury to the Pecan was reported, and specimens of the depredator were sent with samples of the injured Pecans. But, again, the pests escaped, probably to the mail sack, that bourne from which no entomologist's treasures ever return. The worms were reported as causing the shuck enveloping the nut to mould and drop off the tree before they were full grown, thereby rendering them valueless. In *Insect Life*, vol. 4, p. 78, mention is made of a probably undescribed species of Phycitid, whose larvæ are said to attack the buds of Pecan in early spring. These were sent from the vicinity of Brownwood, Texas, June 17, while the specimens intended for me were collected with the injured nuts, September 14. Whether or not there is any connection between the two remains to be learned.

The Angoumois Grain Moth, *Sitotroga (Gelechia) cerealella*, Oliv., is an every year pest, both in the field and among stored grain. My old experiments, with heat, made ten years ago, and before the use of carbon bisulphide came into application in destroying grain-infesting insects, are less practical than is the use of this fluid drug. The same measure may be used against the Rice Weevil, *Calandria oryzae*, which appears to be especially abundant among stored corn, and is, so far as my correspondence and personal observation goes, the grain weevil of Texas.

The Bag Worm or Basket Worm appears to be exceedingly numerous the present season in various portions of the State, and the same may be said of Southern Ohio. Of five sent me from Texas, August 11, and placed on trees in my yard, four soon clustered together and spun their fastenings to the same twig, while the fifth amused me by wandering about in a dissatisfied sort of way, and finally going off by itself to an adjacent limb, to which it immediately attached itself permanently.

THE LARVÆ OF THE CLISIOCAMPÆ.

BY HARRISON G DYAR, ROXLURY, MASS.

As has been shown by Mr. R. H. Stretch, the North American species of *Clisiocampa* are best separated by larval characters, and this paper will deal chiefly with them. I refer to Mr. Stretch's paper in volume I. of *Papilio*, which contains about all that has been known regarding the species.

There are two pretty well defined groups. The first contains *C. disstria*, *C. erosa* and *C. thoracica*, and the second the remaining species. The first are not nest-spinning species; the larvæ rest in bunches on the trunk without covering. The second, with the possible exception of *C. constricta*, of which I have seen no nest, and of *C. incurva*, the larva of which is unknown, are all nest-spinning. Their webs are formed in forks of the smaller branches or twigs, as in the well-known *C. americana* of the Atlantic States. The Eastern region, from the eastern slope of the Rockies to the Atlantic, has two species, one belonging to each group, namely, *disstria* and *americana*. The Pacific Northwest, from the Cascade Mountains to the Pacific, has also two, one to each group, viz., *erosa* and *pluvialis*; but the latter, which takes the place of *americana*, is not its representative, as *erosa* is of *disstria*. The central arid region has but one species at present known to me, unless *incurva*, described from Arizona, be found throughout the range of *fragilis*. *C. fragilis* is the only species not a tree feeder, and this habit has evidently been induced by the absence of deciduous trees in its habitat. California has four species, all endemic, unless it be that *thoracica* is the same as *erosa* of Oregon. Prof. Rivers's description recalls *erosa* most vividly, but he makes no mention of the broad subdorsal blue band so distinct in the larva of *erosa*.

§1. Group *disstria*.

CLISIOCAMPA DISSTRIA, Hübner.

1797—Smith & Abbot, Lep. Ins., Ga., n. 117, tab. LIX. (as *P. neustria*.)

1816—Hübner, Verz. Bck. Schm., p. 192, No. 1975.

1889—Hy. Edw., Bull. 35, U. S. N. M. (26 references).

sylvatica, Harris.

1841—Harris, R. Ins., 271.

drupacearum, Boisduval.

1869—Boisd., Ann. Ent. Soc. Belg., xii., 82.

Larva.—Black, with ten elliptical white spots on the back, one on each segment, except at the extremities: a sub-dorsal reddish line; lateral area largely blue gray, becoming paler below.

Food-plants.—Various forest trees, witch-hazel (*Hamamelis*), etc.

Habitat.—The Eastern region, from the Mississippi valley to the Atlantic.

[The above description is from notes made several years ago, and is not sufficiently full.]

CLISIOCAMPA EROSA, Stretch.

1881—Stretch, *Papilio*, i., 67.

1883—Stretch, *Papilio*, iii., 20 (as larva No. ii.)

Larva.—Head bluish-gray, with small black spots; hairy; labrum whitish. Body black, a row of white or orange-tinted dorsal spots, two on each segment, rounded, the posterior one the smaller. In the dorsal space are several supplementary, narrow, orange-red lines, sometimes partly filled in with blue. An orange-red subdorsal line narrowly separated by a black line from a broad blue band, minutely black dotted; a narrow black line; a lateral orange-yellow line; below this blue-gray, with traces of a broken yellowish substigmatal line and one along the bases of the legs. Hair, thin dorsally, faintly reddish; short and dense from the subventral region, silky white with some dusky and reddish hairs intermixed. On joints 3, 4 and 12 the blue subdorsal band is broken by a quadrate black patch, and incised on the other segments.

Food-plants.—Oak, alder, poplar, willow and fruit trees.

Habitat.—The Pacific Northwest.

CLISIOCAMPA THORACICA, Stretch.

1881.—Stretch, *Papilio*, i., 68.

1889—Rivers, *Proc. Cal. Acad. Sci.*, ser. ii., vol. i., 105.

Larva.—Prof. J. J. Rivers says:—"Body obscure brown; dorsal ridge ornamented with a row of conspicuous ochre coloured spots, two spots on each segment, the one placed in front always much the larger; the spots are attended by numerous short waving lines of reddish brown, running longitudinally, and there is a subdorsal line of the same colour and a spiracular line of a much lighter shade. Its whole length, above the feet, is occupied with numerous tufts of grayish hairs."

