TRANSACTIONS

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TRANSACTIONS

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AMERICAN ENTOMOLOGICAL SOCIETY.

VOLUME II.

CATALOGUE OF A COLLECTION OF HYMENOPTERA made by Prof. F. Sumichrast near Cordova, Mexico.

BY E. T. CRESSON.

PART I.

The species comprised in this catalogue were collected at the Hacienda del Potrero, near Cordova, Mexico, and presented to the American Entomological Society by Prof. F. Sumichrast, of Orizaba,—a most excellent and zealous collector, not only of entomological specimens, but of all branches of Zoology. By his indefatigable labors, large and beautifully preserved collections of Hymenoptera have been made in the environs of Orizaba and Cordova, and the prospects are that the handsome and extremely interesting fauna of that part of Mexico, will soon be thoroughly worked up.

As yet, very little has been done by European authors in making known to science the Hymenoptera, from America, forming the section Terebrantia—probably the most numerous of the two sections in the number of genera and species, and comprising insects of brilliant colors, of beautiful ornamentation, and of very curious and anomalous forms. The Aculeata seem to receive, I may as well say, all the attention, and the Terebrantia comparatively none. It is true that the families of the last named section are, in general, more difficult to study, especially the subsection Entomophaga, by reason of the small size and the extreme variability of form and coloration; but this is no good cause for discouragement. However difficult and perplexing the study may be, an attempt to work up the genera and species must be made, no matter how imperfectly done. There are no great risks to run in creating synonyms—apart from those unavoidably made where the sexes are so very dissimilar in coloration—because so little has been done.

I am well aware that what little I have achieved, towards working up the Ichneumonidæ of this country, is very imperfect, and will have to

be gone over many times before anything approaching perfection can be arrived at; but this is the case with all families of insects where the species are very numerous and the generic and specific characters so improminent as in this great family.

When studying and cataloguing the species of the genus *Ichneumon*, collected north of Mexico, (having at the time very few from south of that line,) I had but little difficulty in deciding what species properly belonged to that genus, and *Hoplismenus*, *Joppa* and *Trogus* seemed to me to possess characters by which they could be readily separated from *Ichneumon* and from each other; but since the examination of the collection now under consideration from Mexico—a recent arrival—I find so many intermediate forms, that I actually hesitate to say what is an *Ichneumon*, an *Hoplismenus*, a *Joppa*, or a *Trogus*. If I confine myself to typical generic forms, I have left a number of species I feel at a loss to say to what genus they properly belong. In this dilemma, I have for the present compromised the matter in my own mind by provisionally retaining all the four above named genera, and placing in them such species as seem most natural, and referring the most doubtful species to *Ichneumon*. This seems to me the best plan to adopt for the present and until a more elaborate study can be made of their natural affinities.

Family ICHNEUMONIDÆ.

Genus **ICHNEUMON**, Linn.

Metathorax without prominent lateral tubercles.
- **Scutellum** flat or moderately convex.
  - Abdomen red, or red and black ..... Sp. 1—2
  - " black, banded with white or yellow ..... 3—16
- **Scutellum** more or less elevated.
  - Abdomen red ..... 17—18
  - " yellow, banded with black ..... 19—21
  - " entirely yellow ..... —22

Metathorax with prominent lateral tubercles.
- **Scutellum** flat or subconvex ..... 23—32
- " decidedly convex.
  - Abdomen red and black ..... —33
  - " black, banded with yellow ..... 34—36
- **Scutellum** much elevated ..... 37—38

1. **Ichneumon mexicanus**, n. sp.

♂ ♀.—Black, head and thorax shining; face, mouth, orbits, broad on the cheeks, annulus on antennæ, basal joint beneath in ♂, posterior margin of prothorax, broader before the tegulæ which has a spot in

front, line over the tegulæ, sides and tip of scutellum, pectus and pleura beneath, and the four anterior coxæ, white or whitish; metathorax and sides of pleura clothed with short silvery-sericeous pubescence; wings hyaline; legs and abdomen ferruginous or yellowish-ferruginous; a spot on the posterior coxæ behind, and tip of first abdominal segment above blackish. Head broad, cheeks full; antennæ slightly thickened towards the tip and the basal joints of flagellum short and thick-set in ♀, long, slender, filiform and with the basal joints elongate in ♂; mesothorax and scutellum polished, sparsely punctured, the latter flat; metathorax densely sculptured, somewhat rugose, smooth at base, the elevated lines obsoletely defined, the apex subtruncate; areolet of anterior wings 5-angular; abdomen elongate, depressed, opaque, first segment rather broadly dilated at tip, the upper surface of which is depressed laterally. Length 7—8 lines.

Five ♀, eight ♂ specimens. (Sumichrast Collection, No. 11.)

2. **Ichneumon meridionalis**, Cresson.

Ichneumon meridionalis, Cresson, Proc. Ent. Soc. Phil. iv, p. 12.

Three ♂, two ♀ specimens. (Sumichrast Coll. No. 59.) These do not seem to differ from Cuban specimens.

3. **Ichneumon zapotecus**, n. sp.

♀.—Black, somewhat shining, head beneath antennæ, orbits, lower half of cheeks, annulus on antennæ, collar, line on each side before tegulæ, two short lines on mesothorax, a line on each side over tegulæ, an oblique line on each side before scutellum, spot on tip of scutellum, another on postscutellum, a slender W-shaped mark on metathorax above, interrupted laterally, a large ovate spot on the extreme sides, posterior margin of tegulæ, the whole of the pleura, except a broad oblique black line on each side, most of the coxæ, base of first abdominal segment, the apical and lateral margins of all the dorsal segments, broader on the disk, and the venter entirely, all white; legs pale luteous, a stripe on all the femora above and on all the tibiæ behind, most of the four anterior tarsi, a spot on the posterior coxæ exteriorly, and their trochanters above, black; wings hyaline, faintly dusky at extreme tips, nervures and stigma black. Head transversely subquadrate, cheeks full, clypeus truncate; antennæ long, slightly thickened towards the tips, third joint not as long as the first and second together, the remaining joints gradually shorter; mesothorax closely punctured on the sides, sparsely so on the disk; scutellum flattened, sides carinated on the anterior half; metathorax rugulose, smoother at base, obliquely truncate behind, elevated lines obsolete; areolet of anterior wings 5-an-

gular, subtriangular; abdomen rather narrow, depressed, densely and finely punctured, first segment slender, with the apex rather suddenly dilated and uneven above. Length 6½—7 lines.

Three ♀ specimens. (Sumichrast Collection, Nos. 27 and 93.)

4. **Ichneumon encaustus**, n. sp.

♀.—Black, shining; head beneath antennæ, palpi, orbits, broad on cheeks, broad annulus on antennæ, basal joint beneath, collar, line on each side before the wings, angular line beneath tegulæ, most of pleura, a longitudinal line on each side of mesothorax behind, sides and tip of scutellum, postscutellum, posterior margins of scutellar and postscutellar regions, a large mark behind each posterior wing, three spots on base of metathorax above, two longitudinal spots at the apex, confluent at the extreme tip with a large rounded spot on each side, the four anterior coxæ and trochanters, their femora, except a black line above and at tip beneath, their tibiæ anteriorly, posterior coxæ, except two black lines behind, apical and lateral margins of all the abdominal segments, and the venter entirely, white or yellowish-white; posterior femora whitish, with the upper inner half and tip black; their tibiæ and tarsi yellow, the apex of the femora black; four anterior tarsi dusky; the whitish bands on the second, third and fourth segments of abdomen are broad, and that on the first segment emarginate in the middle; wings hyaline, nervures blackish, a pale spot at base of stigma. Head broad; antennæ as long as head and thorax, their joints proportioned as in *zapotecus*; mesothorax and scutellum with scattered punctures, the latter flat, carinated on each side at base; metathorax deeply and closely punctured, sparsely so at base and rugulose on the sides, elevated lines distinctly, but not sharply defined on the disk, the apex truncate and bounded by a sharp carina; areolet of anterior wing smaller than usual and triangular; abdomen slender at base, fusiform beyond the first segment, smooth and polished. Length 6 lines.

Four ♀ specimens. (Sumichrast Collection, No. 8.) Distinct from *zapotecus* by the different form and position of the markings of the thorax.

5. **Ichneumon Parredes**, n. sp.

♀.—Head black, orbits, face, clypeus, mandibles except tips, palpi and cheeks, white; antennæ black, the scape beneath and a broad annulus beyond the middle, white; thorax yellowish-white on the sides and beneath, black above, margins of prothorax, interrupted above in front, line over each tegula extending to scutellum, scutellum except base, postscutellum and metathorax, except a large black mark on each

side of basal middle and a black longitudinal mark down the middle of posterior truncation, white or whitish; wings hyaline, faintly yellowish, nervures brown, stigma luteous; legs luteous-yellow, irregular mark on posterior coxæ behind, all the femora above and behind except tips, and the four anterior tibiæ behind, more or less fuscous, tips of tarsi black, four anterior coxæ and trochanters whitish; abdomen above black, subiridescent, base of first segment, lateral and rather broad apical margins of all the segments, and the venter entirely, white, Head large, antennæ long, mesothorax feebly punctured, slightly striated on each side of the middle, scutellum flat, metathorax shining, with well defined carinæ forming a small pentagonal central area, posterior truncation transversely striated on the sides, lateral tubercles very small and indistinct; wings ample, areolet 5-angular; abdomen smooth and shining. Length 4 lines.

One ♀ specimen. Closely allied to *encaustus*.

6. **Ichneumon tepanecus**, n. sp.

♀.—Black, shining; color and markings very similar to those of *zapotecus*, with the following differences: the apical middle of the clypeus has a black spot; the scutellum is whitish except at base; the metathorax marked much as in *encaustus*, it has three small spots at base, the middle the largest, and wanting in one specimen, two elongate marks on the posterior truncation, narrowed above and sometimes confluent by a narrow line, and two spots on each side, the posterior one large and ovate, the elevated lines on the disk are sometimes marked with whitish; the pleura has two large spots on the side, placed obliquely, and two smaller approximate spots behind the anterior coxæ; legs luteous, the four anterior coxæ and trochanters, and a large oblique spot on the posterior coxæ above, white; base and apex of posterior coxæ above, the femora behind—the posterior pair sometimes so only at tip—extreme tip of posterior pair outwardly, and a line on all the tibiæ within, black; abdomen marked as in *encaustus*. Form and sculpture much as in *encaustus*, but the first and second segments of abdomen are densely and finely punctured, while in *encaustus* the entire abdomen above is perfectly smooth and polished. Length 6 lines.

Three ♀ specimens. (Sumichrast Coll. No. 55.)

7. **Ichneumon Cholula**, n. sp.

♀.—Head whitish, occiput confluent with a mark on middle of vertex extending to base of antennæ, and tips of mandibles, black; antennæ black, scape in front and a broad annulus about the middle, white; prothorax black, broadly margined with white; mesothorax black,

a spot on each side anteriorly, a shield-shaped mark on the disk and an oblique spot on the posterior margin, whitish; scutellum and spot on postscutellum, whitish, the space on each side black margined posteriorly with whitish; pectus and pleura yellowish-white, an acutely angular black mark beneath the wings; metathorax yellowish, the lateral basal suture, a broad, abbreviated, longitudinal mark on each side above confluent with an oblique line on the side, and a short line down the posterior truncation, black; tegulæ whitish, with a brownish spot on the outer margins; wings hyaline, faintly dusky at tips, nervures and stigma black; legs yellow, posterior tarsi tinged with orange, a broad line on the posterior coxæ above, their trochanters above, a line on all the femora above, also on the four anterior tibiæ and tarsi behind, the posterior tibiæ except tips within, spot at base of posterior tarsi behind, and the tarsal claws, black; abdomen yellowish-white, a large mark on tip of first segment above covering the dilated portion, a large transverse mark on second segment above, deeply indented anteriorly, a broad, transverse mark on the middle of the three following segments, and the petiole beneath, black. Head broad, cheeks full, clypeus truncate in front; antennæ rather slender, third joint longer than fourth; mesothorax closely punctured; scutellum flat; metathorax closely and deeply punctured, distinctly transversely striated, rather abruptly truncate behind; areolet of anterior wing subtriangular, smaller than usual; abdomen elongate, depressed, very closely punctured, first segment angular near apex in profile. Length 7 lines.

One ♀ specimen. (Sumichrast Coll. No. 85.)

8. **Ichneumon Toluca**, n. sp.

♂.—Black; orbits, broad on cheeks, face except a central, triangular, black mark, clypeus except a central black stripe, mandibles except tips, palpi, scape beneath, a broad annulus on flagellum, upper and lower margins of prothorax, two longitudinal lines on disk of mesothorax, abbreviated in two specimens, entire in the other, tegulæ, a line beneath, a large, irregularly shaped mark on side of pleura, with a small spot above, scutellum, an oblique line on each side above, postscutellum, white or yellowish; metathorax marked as in *Cholula*; wings hyaline, nervures brown, stigma luteous; legs luteous-yellow, sometimes honey-yellow, coxæ whitish, spot at tip of all the coxæ behind, base of posterior pair beneath, a line on all the femora above, and tips of all the tarsi, black; sometimes the four anterior tibiæ and base of posterior pair, behind, are dusky or blackish; abdomen with the apical margins of all the segments pale yellow, broadest on the second

and third; in two specimens the first segment is yellowish except the extreme base, a spot near the tip and the under surface; venter yellow, with lateral black spots. Form long and rather slender, surface closely punctured, opaque; antennæ long and slender; scutellum subconvex; metathorax rounded above, sloping gradually behind; areolet of anterior wings 5-angular, subtriangular; abdomen subcylindrical, basal foveæ of second segment very large, with distinct radiating striæ; apex truncate in profile, subcompressed. Length 5½ lines.

Three ♂ specimens. (Sumichrast Coll. No. 73.)

9. **Ichneumon Chalco**, n. sp.

♂.—Same size, form and sculpture as *Toluca*, and very similar in color and markings, differing only as follows: face yellowish-white with only a central rounded black spot; the femora are reddish-fulvous above instead of black, the tibiæ and tarsi are tinged with fulvous, tips of the latter blackish; the wings are yellow-hyaline, and the apical yellow band on second, third and fourth segments of abdomen shade into ferruginous anteriorly.

? *Var.* ♂.—Abdomen ferruginous, banded with yellow, the posterior coxæ with ferruginous spot at tip above and the femora above bright fulvo-ferruginous; tips of tarsi scarcely dusky.

Two ♂ specimens. (Sumichrast Coll. No. 96.) These may be varieties of *Toluca*.

10. **Ichneumon Alvarado**, n. sp.

♂.—Pale lemon-yellow, opaque; spot covering ocelli, a broad oblique line on each side behind summit of eye and confluent behind ocelli, black; antennæ fuscous above, paler in middle, bright ferruginous beneath, dusky at tip, scape beneath pale yellow; mesothorax black, with a lateral and two central yellow lines, the latter abbreviated behind; line behind collar, apical half of scutellum, its lateral region, postscutellum, basal suture of metathorax, a lateral line, a broad central stripe not reaching the base, and two spots on each side, the posterior one largest and cuneiform, a transverse line beneath wing, connected anteriorly to a slender oblique line, all black; the markings of the metathorax may be better explained by stating that the upper surface is black, with the smooth, slightly elevated lines yellow, excepting the posterior transverse one closing the central area; wings yellowish-hyaline, nervures and stigma honey-yellow; legs pale yellow, a large spot on posterior coxæ behind, base of trochanters, four anterior femora above except extreme base and apex, apical half of posterior femora above, extending nearly to the base within, and apical third of

their tibiæ, black; abdomen black above, tip of first segment except a basal and apical spot, a broad, transverse, subapical band on each of the four following segments, slightly narrowed in the middle, lemon yellow; an obscure yellowish apical band on sixth segment, apical segment brown; venter yellowish, banded with blackish. Form elongate, closely punctured; clypeus truncate in front, the middle slightly emarginate; cheeks flat, not prominent; antennæ large and filiform, joints distinct; metathorax rugulose above, smooth laterally; areolet 5-angular; abdominal segments contracted at base as in *Trogus*, the surface of the second, third and fourth segments above longitudinally rugulose, basal middle of second striated, foveæ large and deep. Length 6½ lines.

One ♂ specimen. This is a very handsome and conspicuous species.

11. **Ichneumon decorosus**, n. sp.

♂.—Head and thorax marked as in *Alvarado*, except that the black spot on vertex extends to base of antennæ; the scutellum and postscutellum are pale yellowish, the former narrowly black at base, and the metathorax has only a broad central black stripe and a lateral black spot just behind the spiracle; wings as in *Alvarado*; legs tinged with luteous, posterior coxæ at tip, the four anterior femora behind, the posterior pair at tip behind, tips of their tibiæ and their tarsi except base, black or blackish; abdomen black above, apical margins of the second and following segments, broader laterally and extending along the sides, lemon-yellow; first segment yellow with a large subapical black spot; venter entirely yellow. Form elongate, slender, and similar to that of *Alvarado* except that the abdominal segments are not contracted at base; the punctation is fine and close; the clypeus is truncate anteriorly; the antennæ are broken off. Length 6½ lines.

One ♂ specimen.

12. **Ichneumon centrosus**, n. sp.

♂.—Color and markings very similar to those of *decorosus*, but the form is shorter and stouter, the scutellum more convex, and the abdomen shorter and broader, sericeous; the antennæ brown, paler beneath, the scape yellow beneath; the metathorax has a lateral black stripe and the spot above is placed before the spiracle; the posterior coxæ have a broad black line behind and a black spot on each side at base, all the femora have a black line above and beneath, all the tibiæ are dusky at base within; the abdomen is dull black, with the lateral and apical margins lemon-yellow, the latter broadly so; venter subfasciate with blackish. Length 6 lines.

One ♂ specimen. (Sumichrast Coll. No. 71.)

13. **Ichneumon jugiosus**, n. sp.

♀.—Very similar to *centrosus*, with the yellow color brighter, the antennæ have a broad white annulus, the scape ferruginous, third joint longer than fourth; the metathorax has no stigmatal spot nor lateral stripe; the posterior femora are black at tips within, their tibiæ dusky at tips; abdomen less sericeous, apex truncate in profile. Length 4½ lines.

One ♀ specimen. May be the ♀ of *centrosus*.

14. **Ichneumon limitaris**, n. sp.

♂.—Pale lemon-yellow, the black markings much as in the proceeding species, with the following differences:—the black mark starting from base of antennæ and covering the ocelli, extends on to the occiput obliquely, margining it posteriorly for a short distance and leaving the orbits broad; in the two preceding species this mark is straight across from eye to eye, leaving no yellow orbital line, while in species 10 and 11, this mark is oblique and free, i. e. not touching either the eye or posterior margin of occiput; cheeks full, convex, giving the head a broad appearance; antennæ long, slender, subserrate, black above, with a narrow testaceous annulus about the middle, beneath testaceous, blackish at tips, scape yellow, spotted above with black; the prothorax is yellow with a black spot on each side; the metathorax has only a basal black mark on each side above; all the femora are blackish behind and at base above and the tarsi are blackish except basal joint; first abdominal segment is yellow with three subapical black spots above; rest of abdomen marked as in *jugiosus*. Length 5 lines.