Food-plants.—Willow and fruit trees.

Habitat.—San Mateo Co., (Stretch); Berkeley, Cal. (Rivers). If Prof. Rivers's determination of the moth is correct, and I see no reason to doubt it, then the name may have to fall as a synonym of *C. erosa*; for the larva is so much the same that there does not seem to be anything in the description to separate it by, unless the subdorsal blue band be really absent.

§2. Group *americana*.

CLISIOCAMPA AMERICANA, Harris.

1797—Smith & Abbot, Lep. Ins., Ga., n. 119, tab. LX. (as *P. castrensis*.)

1841—Harris, Cat. Ins., Mass., 72.

1889—Hy. Edwards, Bull. 35, U. S. Nat. Mus., 77. (32 references; *decipiens*, Walker.

1855—Walk., Cat. Brit. Mus., vi., 1488.

frutetorum, Boisduval.

1869—Boisd., Ann. Ent. Soc., Belg., xii., 82.

Larva.—Head black, pilose, a few long black hairs; bases of antennæ and labrum white. Body black with a narrow white dorsal line on joints 3-12, fainter posteriorly and speckled with black. An orange coloured subdorsal band, rather irregular and a little mottled with black. Below this a subdorsal row of blue dots, two on each segment, elongate, the anterior one longitudinal, the posterior transverse. Above and below them is an interrupted orange-tinted line, and below this the lateral area is mottled with pale blue, becoming brownish in the subventral space. Hair reddish brown, most abundant subventrally.

Food-plants.—Wild cherry and fruit trees.

Habitat.—Florida to Canada: west to the Mississippi Valley.

CLISIOCAMPA CONSTRICTA, Stretch.

1874—Hy. Edwards, Proc. Cal. Acad. Sci., v., 368.

1881—Stretch, Papilio, i., 66.

strigosa, Stretch.

1881—Stretch, Papilio, i., 67.

1892—Dyar, Psyche, vi., 326. *nr. syn.*

Larva.—Head powdery blue, with black mottlings; mouth black, lower part of clypeus white; antennæ white ringed. Body black, densely

covered with powdery blue over the whole lateral region up to and including the subdorsal blue dots, and leaving only a few black mottlings and a subquadrate black patch on each segment laterally, bordered below by an orange dash. Below the spiracles, the blue becomes nearly white, and anteriorly on the segments tufts of silky white hair grow from the skin. Traces of a subventral orange shade. Dorsum black without a dorsal line, the usual pair of orange subdorsal lines narrow and irregular, heavier at the posterior part of each segment. Considerable conspicuous orange tinted hair grows on the back.

Food-plant.—Oak (*Quercus Kelloggii*).

Habitat.—The more hilly parts of California.

CLISIOCAMPA AMBISIMILIS, *nov. sp.*

Larva.—Head pale blue, with numerous black spots especially at the vertex; labrum and basal joints of antennæ yellowish-white; many white hairs. Body black, largely mottled with pale blue-gray at the sides and a series of subdorsal blue dots, two on each segment, the posterior one of which is produced downward into a transverse dash reaching the lateral blue region. A dorsal bluish-white line, much broken, but irregularly so; in some specimens it is continuous from joint 3 posteriorly, in others widely broken in the segmental incisures or entirely absent. A subdorsal series of waved, broken, orange lines, triple or quadruple on the posterior part of each segment, single anteriorly. A paler broken lateral line just above the blue area. Hair quite dense, keeled slightly dorsally and tufted laterally, red on the back, but silky white on the sides, as in *C. constricta*.

Food-plants.—Fruit trees.

Habitat.—Santa Cruz Co., California.

This species occurred to me abundantly on fruit trees at Watsonville, Cal., but the native food-plant was not determined. The larvæ are closely related to *C. constricta*, differing in the presence of the dorsal line (though this is not constant) and in the greater restriction of the lateral blue area, which does not extend up to and enclose the subdorsal dots, as it does in *C. constricta*. The moths are very different. The ♂ is rusty brown, with two pale lines, the ♀ pale brown, with two darker lines. My specimens are too poor to enable me to give characters to separate the moths from *C. californica*, which they much resemble; but the larvæ are abundantly distinct. Besides the marked difference in markings, the contrast in the colour of the lateral hairs of the two species is striking. Dr. Packard has

probably confounded this species, as well as *C. fragilis*, with *C. californica* in the 5th report of the U. S. entomological commission.

CLISIOCAMPA CALIFORNICA, Packard.

1864—Packard, Proc. Ent. Soc. Phil., iii., 387.

1877—Packard, Inj. Ins. West, 807.

1881—Stretch, Papilio, i., 64.

1890—Packard, 5th Rept. U. S. Ent. Com., 120.

pseudoneustria Boisduval.

1869—Boisd., Ann. Ent. Soc. Belg., xii., 82.

Larva.—Head black, very hairy except where the ocelli are, sometimes tinged with powdery blue in front; labrum whitish. Body entirely black, except the tips of the abdominal feet, which are pale, covered with long, fulvous hair, quite thick, especially dorsally, where it is keeled, and laterally, where it is tufted anteriorly on the segments. Almost entirely without marks; some have an irregular red subdorsal line, interrupted between the segments and narrowly centrally on each segment, mottled with the ground colour; while all have a series of subdorsal small blue dots below the red line, only one on each segment, and sometimes a lateral series of red dashes. In some even the blue dots are obscure and wanting on the central segments.