One ♂ specimen.

15. **Ichneumon tenuicornis**, n. sp.

♂.—This resembles *centrosus* very much in general shape of body, color and markings; in this the head is transversely compressed, eyes smaller than usual, face broad, cheeks flattened; antennæ short, slender, very much attenuated at tips, the joints indistinctly defined; scutellum convex, the sides acutely carinated; dark mark on metathorax rugose; basal foveæ of second segment large and very deep; the black mark across the vertex has a confluent, oblique line behind each eye; spot beneath each eye and the palpi black; antennæ blackish, with a yellowish annulus before the middle, scape yellow beneath; lateral carinæ of scutellum black; mesothorax with four yellow lines more developed than in *centrosus*; metathorax with a subbasal black mark on each side above, continued narrowly and obliquely to lateral apical angle; pleura with a short line beneath anterior wing and a spot low

down on each side and on a line with middle coxa; wings dusky hyaline, the costa broadly yellowish, dusky beyond the areolet; four anterior femora above, the posterior pair behind, a line on all the tibiæ, not extending to apex and a narrow line on posterior coxæ, beneath and above, and the trochanters black, anterior femora more swollen than usual; abdomen marked as in *centrosus*. Length 4½—5 lines.

Two ♂ specimens. (Sumichrast Coll. Nos. 72 and 98.)

16. **Ichneumon monitus**, n. sp.

♀.—Lemon-yellow; line behind scape of antennæ, triangular mark covering ocelli, two large spots on occiput connected by a slender line, three broad stripes on mesothorax, lateral regions of scutellum, base of metathorax, a line on each side and a mark down the middle, line beneath wings, spot on tegulæ, subapical spot on first segment of abdomen, basal half or two-thirds of second and third, and the remaining segments entirely, black; antennæ brown-black with a broad yellowish annulus, scape yellow beneath; wings pale yellowish-hyaline, nervures and stigma pale fulvous; two spots on posterior coxæ, stain on all the femora, and tips of the tarsi, fuscous. Cheeks not prominent; antennæ slender, third joint longer than fourth; scutellum convex; metathorax with well defined elevated lines, abdomen broad beyond first segment, depressed, second segment much depressed at base and substriated longitudinally, basal foveæ large and rather deep; second segment closely punctured, remainder smooth and shining. Length 3 lines.

One ♀ specimen.

17. **Ichneumon totonacus**, n. sp.

♂.—Black, clothed with a fine whitish pubescence; face, mouth, orbits, cheeks, broad annulus on antennæ, line on each side before tegulæ and a line beneath, spot on tegulæ posteriorly, sides of scutellum, and four anterior coxæ and trochanters, white; legs and abdomen ferruginous, tips of tarsi blackish, posterior tarsi yellow; wings hyaline, iridescent, nervures and stigma brown. Head large and subquadrate, cheeks full, face flat, clypeus with the anterior margin bisinuate; antennæ about as long as the body, slender, filiform, basal joints of flagellum long; mesothorax shining, with a few large deep punctures, a short, deeply impressed line on each side anteriorly; posterior margin of prothorax prominent laterally; scutellum subquadrate, squarely elevated at tip, flat above, excavate at base and carinate laterally; metathorax truncate behind, rugulose, shining at base, the elevated lines sharply defined, forming a semicircular central area; areolet of anterior wings 5-angular; abdomen short, broad-ovate beyond the first segment,

flattened, the latter slender, with the tip broadly dilated, depressed, shining, with scattered punctures; second and third segments densely and deeply punctured, except the apex which is smooth and polished as well as the whole of remaining segments. Length 4 lines.

One ♂ specimen. Has much the general form of *Hoplismenus*.

18. **Ichneumon frivolus**, n. sp.

♂.—Uniformly ferruginous; orbits and face faintly yellowish; antennæ black, with a white annulus about the middle, scape ferruginous; wings hyaline, iridescent, nervures and stigma black; sutures of pleura, extrême tip of metathorax, and tips of tarsi, blackish; tarsi pale ferruginous. Small, form slender, eyes large, cheeks prominent, antennæ as long as the body, slender at tips; thorax closely punctured; scutellum very convex, sides carinated, apex abrupt; metathorax obliquely truncate behind, rugulose, the elevated lines sharply defined; wings ample, stigma large, areolet subtriangular; abdomen densely punctured, roughly so at base of second segment, apex smoother and shining. Length 3 lines.

One ♂ specimen.

19. **Ichneumon tragicus**, n. sp.

♂.—Lemon-yellow, opaque; a large mark on vertex, covering the ocelli and confluent with a broad, transverse, arcuate line on occiput, antennæ except basal joints, large spot on each side of prothorax, three broad lines on mesothorax almost confluent before the middle, base and sides of scutellum, basal suture of metathorax, a small spot on each side at base above, confluent with a much larger spot behind, a spot before the insertion of the abdomen, a line beneath the anterior wings, spot on posterior coxæ behind, line on their femora above, their trochanters above, their tibiæ except tips beneath, their tarsi entirely, a spot near tip of first abdominal segment, base of the following segments, very broad on the second segment and becoming narrower towards the tip, black; wings yellowish-hyaline, nervures and stigma honey-yellow; legs tinged with honey-yellow. Head large, broad, not narrowed beneath, cheeks full and polished; face sparsely punctured, anterior margin of clypeus truncate; antennæ longer than head and thorax, slender, the joints not distinctly defined, subpubescent; thorax densely punctured; scutellum strongly elevated behind, carinated on the sides and emarginate at tip, the sides and tip very abrupt; metathorax densely punctured, without any distinct elevated lines; areolet of anterior wing triangular; abdomen depressed, longitudinally rugose, first segment

not elevated at tip, the remaining segments with a slightly elevated line down the middle. Length 6¾ lines.

One ♂ specimen. (Sumichrast Coll. No. 30.)

20. **Ichneumon infulatus**, n. sp.

♀.—Lemon-yellow; posterior margin of occiput, line across vertex from eye to eye, covering ocelli and extending to base of antennæ, tips of mandibles, antennæ except broad annulus and scape beneath, two transverse spots on middle of prothorax, more or less confluent, a short line on lateral suture, three broad lines on mesothorax, confluent behind, spot at base of scutellum, an arcuated line on disk of metathorax, sometimes uneven and interrupted, basal sutures, line or dot at tip behind, mark at tip of posterior coxæ behind, sometimes a line on femora above, spot on middle of first abdominal segment above, a transverse, unequal, subbasal band on second segment, and a broad basal band on the three following segments, more or less uneven behind, black; wings pale yellowish-hyaline; femora sometimes fulvous above and the four anterior tibiæ and tarsi, and tip of posterior tibiæ more or less fulvous. Form like that of *tragicus;* head large, subquadrate, cheeks full and convex; scutellum same shape as in last named species, but not so strongly elevated; abdominal segment slightly contracted at base. Length 4½ lines.

Two ♀ specimens.

21. **Ichneumon exquisitus**, n. sp.

♂ ♀.—Pale lemon-yellow, opaque; a triangular mark on vertex, covering the ocelli and confluent with an oblique line on each side of occiput, antennæ, three longitudinal lines on mesothorax, base of scutellum, basal suture of metathorax, three spots on its disk, the middle one very small and placed a little anterior to the others, a dot on each side of pleura, a spot on the posterior coxæ at tip behind, most of the posterior tarsi, and the basal margin of the second and following segments, black; antennæ of ♀ with a broad white annulus about the middle, and the basal joint in both sexes yellow beneath; wings yellowish-hyaline, nervures and stigma fulvous; legs and apex of abdomen more or less tinged with honey-yellow. Head narrowed beneath, being triangular when viewed in front; anterior margin of clypeus truncate, antennæ long, slender, basal joints of flagellum long; thorax finely pubescent, densely punctured; scutellum obtusely elevated at tip, excavated at base, the sides and tip abrupt; metathorax obsoletely sculptured, the elevated lines not sharply defined; areolet of anterior wings 5-angular, subtriangular, the second recurrent nervure very much bent

outwardly; abdomen with the segments above rather deeply incised at base, the first segment elevated and uneven near the apex. One ♂ specimen differs from the others in the shape of the scutellum, which in this is elevated on the sides and excavate at tip as well as at base. Length 5—6 lines.

Six ♀, two ♂ specimens. (Sumichrast Coll. Nos, 36, 37 and 56.)

22. **Ichneumon Montezuma**, n. sp.

♂.—Lemon-yellow, opaque; large mark on vertex, covering the ocelli and confluent with a larger mark on occiput, tips of mandibles, antennæ, except basal joint beneath, a dot on each side of prothorax, three broad lines on mesothorax, the middle one reaching to about the center, basal incisure of metathorax, spot on posterior coxæ at tip behind, and their tibiæ and tarsi entirely, black; wings hyaline, faintly tinged with yellowish, the apex slightly fuliginous, nervures and stigma black. Head broad, not narrowed beneath; anterior margin of clypeus truncate; antennæ nearly as long as the body, slender at tips, subserrate, the joints indistinctly defined; thorax closely punctured, the scutellum very convex, clothed with erect black pubescence; metathorax rugulose, somewhat uneven, clothed with fine yellow pubescence, the basal middle with a large, not deeply impressed fovea, the apex truncate; areolet of anterior wing small, 5-angular; abdomen depressed, densely sculptured, thinly clothed with short black pubescence, a slightly elevated line down the middle of second and following segments. Length 7 lines.

One ♂ specimen. (Sumichrast Coll. No. 57.) Looks much like a *Trogus*.

23. **Ichneumon Nestor**, n. sp.