Food-plants.—Oaks (*Quercus agrifolia* and *Q. lobata*).

Habitat.—The coast region of California.

Dr. Packard has confounded *C. fragilis* with this species, if not others also, and consequently gives it a habitat much too extended. *C. fragilis* is abundantly distinct from *C. californica* in the larva, and, though the ♂ moth is very similar, the ♀ shows good specific differences.

CLISIOCAMPA FRAGILIS, Stretch.

1881—Stretch, Papilio, i., 64.

1888—Hy. Edw., Ent. Amer., iv., 62.

1890—Packard, 5th Rept. U. S. Ent. Com., 120 (as *C. californica*.)

Larva.—Head blue gray, dotted with black, mouth and ends of antennæ black, labrum and bases of antennæ sordid white. Body with the ground colour black, a broad pale blue dorsal band, broken at the segmental incisures and narrowed a little at both ends of each segment, absent on joints 2 and 13. Orange subdorsal marks much reduced, scarcely noticeable, consisting of from one to three narrowly linear, waved and broken streaks. Subdorsal blue dots, two on each segment, very large, subquadrate, either separate or confluent on their upper sides,

or also confluent with the lateral blue-gray area, but always leaving a row of black patches, one in the middle of each segment. A faint, lateral, pale orange or whitish line, broken and bordering the black patches below. Below this line to the legs, blue-gray, mottled with black, with traces of a whitish substigmatal line and one along the bases of the legs. Venter black, immaculate. Thoracic feet black, the abdominal ones pinkish at tips. Hair moderately abundant, faintly reddish tinged on the back, white on the sides, but rather thin and not tufted.

Food-plants.—Wild gooseberry (*Ribes*) and rose (*Rosa*.)

Habitat.—Nevada, Montana, Wyoming, Colorado, and probably all the arid region from the eastern slope of the Rockies to the Sierra Nevada and Cascade Mountains.

CLISIOCAMPA PLUVIALIS, *nov. sp.*

1883—Stretch, *Papilio*, iii, 20 (as larva No. 1).

Larva.—Head hairy, bluish-gray, spotted with black, the spots segregating on the vertex, or covering nearly the whole head; labrum and bases of antennæ yellowish white. Body black, a pale blue dorsal line, divided between the segments, obsolete at the extremities, and forming 9 rather narrow, elongate, blue spots tapering at their ends, exactly as in *C. fragilis*. A subdorsal row of blue dots, two on each segment, the anterior one the smaller, and not reaching quite so far down. Between these is an orange band, starting in a small spot on the anterior part of each segment and either broken or connected with a broad triangular widening of the band on the posterior part. A distinct, broad, but rather irregular, pale orange, lateral band, narrowly broken here and there, and containing a few black dots. Below this, a slight suffusion of blue, mottled with black, and a diffuse and mottled pale orange substigmatal band, besides another along the bases of the legs. Below, black, with a double diffuse and mottled bluish band, or the venter all mottled with bluish white. The subdorsal orange band is very conspicuous. It may extend from near the dorsal line to below and behind the subdorsal blue spots and also in front of them, but is usually less on the anterior part of the segments and always retracted centrally. Its dorsal edge is well defined, a little curved on each segment, following the outline of the pieces of the dorsal band, but always separated from them by a black space, though it sometimes nearly surrounds them by connecting over the dorsum with the band on the other side, posteriorly on the segments. In some examples the region below the subdorsal band to the venter is largely overspread

with orange, mottled with the ground color, most heavily just below the subdorsal band. Hair not thick, reddish, both on the back and sides.

Food-plants.—Alder (*Alnus*), apple, etc.

Habitat.—The Pacific Northwest, from the Cascade range to the sea. Found abundantly at Seattle, Washington, and rarely at Portland, Oregon.

The moths do not differ from Stretch's description of *C. fragilis*, except that in the ♀ there is no broad, brown band on the forewings, but a diffuse shade outward from the inner dark line; in some specimens also bordering the undulated pale outer line. A larger series of specimens than I possess will probably show further differences, though the species is closely related to *C. fragilis*.

CLISIOCAMPA INCURVA, Hy. Edwards.

1882—Hy. Edw., Papilio, ii., 125.

The larva of this species is unknown. I have examined the moths in the collection of Mr. B. Neumoegen, and they seem closely allied to *C. fragilis*. They differ from any other species of this group in that both sexes are pale. The male is suffused with brown on the forewings, the lines pale, bordered inside with brown, so that in pale specimens the lines look brown. The female is the same, but browner, so that the lines are always pale, the outer waved, the inner sometimes rather faint, so that its brown edge is the more distinct. In both, the brown is deeper between the lines than outside them. I am not inclined to give much weight to the character from which the species was named. *Clisiocampa*, like *Datana*, cannot be separated by the position or shape of lines, but by the difference in the relative coloration of similar markings. In *Clisiocampa*, both sexes are needed for a determination. The following table will separate the larvæ here described. *C. incurva*, only, is unknown.

§1. A dorsal row of rounded spots.

One spot on each segment, - - - *disstria*, Hbn.

Two spots on each segment.

A broad, distinct, subdorsal blue band, - *croca*, Str.

No distinct subdorsal band? - - *thoracica*, Str.

§2. A dorsal line, continuous, broken or absent.

A continuous, narrow white line, - *americana*, Harr.

Dorsal line, if present, not white; often absent.

Line irregularly broken or absent.

Lateral region heavily blue shaded.