♀.—Color and markings similar to those of *tepanecus*, but differ as follows: the posterior orbits are interrupted above, and much more dilated below; the mesothorax is without any longitudinal white lines on the disk, but have a whitish line over the tegulæ, confluent with the spot behind; the metathorax have only two spots at base; the pleura has two small spots beneath the anterior wing, and a large mark extending beneath and indented anteriorly by a large black mark behind each anterior coxa; the legs are yellowish-white, the posterior coxæ at base beneath and an irregular mark on the outside, the posterior trochanters, the four anterior femora behind, the posterior pair above, the intermediate tibiæ behind and their tarsi, base and tip of posterior pair and a line within, all black; the first abdominal segment has an additional white band on the dorsal middle, and the extreme lateral margins of

the second and third segments are black. The form is more robust than in *tepanecus*, the head is larger, the face is broader, the cheeks are much more dilated, the antennæ are longer, the abdomen is longer, narrower, compressed and acuminate at tip; mesothorax closely punctured in front; metathorax rugose, elevated lines sharply defined, the upper posterior angles with an acute spine; abdomen smooth and shining, except the second segment above which is closely punctured. Length 7 lines.

One ♀ specimen. This seems intermediate between *Ichneumon* and *Hoplismenus*.

24. Ichneumon Toros, n. sp.

♀.—Black, shining, narrow anterior and broad posterior orbits, face, clypeus, mandibles except tips, palpi, broad annulus on antennæ, spot before tegulæ, scutellum, postscutellum, two large marks on tip of metathorax, covering the tubercles, a large rounded spot on each side, a large irregular, oblique mark on pleura, white or whitish; wings hyaline, nervures and stigma black; legs orange-yellow, coxæ and trochanters whitish, the posterior coxæ with a triangular black mark at tip, apex of posterior femora and of their tibiæ black; base of first abdominal segment, apical and lateral margins of all the segments, and the venter entirely, pale yellow. Abdomen short, ovate, three basal segments densely punctured, remainder smooth and polished; head broad, clypeus foveate at tip and slightly emarginate; the white mark before tegulæ protuberant, scutellum flat, roughly punctured, metathorax rugose, smoother at base, elevated lines well-defined, lateral tubercle very prominent and obtuse; areolet of wings triangular; legs robust, posterior coxæ punctured transversely. Length 5 lines.

Three ♀ specimens. (Sumichrast Coll. No. 26.)

25. Ichneumon famelicus, n. sp.

♂.—Black, rather shining; face, narrow anterior orbits, cheeks, clypeus, mandibles, except tips, palpi, annulus on antennæ, upper and lower margins of prothorax, tegulæ, spot beneath, scutellum, spot on postscutellum, a transverse spot on pleura connected with a very large mark covering the entire portion beneath, sides of metathorax, quadrate spot behind, and a longitudinal spot on basal middle, whitish; wings hyaline, nervures black; legs whitish, posterior tarsi yellow; large spot on outside of posterior coxæ, dot on outside of intermediate pair, posterior trochanters above, the four anterior femora and tibiæ behind, most of their tarsi, posterior femora above, and their tibiæ entirely, black; base and apex of first segment of abdomen, the lateral and api-

cal margins of all the dorsal segments, and the venter entirely, yellowish-white. Form long and slender; head large, subquadrate, anterior margin of clypeus bisinuate, pointed in the middle; mesothorax shining, finely and sparsely punctured; metathorax rounded above, rather abrupt behind, with two short acute spines above, the surface transversly rugulose on each side of the middle, bounded by an angular elevated line; posterior legs unusually long; abdomen long and narrow, subdepressed, closely punctured, subpubescent; first segment with an obtuse tubercle on each side near the tip; second segment much depressed on each side of the middle. Length 8½ lines.

One ♂ specimen. (Sumichrast Coll. No. 25.)

26. **Ichneumon tenebricus**, n. sp.

♂ ♀.—Whitish; vertex, occiput, tips of mandibles, antennæ, except a white spot on scape in front and a white annulus about the middle, prothorax, except upper and lower margins, mesothorax entirely, lateral region of scutellum, sutural line at base of metathorax, a broad stripe on each side above, reaching to the lateral tubercles, a stripe down the middle of posterior truncation, spot on outside of coxæ, a line on trochanters above, line on all the femora above, and the abdominal segments above except the lateral and broad apical margins, black; tibiæ, especially the posterior pair, tinged with fulvous, dusky outwardly at base, four anterior tarsi dusky, posterior pair whitish, dusky or fulvous at base and tip; wings hyaline, faintly tinged with yellowish, nervures black, stigma more or less luteous. Form slender, head subquadrate, shining; clypeus flat, rounded at tip; mesothorax sparsely punctured; scutellum flat; metathorax rugosely punctured, with a short acute spine on each side above; areolet of wings triangular; abdomen above finely and densely punctured. Length 6—7 lines.

Two ♀, four ♂ specimens. (Sumichrast Coll. Nos. 62, 91 and 92.)

27. **Ichneumon intentus**, n. sp.

♂.—Color and markings as in *tenebricus* ♂, except that the scape is entirely black; there is a white line on each side of mesothorax, above tegulæ; tip of metathorax without black spot; posterior tibiæ and tarsi entirely yellow, the former tinged with orange; basal segment of abdomen broadly white before the base. Shaped like that of *tenebricus* ♂, but more slender, the abdomen being cylindrical; clypeus bisinuate anteriorly; basal middle of metathorax smooth and polished, lateral tubercles small and obtuse. Length 6 lines.

One ♂ specimen.

28. **Ichneumon gracilentus,** n. sp.

♀.—Head black; orbits, cheeks, face, clypeus, mouth and annulus on antennæ, white; pro- and mesothorax black, margins of the former, interrupted above, tegulæ and scutellums, whitish; metathorax whitish, a broad stripe on each side of middle and a bilobed mark at tip, black; pleura entirely whitish; wings hyaline, iridescent, nervures and stigma brownish; legs luteous, spot at tip of posterior coxæ above, line on femora above, on tibiæ behind, and tips of tarsi, fuscous; abdomen above black, with a slight opaline iridescence, extreme base of first segment, lateral and apical margins of all the segments above, broader laterally, and the venter entirely, whitish. Form elongate, slender, surface smooth and polished, impunctured; head broad, clypeus deeply impressed about foveæ; scutellum flat; metathorax truncate behind, elevated lines sharply defined, lateral tubercles short and acute; areolet of wing broad, 5-angular; abdomen smooth and polished, slender at base. Length 4 lines.

One ♀ specimen.

29. **Ichneumon Arista,** n. sp.

♂.—Differs from *tenebricus* only as follows: orbits interrupted on both sides near the summit of eyes, so that only a spot remains at the summit; mesothorax with two short white lines on the posterior middle; scutellum slightly raised on the sides, black with a U-shaped yellow or white mark posteriorly; the metathorax has a short, slender, black line on the flanks at base; wings tinged with yellowish, faintly dusky along apical margin; posterior tibiæ and base of their tarsi black, rest of their tarsi white, claws black; posterior femora luteous beneath; abdominal segments with narrower whitish apical margins, the first segment white at base. Length 7½—8 lines.

Five ♂ specimens.

30. **Ichneumon maritus,** n. sp.

♂ ♀.—Smaller than *Arista*, and differs by the orbits being only once interrupted at the summit of the eyes; by the legs, ♀, being luteous, the femora behind more or less, and the base of the tibiæ, being black or dusky; the posterior tarsi are white, with the basal two-thirds of the first joint, and the claws, black; in one ♀ specimen the posterior coxæ are irregularly black above and their femora have a black line above, their tibiæ pale fulvous except a black spot at extreme base, their tarsi whitish, fulvous at base, claws black. The ♂ has the posterior tibiæ entirely luteo-fulvous, their tarsi whitish, tinged with

fulvous at base, their femora have a black line above. Length 6—6½ lines.

Three ♀, one ♂, specimens. (Sumichrast Coll. No. 9.)

31. **Ichneumon Tuxtla**, n. sp.

♀.—Differs from *tenebricus* as follows: there is a white spot on each side of mesothorax, over the tegulæ; the metathorax, instead of having a broad black stripe on each side above, has a black spot on basal middle confluent with a broad transverse band of same color on the middle, and a black central stripe down the posterior truncation; the posterior coxæ have two dusky spots or stripes behind, and the femora above and base of tibiæ are more or less dusky. Length 4—5 lines.

Three ♀ specimens. Readily distinguished from any of the preceding species by the marking of the metathorax.

32. **Ichneumon subspinosus**, n. sp.

♂.—Ornamentation very similar to that of *tepanecus*, No. 6, but lemon-yellow instead of white; the antennæ are long, slender and filiform, with the scape beneath and a narrow annulus about the middle, yellow; the two pale vittæ on mesothorax are longer, and the surface closely and rather strongly punctured; scutellum more prominent and more black at base; pleura entirely yellow except the sutures and a deep emargination on the sides beneath the wings; lateral tubercles of metathorax prominent and acute; legs luteous-yellow, femora above, four anterior tibiæ and tarsi outwardly, and tips of posterior tibiæ, black or dusky, posterior coxæ marked as in *tepanecus*; apical fasciæ of abdomen rather broader. Length 4½—5½ lines.

Four ♂ specimens. (Sumichrast Coll. Nos. 89 and 90.) This may prove to be the ♂ of *tepanecus*.

33. **Ichneumon tolteeus**, n. sp.

♀.—Ferruginous, face and orbits yellowish; antennæ black, a white annulus on the middle, base ferruginous; sutures at base of scutellum and of metathorax, tips of posterior tibiæ, their tarsi entirely, sometimes the petiole of abdomen, and base of second, third and fourth, segments above, black; the pleura beneath and venter sometimes yellowish; wings yellow-hyaline, a faint fuscous cloud placed obliquely beneath stigma, nervures blackish, most of stigma luteous. Head narrowed beneath, the cheeks flattened; antennæ long and slender; thorax and abdomen densely punctured; scutellum gibbous, very abrupt on the sides which are carinated, tip abrupt; metathorax rounded above, sloping gradually behind, lateral tubercle well-developed and acute. Length 5—6 lines.

♂. More slender, yellowish-ferruginous, the mesothorax above ferruginous, face and pleura yellow; (antennæ broken off;) wings dusky beyond stigma. Length 6 lines.

Three ♀, one ♂, specimens. (Sumichrast Coll. No. 32.)

34. **Ichneumon teres**, n. sp.

♂.—Head black; orbits, cheeks, face, clypeus and mouth, yellow; antennæ black, with a broad white annulus beyond the middle, scape rufous beneath; pro- and mesothorax black, margins of the former, interrupted in the middle above, a spot over the tegulæ, scutellums and tegulæ, yellow; metathorax and pleura yellow, slightly stained with fulvous; a longitudinal, subinterrupted line on each side of the metathorax above and a stain beneath anterior wing, fuscous; wings yellowish-hyaline, nervures brown, stigma luteous; legs fulvous, four anterior coxæ and trochanters and most of the tarsi, yellow; abdomen above black, subiridescent, the first segment except an irregular spot near the apex, basal foveæ of second and a broad apical fascia on each of the second and three following segments, yellow; two apical segments mostly ferruginous; venter yellowish, with lateral dusky marks, apex fulvous. Form long, slender, almost cylindrical; head large, subquadrate, cheeks full and convex; antennæ about two-thirds the length of the body, subserrate, slender at tips; scutellum convex, polished; mesothorax delicately punctured; metathorax punctured, smooth on the disk, subpubescent, apex truncate, lateral tubercle small and obtuse; areolet of wing subtriangular; legs slender; abdomen long, narrow, cylindrical, densely punctured, basal foveæ of second segment large and longitudinal. Length 6 lines.

One ♂ specimen. (Sumichrast Coll. No. 28.)

35. **Ichneumon lectus**, n. sp.

♂ ♀.—Lemon-yellow; the occiput and a confluent mark extending forward to base of antennæ, covering the ocelli, antennæ except scape beneath and broad white annulus, mesothorax except lateral posterior margin, base of scutellum, a central mark on metathorax broadly dilated at base, apical suture of posterior coxæ, apical half or two-thirds of their femora, tips of their tibiæ, extreme tips of all the tarsi, and the abdomen above except lateral and broad apical margins, undulate anteriorly on second and third segments, all black; scutellum, and legs except four anterior coxæ and trochanters and posterior tibiæ and tarsi, tinged with fulvous; wings hyaline, slightly tinged with yellowish, nervures brown, stigma pale. Head narrowed beneath, cheeks flat; antennæ long, slender, third joint longer than fourth; body opaque,

densely punctured; scutellum elevated, sides and apex abrupt; metathorax rounded above, sloping behind, lateral tubercle long and acute; areolet of wing triangular; basal foveæ of second segment transverse, rather large. Length 6—7 lines.

Two ♂, two ♀ specimens. (Sumichrast Coll. No. 6.)

36. **Ichneumon chichimecus**, n. sp.

♂.—Bright lemon-yellow, clothed with short pubescence; transverse spot covering ocelli and extending to base of antennæ, transverse mark on occiput, antennæ above, two spots on prothorax in front, mesothorax except two central longitudinal lines abbreviated behind, tip and lateral region of scutellum, sutures of pleura, basal suture of metathorax, a large mark on each side at base, irregularly and obliquely continued to the apical angle, bilobed mark on posterior coxæ behind, all the femora behind, line on posterior tibiæ behind, their tarsi entirely, the abdomen above except base of first segment, and regular, rather narrow apical and lateral margins of all the segments, black; sometimes the subapical black spot on first segment is more or less separated into three lines or spots; antennæ beneath fulvous, dusky at tips, scape yellow beneath; wings pale yellow-hyaline, nervures brown, stigma yellow. Head broad, cheeks full, convex; antennæ as long or nearly as long as body, subserrate, slender at tips; mesothorax and abdomen above very densely punctured or shagreened; scutellum convex, smooth and polished; metathorax pubescent, short, abrupt behind, elevated lines well-defined, lateral tubercle small and subacute; pleura and sides of metathorax polished; areolet of wing 5-angular; abdomen more or less clavate, second segment depressed, basal foveæ longitudinal and aciculated. Length 4½—5½ lines.

Six ♂ specimens.

37. **Ichneumon lenis**, n. sp.

♀.—Color and marking as in *tragicus* (No. 19), except as follows: the vertex is entirely black except narrow orbits, the antennæ have a broad white annulus, the prothorax is black except narrow margins, the yellow lines on mesothorax are narrower, not dilated in front and sometimes abbreviated, the pleura has an oblique black line beneath the wing, no black spot at tip of metathorax, all the femora have a blackish line above, and the slender portion of first abdominal segment is black above and beneath, that above sometimes extending onto the dilated apex. Form much the same as that of *tragicus*, but the head is smaller, the antennæ longer, the metathorax has a stout subacute lateral tubercle, and the abdomen above has no perceptible raised dorsal line. Length 6½ lines.

Two ♀ specimens. (Sumichrast Coll. No. 21.) This is much like *tragicus*, and is readily distinguished by the prominent tubercles on metathorax.

38. **Ichneumon azteous**, n. sp.

♂.—Lemon-yellow, thinly pubescent; occiput, middle of vertex, antennæ except scape beneath, spot on each side of prothorax, mesothorax except two central lines, spot beneath tegulæ, basal suture of metathorax, spot on apex of posterior coxæ behind, their tibiæ except base, their tarsi, and basal suture of the abdominal segments above, sometimes obsolete on first and second, black; wings subhyaline, nervures and stigma black. Same form and sculpture as *lenis*. Length 6—6½ lines.

Five ♂ specimens. (Sumichrast Coll. No. 60.) This has somewhat the general appearance of *exquisitus* (No. 21), but is very distinct both in sculpture and ornamentation.

Genus **HOPLISMENUS**, Grav.

Scutellum flattened.
Abdomen mostly reddish.....Sp. 1— 2
" banded with white or yellow..... 3— 8
Scutellum elevated, unituberculate.
Body reddish-yellow, occiput black..... — 9
" black and yellow..... 10—12
Scutellum elevated, bituberculate..... —13

1. **Hoplismenus rixosus**, n. sp.

♀.—Black, opaque; face, clypeus, mouth, orbits, cheeks, broad annulus on antennæ, scape beneath, upper and lower margins of prothorax, the former interrupted medially, spot on each side over tegulæ, scutellum, band at base of metathorax, two longitudinal marks beneath spines, a large spot on the flanks, line beneath tegulæ, mark beneath posterior wings, and a large oblique mark on pleura, dilated beneath, white or yellowish-white; wings hyaline, faintly tinged with yellowish, nervures blackish, stigma fulvous; legs fulvo-ferruginous, four anterior coxæ and trochanters whitish, posterior tarsi yellow, posterior coxæ yellowish, blackish behind, tips of tarsi blackish; abdomen dull ferruginous, basal segment whitish at tip, base of second segment dusky. Antennæ long, third joint longer than fourth; thorax without distinct punctures; scutellum narrow, carinate laterally; metathorax with sharply defined elevated lines, sides transversely striated, spines long and acute; areolet 5-angular; abdomen flat, shining, petiole long, slender. Length 5 lines.

One ♀ specimen.

2. **Hoplismenus otomitus**, n. sp.

♀.—Black; face, mouth, orbits, broad on the cheeks, broad annulus on antennæ, complete above, spotted with black beneath, collar, line on each side before tegulæ, two abbreviated lines on disk of mesothorax, a cuneiform mark on each side of scutellum, postscutellum, anterior half of tegulæ, a short line beneath, a large mark on each side of pleura, indented behind, a spot behind each posterior wing, four spots on metathorax posteriorly, the four anterior coxæ, and spot on the posterior pair behind, all white; legs and abdomen fulvo-ferruginous; sides of posterior coxæ, tips of the tarsi, and tip of first abdominal segment above blackish, posterior tarsi yellow; wings hyaline, faintly yellowish, nervures and stigma brown. Antennæ long, stouter toward the tips, third joint longer than first and second together, fourth to sixth joints shorter and subequal; mesothorax shining, with sparse confluent punctures, no dorsal impressed lines; scutellum flat, the tip truncate, and the sides carinate; metathorax rugulose, transversely so behind, the elevated lines tolerably distinct, the apex obliquely truncate, with a sharp transverse carina on the verge of the truncation, ending laterally in a sharp, flattened tubercle; areolet of anterior wing 5-angular; legs rather robust; abdomen short, ovate, depressed, slender at base, apex of first segment shining, broadly dilated, deeply punctured; apical segments shining. Length 4 lines.

One ♀ specimen.

3. **Hoplismenus munitus**, n. sp.

♂ ♀.—Black, opaque; face, clypeus, mouth, orbits, more ar less interrupted at summit and behind eyes, broad on cheeks, annulus on antennæ beyond the middle, upper and lower margins of prothorax, the former interrupted medially, two central stripes on mesothorax, tegulæ, lateral and apical margins of scutellum, and the postscutellum, whitish; metathorax yellowish-white, with three longitudinal black stripes—one on each side and one down the middle—connected by a transverse, subbasal, black band; pleura yellowish-white, with a curved line beneath the wings; wings hyaline, nervures black, stigma whitish; legs yellow, coxæ and trochanters whitish, a line on the posterior coxæ behind, apex of their trochanters, line an all the femora above, a more or less distinct line on all the tibiæ behind in ♀, sometimes not reaching the tips, tips of four anterior tarsi in ♀, posterior tibiæ and four anterior tarsi in ♂, black or blackish; abdomen black, petiole above and beneath, apical margin of first segment, uneven anteriorly, the lateral and apical margins of the second and following segments, a me-

Two ♀ specimens. (Sumichrast Coll. No. 21.) This is much like *tragicus*, and is readily distinguished by the prominent tubercles on metathorax.