- Blue inclosing the subdorsal dots, *constricta*, Str.
 Blue not reaching the dots, *ambisimilis*, Dyar.
 Lateral region with no blue shade, *californica*, Pack.
 Line forming a row of elliptical blue spots.
 A slight subdorsal orange band, - *fragilis*, Str.
 A heavy orange band, - - *pluvialis*, Dyar.

ASTATUS BICOLOR, SAY.

BY WILLIAM J. FOX, PHILADELPHIA.

In reply to Mr. Charles A. Hart, who has shown, in the last number of this journal, that in his opinion I am in error regarding the identification of *Astatur bicolor*, Say, I would say that the stigma of the ♂ only is "yellowish-rufous", while that of the ♀ varies from reddish-black to deep black. If he will again consult my synopsis of the genus *Astatur* he will find that I used the words "stigma of wings black" in separating those of the female sex. In regard to my new species, *A. pygidialis*, which Mr. Hart suggests may be an extreme variety of *bicolor*, it differs not only in the slight characters mentioned by him, but also in the shorter and triangular pygidium, and the more feeble armature of the legs; the scutellum is not furrowed down the middle, and the insect itself is much smaller. Although it *might* prove to be but a variety of *bicolor*, nevertheless a series of nineteen specimens of that species and three of *pygidialis* show no intergradation, and therefore I think I was justified in describing it as new. I would rearrange the synonymy suggested by Mr. Hart as follows:

ASTATUS BICOLOR, Say.

- A. bicolor*, Say. Lec. Edition, I., p. 166, ♀ ♂.
A. rufiventris, Cress. Tr. Am. Ent. Soc., IV., p. 218, ♀.
A. terminata, Cress. *ibid.*, p. 218, ♂.

A. PYGIDIALIS, Fox.

- A. pygidialis*, Fox. CAN. ENT., XXIV., p. 234, ♀.
A. bicolor, Hart, (not Say). *ibid.*, XXV., p. 27.

NOTE UPON THE REVISION OF THE GENUS CUCULLIA.

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

The "Revision of the Genus *Cucullia*," by Prof. Smith, in Proc. U. S. Nat. Mus., XV., pp. 33, *et. seq.*, raises the number of described North American species to 14, and is an interesting addition to the knowledge of our *Noctuida*. Larger collections from the west have come to hand since my study of the species and have admitted of fuller comparisons. Although the species of *Cucullia* are not among the commonest Owlet Moths and seem to fall less easily a prey to the collector's efforts than those of many other genera, still we may conclude that the above figures give, at least approximately, the N. American representation of the genus. In a comparison of the faunæ of Europe and North America* I have sought one distinction in the smaller representation of the Hooded Owlets in America. Whereas in other leading genera, such as *Apateles* (*Acronycta*), *Hadena*, *Mamestra*, *Agrotis*, *Oncocnemis*, *Lithophane*, *Plusia*, *Catocala*, the North American species are much the more numerous; in *Cucullia* the proportion is reversed, and we have only 14 American to 43 European species of the genus. Of a truth we seem to have only 12 species which represent structurally the European forms. Two of our species (*bistriga* and *serraticornis*) I have no doubt (from figures and descriptions, as well as my own observations upon the Californian form) will come to be separated generically, or at least subgenerically, from the rest. There appear to be no analogues to these two species in the European fauna.

It is noteworthy that our North American species belong, in the main, to the groups represented in Europe by *Blattaria*, *Asteris* and *umbratica*. No North American representative of the group of *Scopariæ* appears to be known, and, in particular, the silvery group containing *argentea* is wanting with us. Our western plains have this in common with the Russian steppes that they produce *Heliothini* in abundance, and when the description of *Cucullia luna*, Morrison, appeared, I was induced to believe that we had also found an American silvery species of *Cucullia*, allied to *argentina* from Astrachan or *splendida* from the Ural and Altai. But it now appears that this species of Mr. Morrison's is my *Epinectis notatella*, a genus referred by me originally to the white *Heliothians*, among such forms as *Pippona* and *Antaplaga*, and where, from its structure, I believe still it most naturally belongs. At nearly the same time the moth was

*See Grote: "Die Verwandtschaft," etc., Verh. Gesell. Deutsch. Naturf., 2ter Theil, pp. 148-154, Leipzig. 1890.

published by Prof. Smith as a new genus, but "closely allied to *Cucullia*," under the name of *Nyctophæata*. These facts, which are of interest in a comparison of opinions upon one and the same Noctuid, are obscured by Prof. Smith's brief statement that "the species described as *luna* by Mr. Morrison is an Heliothid", l. c. p. 37. According to Smith, Bull. Br. Ent. Soc. 45, it "should stand between *Cleophana* and *Cucullia*".

If, then, we really possess a silvery *Cucullia*, it has yet to be discovered. Such a form must be looked for in the west, in the States and Territories adjoining the Rocky Mountains, and, probably, on the eastern side of the range. But not improbably such forms, so much prized by European collectors, are entirely wanting in our fauna; while, although breeding and more extended research may turn up new species, it may be concluded that we shall finally remain much behind Europe in the total number of our native species of *Cucullia*. This fact is important in a study of geographical distribution. We know too little as yet to generalize upon its probable cause. The species of *Cucullia* run often closely together and are also confined, it would sometimes appear, to single kinds of food plants. I content myself here with calling attention to the circumstance. Upon the following species I would make some notes in reference to Prof. Smith's remarks:—

Cucullia convexipennis, G. & R.

No mention, or I have overlooked it, is made in the Revision of the somewhat peculiar shape of the wings, to which this species owes its specific name. I should have been glad had I been able to note that our observations in this respect had been verified. On the whole, this seems our most striking species yet discovered.

Cucullia florea, Guen.