38. **Ichneumon aztecus**, n. sp.

♂.—Lemon-yellow, thinly pubescent; occiput, middle of vertex. antennæ except scape beneath, spot on each side of prothorax, mesothorax except two central lines, spot beneath tegulæ, basal suture of metathorax, spot on apex of posterior coxæ behind, their tibiæ except base, their tarsi, and basal suture of the abdominal segments above, sometimes obsolete on first and second, black; wings subhyaline, nervures and stigma black. Same form and sculpture as *lenis*. Length 6—6½ lines.

Five ♂ specimens. (Sumichrast Coll. No. 60.) This has somewhat the general appearance of *exquisitus* (No. 21), but is very distinct both in sculpture and ornamentation.

Genus **HOPLISMENUS**, Grav.

Scutellum flattened.
Abdomen mostly reddish.....Sp. 1—
" banded with white or yellow..... 3—
Scutellum elevated, unituberculate.
Body reddish-yellow, occiput black.....
" black and yellow..... 10—
Scutellum elevated, bituberculate.....

1. **Hoplismenus rixosus**, n. sp.

♀.—Black, opaque; face, clypeus, mouth, orbits, cheeks, broad nulus on antennæ, scape beneath, upper and lower margins of proth the former interrupted medially, spot on each side over tegulæ, s lum, band at base of metathorax, two longitudinal marks beneath s a large spot on the flanks, line beneath tegulæ, mark beneath po wings, and a large oblique mark on pleura, dilated beneath, w yellowish-white; wings hyaline, faintly tinged with yellowish, ne blackish, stigma fulvous; legs fulvo-ferruginous, four anterior co trochanters whitish, posterior tarsi yellow, posterior coxæ ye blackish behind, tips of tarsi blackish; abdomen dull ferruginou segment whitish at tip, base of second segment dusky. Antenn third joint longer than fourth; thorax without distinct punctu tellum narrow, carinate laterally; metathorax with sharply de vated lines, sides transversely striated, spines long and acut 5-angular; abdomen flat, shining, petiole long, slender. Len

One ♀ specimen.

[illegible] orbits, broad on the cheeks broad [illegible] spotted with black beneath [illegible]

[illegible]

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dian spot on the second confluent with the apical band, and the venter except lateral black spots, yellowish-white. Head large, cheeks full, clypeal foveæ very deep; antennæ long, especially in ♂; thorax and abdomen densely, the former coarsely punctured above; scutellum raised, the upper surface flattened; metathorax transversely striated, especially in ♀, the spines rather long and acute; areolet small, 5-angular; abdomen elongate, flattened, shining at base and at tip. Length 5½—7 lines.

Five ♀, four ♂ specimens. (Sumichrast Coll. No. 2.)

4. Hoplismenus propinquus, n. sp.

♀.—Differs from *munitus* only as follows: the clypeal foveæ less profoundly impressed, mesothorax not punctured, but subrugose, without central longitudinal whitish lines, but with a lateral line curved inwardly in front and dilated; prothorax entirely black; metathorax with only a large triangular basal mark and a faint dot at extreme tip; second abdominal segment without discal spot, so conspicuous in *munitus*. Length 5½ lines.

One ♀ specimen.

5. Hoplismenus picturatus, n. sp.

♀.—Black, opaque; face, clypeus, mouth, orbits interrupted behind eyes, cheeks, broad annulus on antennæ, upper and lower margins of prothorax, broadly interrupted in front, the former protuberant, tegulæ, line beneath, spot on posterior middle of mesothorax, scutellum, postscutellum, a basal bilobed spot on each side of metathorax, two elongate marks at tip, covering the spines, the flanks, the pleura beneath, confluent with a large, broad, oblique mark on each side, indented with black posteriorly, the coxæ, petiole of abdomen above, apical margins of all the segments, the basal foveæ of second segment, confluent with a dot on each side, the extreme basal margin of third segment and a minute subbasal dot on each side, and the venter entirely, all white; wings hyaline, nervures and stigma black; legs, except coxæ, yellow, basal suture of posterior coxæ, apical suture of intermediate pair, an exterior oblique mark on posterior pair, most of their trochanters, on outer and inner line on all the femora, a line on the four anterior tibiæ and tarsi behind, the posterior tibiæ except tips, and the tarsal claws, black. Thorax and second and third abdominal segments closely and rather deeply punctured, remainder shining; head narrowed beneath and behind, cheeks not prominent; antennæ long, stouter near the tips, third joint longer than fourth; scutellum flat, sides subcarinated, tip abrupt; metathorax rugulose, more finely sculptured on

basal middle, elevated lines subobsolete, spines prominent and subacute; areolet 5-angular; abdomen flattened, oblong-ovate, petiole flat and slender, the first segment angular near apex in profile, bituberculate above; basal fovea of second segment transversely linear and very deep. Length 6 lines.

One ♀ specimen. The metathorax is marked much like that of *munitus*, with the band and stripes much broader.

6. Hoplismenus dissonus, n. sp.

♀.—Black, subopaque; head white, posterior margin of occiput, a spot on vertex covering ocelli, extending nearly to base of antennæ and confluent with a transverse line behind ocelli, black; broad annulus on antennæ and scape beneath, white; upper and lower margins of prothorax, the former interrupted before and the latter dilated laterally, two short lines on mesothorax, a spot on each side before scutellum, the latter except base, postscutellum, broad inner margin of tegulæ, and a line beneath, white; metathorax white, with three longitudinal black stripes, the median one broad and entire, the lateral ones dilated anteriorly, not reaching the base, and connected to the median stripe by a slender line, basal incisure black; pleura white, the incisure black; wings hyaline, nervures black or brown, stigma reddish; legs luteous, coxæ much paler, spot on posterior pair behind, all the femora behind, stain on four anterior tibiæ behind, and tips of tarsi, black; abdomen yellow, tinged with luteous, tip of first segment above except two apical spots, basal two-thirds of second segment except a transverse line on basal foveæ, and lateral margin, basal half of third segment, base of following segments more or less, a narrow apical band on fourth segment, abbreviated laterally, black. Head shining; transversely subcompressed, face broad, cheeks subconvex, occiput flat; antennæ long, rather slender, third and fourth joints subequal; thorax closely punctured; scutellum flat; metathorax with well-defined elevated lines, spines short and acute; areolet triangular; abdomen subdepressed, oblong-ovate, second and third segments very closely and finely punctured; basal foveæ of second segment transversely linear and deep. Length 5 lines.

One ♀ specimen.

7. Hoplismenus minax, n. sp.

♂.—Black, opaque, with a very short, subsericeous pubescence; face, clypeus, mouth, orbits, broad on the cheeks, annulus on antennæ, scape beneath, collar beneath, line above, upper margins of prothorax interrupted above, spot over tegulæ, scutellum, postscutellum, and

pleura beneath, extending up on each side for a short distance, whitish; metathorax entirely black, rather densely clothed with a short fine, pale sericeous pubescence; wings hyaline, sometimes tinged with yellowish, nervures black, stigma sometimes brown; legs yellow, coxæ whitish, posterior pair above, four anterior femora behind, posterior pair except base beneath, tips of their tibiæ, and extreme tips of all the tarsi, black; abdomen above more or less obscure luteous-yellow, a large mark near apex of first segment, basal two-thirds of second, basal half of third, and narrow basal margin of the two following segments black; venter orange-yellow. Body very indistinctly punctured; antennæ long, slender, subserrate; scutellum subconvex, flattened at tip, sides subcarinate; metathorax with tolerably well-defined elevated lines, posterior truncation with fine transverse striæ, spines rather short, robust, acute; areolet small, subtriangular; abdomen elongate, flattened, subopaque, first segment slender, smooth and shining; basal foveæ of second segment longitudinal, rather deep. Length 5—7 lines.

Five ♂ specimens. (Sumichrast Coll. Nos. 48 and 98.)

8. **Hoplismenus limatus**, n. sp.

♂.—Black, smooth and shining, with a slight opaline iridescence, subpubescent; face, clypeus, orbits, mouth, cheeks, broad annulus on antennæ, collar, narrow margins of prothorax, interrupted above, line over tegulæ, spot before, sides of scutellum, margins of scutellar region, and tegulæ, white or yellowish-white; pleura and metathorax very pale fulvous, the upper surface of the latter black, with the elevated lines pale; wings hyaline, iridescent, nervures blackish, stigma pale, margined with blackish; legs luteous-yellow, a stripe on the femora above, and the four anterior tarsi more or less, fuscous, posterior tarsi bright yellow; abdomen black, narrow apical and lateral margins of all the segments above, and the venter, whitish; there is also a whitish dot on each side of second segment near the base. Head large, subquadrate, cheeks full, convex, antennæ long, slender; scutellum slightly raised, flattened above, carinate laterally; metathorax obliquely truncated behind, the truncation rugose, the elevated lines well-defined, the spines short and acute; areolet broad, 5-angular; abdomen very slender at base, remainder flat, oblong-ovate, smooth and polished. Length 4½ lines.

One ♂ specimen.

9. **Hoplismenus occiputalis**, n. sp.