The specimen of this species, referred to on page 45 of the Revision as "from Dr. Lintner", was given by me, with the above determination, to Dr. Lintner when he was studying that genus, as also the types of *serraticornis*. This unique specimen, which I had determined as *florea*, agreed fairly with Guenée's figure and description, and Dr. Lintner had not recognized the species elsewhere when I gave it to him from my collection. The specimen was, I believe, from New York State, but I had lost the exact locality. I believed that I had collected it myself at a time when my attention was not especially directed to the genus. Afterwards, finding the specimen in my duplicate boxes, I determined the same with-

out being certain of its origin. This species, from its grayer colour, is readily distinguished from *postera* or *asteroides* (*i. e.* star-like ?, a queer title for the moth ; the Latin name was probably meant to refer to the European *Asteris* or to the botanical genus *Aster*, a food plant for some of the species) and must be quite uncommon. I never saw a second example.

Cucullia lætifica, Lint., in Grote Check List (1875).

In describing the type of *cita*, from Arizona, I had no longer specimens of *lætifica*, from Texas, for comparison. The discovery of *montana*, Grote, had led me to expect new western forms of the genus, and in the present instance the sexual difference in general colour assisted my mistake. I have no doubt that the reference in the Revision is correct, and that the Texan species extends its range to Arizona. I do not know Prof. French's species, also referred here. With regard to *Cucullia solidaginis*, Behr., in Strecker, if my memory serves, I had a note upon it to the effect that it did not belong to this genus. If so, we have as yet no typical species of *Cucullia* known from California or west of the Rocky Mountain range. I must concur with Mr. Smith's remarks upon the descriptions of Behr. in Strecker.

In my opinion the *Cucullini* form a tribe of the *Noctuinae*, sufficiently characterized by comparative characters. These consist in the elongate wings, the tapering abdomen, the fine and smooth vestiture, the hooded collar, the pencilled anal tuft, the short and unarmed legs, naked and lashed eyes. The European species have, in the group of *Scrophulariæ*, the fringes of primaries dentate. The rest, with the American forms, seem to have them even. The usually smooth larvæ are very distinctly marked, but are not easily distinguished upon the food-plant. In habit and character they resemble *Heliothis* somewhat. The flower of a purple double aster I had here, blooming in a pot on my window-sill, contained the coiled and partially hidden full-grown larva of one of the European species, which I did not discover for some days. The pupation is effected in the ground in a dense cocoon mixed with earth, the moth appearing in the spring. The larvæ, when disturbed, often make a jerking motion, reminding me of that of the Hawk Moth, *Thyreus Abbotii*. It must indeed be said that the moths are not without some resemblance to the *Chærocampinæ*.

In my Revised Check List of 1890, I have given eleven species of *Cucullia*. The list must now be changed to include the following fourteen apparently valid names :

- | | |
|--------------------------------------|----------------------------------|
| 1. convexipennis, <i>G. & R.</i> | 8. laetifica, <i>Lintn.</i> |
| 2. montanae, <i>Grote.</i> | 9. Speyeri, <i>Lintn.</i> |
| 3. similis, <i>Smith.</i> | 10. dorsalis, <i>Smith.</i> |
| 4. obscurior, <i>Smith.</i> | 11. intermedia, <i>Speyer.</i> |
| 5. asteroides, <i>Guen.</i> | 12. cinderella, <i>Smith.</i> |
| 6. postera, <i>Guen.</i> | 13. bistriga, <i>Smith.</i> |
| 7. florea, <i>Guen.</i> | 14. serraticornis, <i>Lintn.</i> |

A TRYPETID BRED FROM GALLS ON BIGELOVIA.

BY C. H. TYLER TOWNSEND, LAS CRUCES, NEW MEXICO.

A round, white, woolly gall was found on stems of *Bigelovia* (sp. probably *gravcolens*) in several localities in western New Mexico the past summer, from June 19 to 22. Those found June 19 were old galls, and were met with near Luera Spring, in Socorro county. On June 21 the fresh galls were found in numbers near Gallo Spring. Sometimes two or three were found near each other on the same stem or twig of the plant, and in one case three galls were found joined together, forming a triple gall. On June 22 they were found extremely common west of Apache Spring, thus seeming to increase in number in a westerly direction, as did also the patches of *Bigelovia*, every plant of which was full of them. The last two localities are on the Pacific slope of the Continental Divide, the first locality (Luera Spr.) being to the east of the divide about 40 miles.

Many of the galls found June 22 were opened at the time and disclosed several hymenopterous pupæ which were at first taken for the gall-maker. Some also contained a small white larva, probably belonging to the hymenopteron. Most of the galls, however, contained puparia which were taken for those of a tachinid, but which were in reality the puparia of a trypetid and the original gall-maker. None of the puparia were noticed to contain the fly, and numerous galls that were picked and kept in pill boxes for several months developed no trypetids. It was later found, however, that two of the puparia extracted from the galls at this date and placed in alcohol contained the pupa within. The credit for the breeding of the fly is due to Professor C. P. Gillette, who sent me speci-

mens of the fly and gall. Several flies were bred by him from galls which he collected at Dolores, Colo., June 18, the flies issuing June 19. The following is a description of the gall made by Professor Gillette at the time:—

Galls sub-globular in form, varying from $\frac{1}{4}$ to $\frac{1}{2}$ inch in diameter, and borne singly along the side of the stems of *Bigelovia*. They are very light in colour, being densely covered with a short white woolly hair. Beneath this fuzz the substance of the gall is greenish in colour and quite brittle. At the centre of each gall is a single larval cell containing, at this date, the puparium of some fly. From the larval cell a burrow leads to the woolly outer covering, which it never penetrates, and it cannot be seen from the outside. The galls are very common.

I have little to add to this description. The galls which I collected measure (dried) from 8 to 11 mm. in diameter, the average being about 9 mm. The wool is extremely fine in texture. As before stated, they were often approximated to each other on the same stem. Their form seems to indicate more or less plainly a bud-like growth, and they very often show the opening of the larval burrow on the outside.

I have referred this trypetid to the sub-genus *Eurosta*, Loew, because it seems to come nearest to this group of species, though it does not entirely fit the characterization. The fifth vein is not bristly, scutellum has only two bristles; the front is what I should call very broad, perhaps not "remarkably" so; the third antennal joint is short, but the ovipositor seems to be somewhat flattened instead of conical. The following is a description of the species:—

Eurosta (*Trypeta*) *bigeloviae*, n. sp. ♀.

Wings do not resemble any figured by Loew in monographs; they are very pale at base, rest blackish fuscous, except the white reticulations, and a slightly flavous portion near centre, and a little approximated to costa, being situated in basal portion of submarginal, distal portion of first basal and proximal portion of apical cells; a white spot on costal margin before and just reaching the costal spine, before this an elongate transverse white spot extending from costa back to posterior (second) basal cell, and bordering on the pale basal portion of wing; on costa in marginal cell two white spots, the inner one just beyond and at extremity of first longitudinal vein, the outer one more elongate transversely and

extending nearly across submarginal cell, the inner one wholly in marginal cell ; marginal cell more or less pale, at least on costal portion ; submarginal cell with a longitudinally elongate, slightly crescentic pale area in its apical portion ; an elliptical, longitudinal white spot in first (anterior) basal cell at its distal two-thirds just the width of cell ; a round white spot nearly in middle of widened distal portion of discal cell, a little approximated to anterior border of cell ; a transversely oblique, somewhat elongated white spot in apical cell on its distal two-thirds, but little separated at its posterior end from a similar spot in distal portion of second posterior cell, which, however, reaches hind margin, where it slightly widens, these two spots having the same oblique direction pointing outward toward the hind margin of the wing ; a large inverted V-shaped white spot nearly in middle of second posterior cell, a little nearer base, slightly bulged on its inner (toward base of wing) margin, and its prongs reaching hind border of wing ; two smaller, quite widely separated white spots bordering on hind margin in distal portion of third posterior cell, the outer one touching fifth longitudinal vein near its extremity ; a large, white spot a little before middle of third posterior cell, extending from anterior border of cell back through fourth posterior cell to hind margin of wing ; a small, rather triangular white spot in extreme basal portion of third posterior cell and nearly behind the elongate marking above referred to as bordering on the pale basal portion of the wing ; anal angle broadly white, extending into the anal cell, and joining the pale basal portion ; wing veins at base, including the costal vein where it borders the white spots, pale yellowish ; halteres pale yellowish.

Head, including front, frontal bristles, face, antennæ, cheeks, proboscis, and palpi, pale yellowish, arista slightly darker apically and bare ; occiput darker on upper central portion ; eyes blackish (are probably green in life) ; second and third antennal joints of nearly equal length, palpi enlarged apically and tips reaching to tip of proboscis ; front narrowed anteriorly, on vertex more than one-half width of head ; front set on ocellar area ; anterior portion of orbital margins and vertex with short pale yellowish bristles, including a row on each side descending obliquely inward from vertical angles, meeting in centre and forming a V, also with a pair of long, nearly erect bristles on vertical margin, and three shorter, sub-appressed, inwardly directed pairs on anterior orbital margins. Thorax blackish, dorsum and pleuræ, including scutellum, thickly set with short,

pale yellowish bristles, some long yellowish bristles on pleuræ and posterior dorsum of thorax, and a long pair arising from sides of scutellum; scutellum blackish at base, pale yellowish on margin and apex. Abdomen rufous or dark fulvous, anal segment black, ovipositor rufous. Legs entirely pale yellowish.

Length of body (incl. ovipos.), 5 mm.; of wing, nearly $4\frac{1}{2}$ mm.

Described from one specimen bred by Professor C. P. Gillette from galls collected at Dolores, Colo., June 18. Issued June 19.

An imperfectly-hardened ♀, which I collected in Johnson's Basin, in Western Socorro county, N. M., June 23, differs in the lighter abdomen, rufous anal segment; the more grayish short bristles of thorax, and darker long bristles of thorax and scutellum; in the oblique white marking of apical cell being united with the distal one of second posterior cell; and by the large inverted V-shaped marking of second posterior cell being represented by an oblique elongate marking parallel to the preceding, and a short marking inside it, both bordering on the hind margin of wing. It will need more material to establish the distinctness of this specimen.

Puparium of *E. bigelovia*, containing pupa: Length, 4 mm.; greatest width, $2\frac{1}{4}$ to 2.5 mm. Stout posteriorly, rufous on posterior portion and brownish anteriorly, eyes and wings of pupa showing beneath puparium as black spots. Puparium showing twelve segments, counting anal and capital plates. Mouth parts of larva showing in centre of capital plate at anterior end of puparium as a very small, central, raised circle, with usually eight primary radiating ridges, their length less than twice the diameter of the circle, these ridges longitudinally and often deeply fluted, giving appearance of smaller, more numerous ridges; a pair of circles exactly similar to the central circle placed on outer margin of the area of radiating ridges, a little dorsally of the central one, and with it forming the three corners of a triangle; from the central circle there extends ventrally a linear, elongate, forked black body seen beneath the integument of the puparium. Anal stigmata showing in centre of anal plate as a pair of small blackish spots, each bearing three principal black tubercles arranged in a slightly crescentic form with the convexity ventral, and a smaller black tubercle in concavity of each crescent, one or more other still smaller ones sometimes apparent; a small, depressed median

orifice slightly dorsal to the pair of stigmata, and a third less distinct median stigma considerably removed ventrally from the pair.