♂ ♀.—Fulvo-ferruginous; head black, anterior orbits, mouth, and lower part of cheeks in ♀, the face, clypeus, mouth, anterior orbits

and most of cheeks in ♂, lemon-yellow; most of clypeus, ♀, fulvous; antennæ black, with a broad white or yellowish annulus, and scape yellowish beneath in ♂; mesothorax ferruginous; wings yellowish-hyaline, nervures and stigma pale; tibiæ and tarsi yellowish, tips of tarsi black. Form slender, surface delicately punctured, finely and thinly pubescent; head subquadrate, frontal foveæ deeply impressed; clypeus strongly bisinuate anteriorly; scutellum more or less prominently raised into an obtuse tubercle, metathorax rugose, spines long and acute; areolet triangular; abdomen elongate, narrow, very slender at base. Length 4—4½ lines.

Five ♂, two ♀ specimens. (Sumichrast Coll. No. 57.)

10. **Hoplismenus acclivus**, n. sp.

♂.—Head yellow, with a black mark on vertex covering ocelli and extending back on occiput; antennæ black, scape beneath yellowish; thorax above black; margins of prothorax, a broad central stripe on anterior portion of mesothorax, a line over tegulæ, scutellum, postscutellum, flanks of metathorax, pleura except mark beneath wings, and the tegulæ, yellow; wings yellow-hyaline, nervures and stigma pale; legs yellowish, posterior femora behind, their tarsi entirely and tips of four anterior tarsi, blackish; abdomen obscure yellowish; subapical spot on first segment, large irregular mark at base of second, basal margins of third and fourth, and the remaining segments entirely, black. Formed and sculptured same as *minax*, with the scutellum elevated into an acute tubercle. Length 5¼ lines.

One ♂ specimen. (Sumichrast Coll. No. 95.) Closely resembles *minax* in shape and coloration.

11. **Hoplismenus esurialis**, n. sp.

♂ ♀.—Black; head white, occiput and spot on vertex covering ocelli and extending to base of antennæ, black; antennæ black, with a very broad white annulus; margins of prothorax, spot on each side of mesothorax behind, scutellum, postscutellum and tegulæ, white; pleura and metathorax honey-yellow, sometimes fulvous, the former with a black line beneath tegulæ, and the latter with two large marks above, sometimes confluent with the base and with each other; wings hyaline, nervures and stigma brownish; legs pale honey-yellow, sometimes the posterior coxæ, and the femora behind are dusky, tips of tarsi more or less dusky; abdomen black or fuscous above, yellowish beneath; base of first segment more or less, and narrow apical and lateral margins of all the segments, pale yellowish; basal foveæ of second segment pale. Head large, nearly quadrate, cheeks full, convex; antennæ long and

slender; mesothorax opaque, longitudinally striated on the disk; scutellum elevated into an obtuse tubercle, more or less prominent; metathorax rugulose, spines rather long and acute; areolet subtriangular; legs slender; abdomen elongate, flattened, very slender at base, segments very densely and finely punctured. Length 4½—5 lines.

Eight ♂, two ♀ specimens. (Sumichrast Coll. No. 12.)

12. **Hoplismenus scutellaris**, n. sp.

♂.—Much like *esurialis*, but stouter, head broader, pale markings yellowish, the annulus on antennæ yellow, situate more in the middle, scape pale beneath; disk of mesothorax flat, longitudinally striated and with a large square yellow mark; scutellum more prominently elevated; metathorax with two undulate stripes above, broader at base and confluent at tip, and the basal incisure, black; wings yellowish-hyaline, iridescent; posterior femora more or less fuscous above and within, posterior coxæ within and at tips and tips of all the tarsi black; abdomen shorter and broader, with broader yellowish apical margins. Length 4—4½ lines.

Three ♂ specimens. (Sumichrast Coll. No. 99.)

13. **Hoplismenus abnormis**, n. sp.

♀.—Black, opaque; face, clypeus, mandibles except tips, palpi, orbits, interrupted behind, cheeks, annulus on antennæ, interrupted above, two lines before tegulæ, two short lines on disk of mesothorax, scutellum except sides, postscutellum, two spots on tip of metathorax, covering spines, a large rounded spot on flanks, spot behind posterior wing, and two large spots on pleura, white or yellowish-white; wings hyaline, faintly dusky at tips, nervures and stigma brown-black; legs yellow, coxæ whitish, posterior pair at tip and within, line on all the femora within, tips of posterior trochanters, extreme tips of their femora, and tip of their tibiæ within, black; apical and lateral margins of all the segments of abdomen, very broad on apical segments, and venter, pale yellowish, the petiole of first segment is black, the sides of dilated apex narrowly yellowish, sometimes confluent above and enclosing a black spot; the apical segments appear almost entirely yellowish. Head broad, cheeks full, antennæ as long as the body, somewhat dilated near the tips, third joint longer than fourth; thorax sparsely punctured; lateral margins of scutellum strongly carinate, and raised into a prominent flattened tubercle; metathorax transversely striated behind, spines long and subacute; areolet rather small, 5-angular; abdomen short, broad, ovate, slender at base, second and third segments closely and deeply punctured, remainder smooth and shining, apex of first segment

broadly dilated; basal foveæ of second segment very deep and subtransverse. Length 5—5½ lines.

Two ♀ specimens. (Sumichrast Coll. No. 23.) Easily distinguished by the bituberculate scutellum.

ŒDICEPHALUS, n. gen.

This genus (or probably subgenus) is formed to receive *Trogus? albovarius* nob. from Cuba, and three species from Mexico, possessing apparently constant structural characters of generic value. The *head is unusually large and swollen, very broad behind the eyes, the occiput deeply emarginate*, mandibles very broad, antennæ generally longer than the body, thorax very robust; scutellum very broad, subquadrate, unituberculate, more or less prominent; metathorax short and broad, broadly and rather suddenly truncated behind, lateral tubercle very small or altogether wanting; wings long, areolet 5-angular; legs long, more robust than usual, posterior tibiæ incrassate toward the tips, the inner spur longer than usual; abdomen short, ovate in ♀, subdepressed, petiole slender, apex of first segment very broadly dilated, *basal foveæ of second segment broad, transverse and very deep*, this segment is generally longitudinally aciculate; ovipositor exserted about the length of petiole of abdomen. Seems to be intermediate between *Hoplismenus* and *Joppa*.

1. **Œdicephalus longicornis**, n. sp.

♀.—Black, shining, with an opaline iridescence; face, clypeus, mandibles except tips, palpi, anterior orbits, ending in an ovate spot at summit of eyes, cheeks, broad annulus on antennæ, collar, short line before tegulæ, two short lines on disk of mesothorax, sides of scutellum, an oblique line on each side before, tegulæ, transverse line at base of metathorax, two large marks behind, a broad longitudinal mark on flanks, two spots beneath wings, pleura beneath and extending for a short distance up on each side, all white; wings hyaline, nervures and stigma black; legs yellow, coxæ whitish, spot at tip of posterior pair, their trochanters, line on all the femora above, line on outside of four anterior tibiæ, the posterior pair except tips, and the four anterior tarsi, black; abdomen black, petiole, narrow apical margin of first segment, basal foveæ of second, broad apical margins of this and the following segments and the venter except base, yellowish-white; apical segments above and venter with long, thin, black pubescence. A transverse, interrupted carina beneath ocelli; antennæ longer than body, slender, slightly thickened near tips; mesothorax sparsely punctured; scutellum with a long subacute spine, the lateral margin carinate; meta-

thorax rugulose, the basal enclosures smooth, polished, with a few large punctures, the posterior truncation transversely striated, tubercles very short, acute; abdomen short, broad ovate, shining; tip of first segment quadrituberculate above, finely aciculate, the apical margin bisinuate; second segment deeply and transversely depressed on the disk, which, with the narrow division between the large and very deep basal foveæ, is longitudinally aciculate, the remainder of this segment, except a few scattered punctures, and rest of abdomen, smooth and polished; basal suture of third segment very deep. Length 5½ lines.

One ♀ specimen. This is colored very much like *Hoplismenus picturatus* nob.

2. **Œdicephalus sororius**, n. sp.

♀.—Differ from *Œ. albovarius*, from Cuba, only as follows: posterior orbits interrupted a little below summit of eyes; pale lines on mesothorax abbreviated; legs pale lemon-yellow, tips of posterior tarsi white, spot at tips of posterior coxæ, line on all the femora above, line on the four anterior tibiæ, most of their tarsi, and base of posterior tibiæ, black; abdomen marked the same, but sculptured as in *longicornis*. Length 4½ lines.

One ♀ specimen. (Sumichrast Coll. No. 84.)

3. **Œdicephalus gracilicornis**, n. sp.

♀.—Black, shining; face, clypeus, mandibles except tips, palpi, anterior orbits interrupted opposite the ocelli, posterior orbits continued straight across head behind ocelli and nearly confluent, cheeks, broad annulus on antennæ, collar, line before tegulæ, another indistinctly defined above, and a broad oblique one behind, two lines on mesothorax, a large spot on each side of scutellum, nearly confluent behind, postscutellar region, and the pleura except an arcuated line beneath wings, white or yellowish-white; metathorax yellowish-white, with a large irregular basal mark on each side above, and a broad stripe down the middle of posterior truncation, black; wings hyaline, iridescent, slightly yellowish, nervures brownish, stigma pale; legs pale orange-yellow, coxæ and four anterior trochanters whitish, basal incisure of posterior coxæ, most of their trochanters, base of their tibiæ, and tips of all the tarsi, black; abdomen black, the petiole, broad basal and apical margins of second segment, narrower apical margins of following segments and the venter pale yellowish. Antennæ longer than body, very slender throughout; mesothorax feebly sculptured; scutellum convex, with a short obtuse tubercle on the disk; metathorax rugulose, transversely striated behind, tubercles very small and acute; abdomen oblong-ovate.

basal two-thirds of second segment with dense, fine oblique striæ; apex of first segment smooth above. Length 3½ lines.