Described from two alcoholic puparia taken from galls collected near Apache Spring, June 22, and containing pupæ.

The hymenopterous larvæ and pupæ which I found in the galls, June 22, and which are undoubtedly those of a parasite of the trypetid, consisted of two small larvæ, and a ♂ and ♀ pupa, the latter at once distinguished by the long ovipositor curved forward over her back. This parasite seems nearly to equal its host in size.

The larvæ, in their partially curled position, measure $2\frac{1}{2}$ to 3 mm. long, and fully 2 mm. wide; tapered suddenly toward head and quite so toward anal extremity; whitish, very pale dilute yellowish after immersion for some months in alcohol, mouth parts blackish.

♀ pupa, 4 mm. long, $1\frac{1}{2}$ mm. wide; ovipositor curled forward over back, reaching tip of scutellum; after immersion in alcohol pale fulvous, abdomen at base and eyes blackish. Ovipositor, in its curled position, measures nearly 3 mm.

♂ pupa, 3 mm. long, scarcely 1 mm. wide; pale fulvous, eyes black.

It should also be mentioned that there was bred from the galls collected near Gallo Springs, June 21, a very small weevil less than 3 mm. in length, perhaps an inquiline in the galls. The galls were left attached to very short pieces of the stems, but it is not likely that the weevil came from the stems, which are very small. Moreover a careful examination of the stems with a lens shows no exit hole whatever in them.

NOTE.—Since writing the above, I have found that Mr. Theo. D. A. Cockerell records, on page 106 of *West American Scientist*, vol. 6 (Sept., 1889), the breeding of a cecidomyiid "from woolly trypetid galls on *Bigelovia*." Mr. Cockerell has also sent me a small gall of this species, with the following note: "Gall of *Trypeta bigeloviae*, Ckll., Ent. Mo. Mag., 1890, West Cliff, Col." I have not seen Mr. Cockerell's mention of this species in the Ent. Mo. Mag., and do not know whether he described the fly or only the gall. At all events the discovery of the trypetid nature of the gall belongs to him. When I named the trypetid as above, I did not know that the same name had been proposed for the same insect by Mr. Cockerell.

THE MEMBRACIDÆ OF ST. VINCENT ISLAND, W. I.

BY F. W. GODING, M. D., PH. D., RUTLAND, ILL.

The material forming the basis of this paper was sent to me last October by Prof. C. V. Riley for determination. The species were collected by H. H. Smith in St. Vincent, West Indies, and are among the most interesting forms of this remarkable family.

Subfamily CENTROTINÆ, Stal.

1. *Monobelus fasciatus*, Fabr.

♂. One example in National Museum.

Subfamily SMILINÆ, Stal.

2. *Acutalis trifurcata*, n. sp.

♀. Head greenish-yellow, with an oval spot in the middle (in which are the ocelli), and a curved black line around the apex; prothorax shining greenish-yellow, a broad line ending just before the apex, at its middle sending toward the front a line, on each side, which does not reach a line through lateral angles, these lines together resembling a three-tined fork; median line behind this fork much broader; at base of median line a broad line branches from each side backward and outward in the form of an arrow-head; base of prothorax very narrowly shining black; tegmina very pale yellow, veins indistinct; chest, femora, tibiae and tarsi dark brown. Length, 3 mm.; width, 1½ mm.

Described from one female; type in National Museum.

This species is near *Illinoicnsis*, Godg.

3. *Acutalis apicalis*, n. sp.

♂. Shining black, with a submarginal yellow line on each side, originating at the apex of head it extends posteriorly nearly to apex of prothorax, where it converges towards the line on the opposite side, but they do not come together; apex bright yellow; lateral angles of prothorax produced in small tubercles; tegmina light yellow, veins darker. Legs light brown, tarsi annulate with brown.

Length, 3 mm.; width, 1½ mm.

Described from one male; type in National Museum.

This species is near *flaviventris*. Leth. It may prove to be the ♂ of *trifurcata*, Godg.

Subfamily MEMBRACINÆ, Stal.

4. *Sphongophorus (Lobocladisca) vexillifera*, n. sp.

Sex (?) Dark brown fuscous; very densely and coarsely punctured. Head vertical, nearly quadrangular, a little longer than the width between

eyes; eyes small, brown; ocelli on a line with superior edge of eyes, to which they approach nearer than to each other. Prothorax in front convex, armed with a long, slender, nearly upright compressed horn, leaning slightly forward, seen from side, slightly sinuous and armed near middle of posterior edge with a small tooth; seen from front, thinly compressed, and at apex bidentate, the small teeth divaricate; behind anterior horn near middle of posterior process is a medium sized, compressed, rounded lobe, which, when seen from side, resembles the helmet of a huzzar, the top of which has a sharp, slender, needle-like spine pointing upward; behind the base of this lobe the posterior process extends backward in a low, small, triangular process, placed vertically, with a slender spine extending posteriorly from the base. Lateral angles very prominent; front margin arched to receive the head, the sides of prothorax extending downward in ear-shaped lobules behind the eyes. Elytra ferruginous, with a large black spot across the middle. All the tibiae very widely dilated and thin.

Length, 6 mm; to tip of tegmina, 7 mm.; breadth, $3\frac{1}{2}$ mm.; altitude, 6 mm.

Described from one example, the sex of which could not be determined without mutilating it. Type in National Museum.

This is nearest to *rigidus*, Stal. It belongs to Stal's subgenus LOBOCLADISCA, which with its related subgenera are characterized as follows:—

Posterior prothoracic process unarmed at the middle.....Subg. SPHONGOPHORUS, Fairm.
 Posterior prothoracic process armed at or near middle with a process.

Anterior horn undate, lengthily curved backward, posterior or inferior edge unarmed..... CLADONOTA, Stal.

Anterior horn substraight, not curving behind lobe of posterior process, posterior or inferior edge armed with a tooth or lobe..... LOBOCLADISCA, Stal.

5. *Sphongophorus (Cladonota) albofasciata*, n. sp.

♂. Blackish-brown, coarsely and roughly punctured, tuberculate. Head longer than wide, inferior edge 3-lobed; ocelli on a line with superior edge of eyes, red, nearer to eyes than to each other, and near base of prothorax. Prothorax highly convex, armed anteriorly with a horn which at first extends upwards, strong and stout; from posterior superior angle it extends, slender and thread-like, posteriorly upward and backward for another third, then it suddenly enlarges in a nearly quadrangular, com-

pressed, foliaceous lobe, having a tooth extending posteriorly; this lobe is compressed in centre with a diamond-shaped outline at the posterior edge; about the middle of the posterior process is a cylindrical upright horn, constricted on sides at middle, the upper part produced anteriorly and receives the foliole of the anterior horn which rests upon it; behind this horn the posterior process is slightly enlarged towards apex, where it is truncated diagonally downward and backward. Elytra light brown ferruginous, with a white band extending across the middle. Tibiæ all all widely dilated.

Length, 5 mm.; altitude, $3\frac{1}{2}$ mm.

Described from one male. Type in National Museum.

6. *Bolbonota (Tubercunota) bispinifera*, n. sp.

♂. Black, covered with auriferous pubescence finely tuberculated. Head longer than wide, sides of face dilated; ocelli on a line with eyes and near base of prothorax, nearer eyes than each other. Prothorax highly convex anteriorly, behind elevated portion strongly declivous; at upper edge of declivity is a short, cylindrical spine pointing upward and backward, and between this and apex of posterior process is a larger transverse spine pointing directly upward; lateral angles produced in tubercles, above which are two little elevated lines on each side, the superior one reaching middle of inferior border of prothorax, diverging posteriorly, the surface between these and median carina smooth. Tegmina with basal portion black, remainder hyaline, veins black. Anterior pair of legs dilated, middle and posterior pairs triquetrous, with strong spines, dark brown.

Length, $1\frac{1}{2}$ mm.; breadth, 1 mm.

Described from one male. Type in National Museum.

It is near *hituberculata*, Stal., and *inæqualis*, Fabr., and belongs to the subgenus TUBERCUNOTA, Godg., which with its relative may be distinguished by the following table:—

Posterior process of prothorax behind middle furnished with a high transverse tubercle or spine, more or less compressed antero-posteriorly: anterior part strongly and gradually elevated up to middle.....	Subgenus TUBERCUNOTA, Godg.
Posterior process from apex, seen from side, depressed, in front of depressed part dorsum straight or lightly uni- or bi-sinuate	Subgenus BOLBONOTA, A. & S.

(Types *melacna*, Germ., *aurco-sericca*, Stal.)

The type of the subgenus TUBERCUNOTA, Godg., is *bispinifera*, Godg., which is the smallest known member of the genus.

7. *Enchophyllum (Tropidocera) Rileyi*, n. sp.

♂ and ♀. Head black; prothorax beautiful orange-red, the anterior horn and a stripe passing downward from it, on each side, forks, one branch in front and one behind lateral angles, the front branch extending to eye, the hind one spreading out for a little distance along inferior border, in some examples, all the way to apex, black. Tegmina opaque brown-black, veins distinct. Legs black, front and middle tibiae dilated, posterior tibiae triquetrous and spined.

Length to tip of tegmina, 6 mm., including anterior horn, 10 mm.; altitude, 3 mm.

It belongs to Stal's subgenus TROPIDOCERA near *quinque-maculatum*, Fm. I take pleasure in dedicating this, the most beautiful member of the genus, to my esteemed friend, Dr. C. V. Riley, who kindly presented me with the types and who has aided in many ways my studies of this difficult group.

Types in collection of F. W. G., and National Museum.

Described from five examples.

A STATEMENT IN CORRECTION.

BY AUG. R. GROTE, A. M.

In that most useful paper, the "Directions for Collecting and Preserving Insects," by Dr. C. V. Riley, Washington, 1892, occurs the statement, on page 137, that the periodical, the North American Entomologist, was "published by the Buffalo Society of Natural Sciences." The fact is that the little monthly, which only reached its first volume, was edited by myself, and printed and published by Reinecke & Zesch, a Buffalo printing house. The material was written or collected together by myself, and the few plates, mostly contributed by the authors, were gotten up at my sole trouble, and even expense. I corrected the proofs and had sole charge of the periodical, which was intended to include short articles and reviews of current literature upon its subject. The subscriptions, advertisements and what profit resulted upon the undertaking went entirely into the pockets of the printers, who, on my suggestion, undertook the outlay for printing and paper. I received no consideration whatever for my work. The Buffalo Society had nothing, in any shape or manner, to do with the matter. My name is upon the title page and not that of the Society, nor can I find that the Society's name has been ever previously brought forward in connection with my little venture. I am entirely at a loss to account for Dr. Riley's statement, which misrepresents my entomological labours in this particular.

Mailed February 4th.