♂.—Differs from the ♀ as follows: the posterior orbits are broadly interrupted behind ocelli; the black mark on pleura is larger, the lower half is transversely striated, with two black spots arranged longitudinally; base of posterior coxæ broadly black, posterior tarsi yellow, basal half of all the tibiæ, the four anterior tarsi and base of posterior pair are also black; abdomen longer and narrower, the pale apical margins of second and following segments are narrower, and the apex of first and almost the whole of second segment covered with fine oblique striæ. Length 4 lines.

Two (♂ ♀) specimens. The dilated portion of first abdominal segment is entirely black.

Genus **JOPPA**, Fabr.

Body black, tip of abdomen and legs yellow.....Sp. 1
Body black, abdomen narrowly banded with yellowish.
  Wings hyaline, apex black.... 2
  Wings entirely hyaline.
    Abdomen longitudinally rugose..... 3
    Abdomen longitudinally aciculate..... 4
Body yellow, ornamented with black.
  Mesothorax vittate with black; wings with apex and submedian spot, black..... 5
  Thorax above and tip of abdomen black; base and apex of wings black, 6
  Mesothorax fulvous, tip of abdomen and apex of wings black..... .7
  Mesothorax fulvous, head and tip of abdomen black; wings fuliginous, 8

1. **Joppa ? conica**, Brullé.
Joppa conica, Brullé, Hymén. iv. p. 286.
? Ichneumon breviventris, Cresson, Proc. Ent. Soc. Phil. iv. p. 12.

Three ♀, three ♂, specimens. (Sumichrast Coll. No. 4.) Seems to differ from the unique Cuban specimen only by the more dense punctation of the mesothorax, by the sparsely punctured scutellum, by the first abdominal segment being rugose and not aciculate, and by the base of the fourth segment above being sometimes black. The ♀ is colored like the ♂, with the antennæ stouter and convolute, that of the ♂ is slender and gradually attenuated to the tips, which are very slender. This is not a true *Joppa*.

2. **Joppa inclyta**, n. p.

♀.—Very closely allied to *picta*, Guér., but differs by the longer antennæ, by the metathorax having a short subbasal, transverse, central, yellow line, instead of two transverse spots, the apical spots being longitudinal and large, by the first four segments of the abdomen

having subapical yellowish fasciæ, constricted in the middle anteriorly, that on the fourth segment slightly interrupted in the middle, and by the apical margin of the sixth segment and the seventh entirely, being yellowish; the wings are clear hyaline, with only the apex of anterior pair broadly purplish-black; the metathorax is sparsely punctured, not transversely aciculate on the subbasal elevation, and the two central posterior carinæ are more distant and strongly elevated at tip of metathorax, but obsolete at base; otherwise as in *picta*. Length 7½ lines.

One ♀ specimen. A beautiful species, with the markings very bright and distinct.

3. **Joppa? egregia**, n. sp.

♀.—Black, thinly pubescent; face, clypeus, mouth, orbits and cheeks, pale lemon-yellow; antennæ with scape beneath and annulus on middle of flagellum above, whitish; thorax above black, beneath pale lemon-yellow; collar, margins of prothorax, two lines on disk of mesothorax, spot on each side behind, apical half of scutellum, postscutellar region, lemon-yellow; metathorax lemon-yellow, the basal incisure, an angular line on each side extending from the stigmata nearly to base of posterior coxæ, a transverse, somewhat oblique spot on each side above, about the middle, and a broad stripe down the middle of posterior truncation, black; a line beneath wings also black; wings hyaline, faintly yellowish, nervures black, stigma fulvous; legs fulvous, coxæ and posterior tarsi yellowish, base and spot at tip of posterior coxæ, tips of their trochanters, tips of their femora and of their tibiæ, black; abdomen black, base of the first, apical margins, dilated laterally, of all the segments and the venter entirely, pale lemon-yellow. Thorax feebly punctured; antennæ as long as head and thorax, slightly thickened toward tips; scutellum quadrate, raised at base, flat at tip; metathorax broad, obliquely truncated, rugose, transversely so behind, smooth and polished at base, three carinæ down the middle; wings ample, areolet broad, 5-angular; legs rather short, robust; abdomen oblong-ovate, depressed, segments constricted at base, longitudinally rugose; first segment broad at tip, with two central longitudinal carinæ. Length 5 lines.

One ♀ specimen. Seems intermediate between *Joppa* and *Trogus*.

4. **Joppa? aciculata**, n. sp.

♀.—Head white, mark down middle of vertex, covering ocelli and confluent with a large transverse mark on occiput, black; antennæ black, broad annulus, incomplete beneath, and scape beneath, white;

thorax black, collar, upper and lower margins of prothorax, the former interrupted in front, two interrupted longitudinal lines on disk of mesothorax, line over tegulæ, two oblique lines behind, margins of scutellum, base of metathorax, flanks, and two large spots at tip, and the pleura except two spots beneath wings, white; wings hyaline, slightly yellowish, iridescent, nervures brown, stigma yellow; legs pale fulvous, coxæ and trochanters whitish, basal half of posterior tibiæ and their tarsi, yellowish, tips of posterior coxæ, of their femora and of all the tarsi, black; abdomen above black, base and apex of first and apical margins of the three following segments, yellowish-white, fifth and following segments fulvous, beneath tinged with orange. Form and sculpture same as in *egregia*, except that the antennæ are as long as the body, more slender, the scutellum less elevated at base, and the upper surface of abdomen is longitudinally and finely aciculate. Length 4¼ lines.

♂.—Differs from ♀ as follows:—The pale markings more yellowish; the antennæ brown above, without annulus, testaceous beneath with the scape yellowish; the third, fourth and fifth abdominal segments above with a lateral yellowish spot instead of a band, and the two following segments entirely black instead of fulvous. Length 4 lines.

Two (♂ ♀) specimens. (Sumichrast Coll. No. 83.) This is congeneric with *egregia*.

5. **Joppa Sumichrasti**, n. sp.

♂ ♀.—Bright lemon-yellow; spot on vertex covering ocelli and confluent with a broad band from eye to eye, tips of mandibles, antennæ except scape beneath, spot before tegulæ, three broad stripes on mesothorax, posterior half of tegulæ, spot at base and at tip of scutellum, postscutellum, two moderately large subbasal spots on metathorax above, often surrounded by from two to six small spots or dots, extreme base of posterior tibiæ, all the tarsi more or less, the fourth and following segments of abdomen, and base of the three basal segments more or less, black; sometimes the second and third segments have merely a median black spot at base, that on the second sometimes wanting, leaving the first and second segments immaculate; the sides of the fourth segment are often more or less yellow; wings yellow-hyaline, sometimes tinged with dusky, the apex of both pair, more or less, and a spot before the middle, sometimes much reduced, and sometimes obsolete on posterior wings, blackish. Head large, buccate; antennæ rather short, slender in ♀, dilated near tips in ♂; scutellum subconvex, carinate laterally; metathorax rugulose, large black spots

smooth and sparsely punctured; wings broad, ample, areolet rhomboidal; abdomen elongate, subdepressed, three basal segments longitudinally striated, the remainder smooth and shining. Length 5—6½ lines.

Seven ♂, seven ♀ specimens. (Sumichrast Coll. Nos. 14 and 20.) This handsome species varies much in the markings of the abdomen. those of the ♂ being more developed than in ♀.

6. **Joppa decorata**, n. sp.

♂.—Bright lemon-yellow; broad band across vertex from eye to eye, dilated in front of ocelli, antennæ except scape beneath, mesothorax, except narrow lateral margin suddenly dilated in front, scutellums, a large, broad, transverse mark at base of metathorax, tips of femora, extreme base of the posterior tibiæ, all the tarsi, and the fourth and following segments of abdomen black; wings yellow-hyaline, the base and apex of both pairs broadly black. Head buccate; antennæ long, slender, dilated near tips; thorax smooth and polished; scutellum large, flattened; wings broad, ample, areolet rhomboidal; abdomen oblong, segments strongly constricted at base, four basal segments longitudinally aciculate, the remainder smooth, pubescent. Length 5 lines.

One ♂ specimen. This is a very beautiful and conspicuous species.

7. **Joppa elegantula**, n. sp.

♂.—Pale lemon-yellow, the occiput, mesothorax, scutellum, and sometimes base of metathorax, more or less fulvous; a triangular spot covering ocelli, tips of mandibles, antennæ entirely, spot on each side of posterior coxæ, spot on their trochanters, tips of four anterior femora behind, posterior pair except base, tips of all the tibiæ, the tarsi, basal suture of second segment of abdomen, and the third and following segments entirely, black; wings bright yellow-hyaline, apex of both pair broadly black. Head large, antennæ as in *Sumichrasti*; thorax smooth and shining; scutellum longitudinally striated; metathorax excavated posteriorly, and longitudinally rugulose, base smooth, wings and abdomen as in *decorata*. Length 4½—5½ lines.

Three ♂ specimen. (Sumichrast Coll. No. 15.)

8. **Joppa fumipennis**, n. sp.

♂ ♀.—Differs from *elegantula* as follows:—The vertex and occiput are entirely black; the wings fuliginous, the basal half and apical margin darker, subhyaline before apex in ♂, the nervures and stigma black; only the extreme tips of femora and the tibiæ and tarsi are black. with a yellowish annulus near the base of the tibiæ; the apex

of fourth segment and the following entirely are black. Length 5 lines.

One ♂, three ♀ specimens. (Sumichrast Coll. No. 13.)

Genus **STILPNUS**, Grav.

Stilpnus tenuicinctus, n. sp.

♂.—Black, shining; clypeus, mandibles, palpi, scape beneath, (remainder of antennæ wanting), tegulæ, line before, another beneath, coxæ and trochanters, basal fovæ of second segment of abdomen, and narrow apical and broader lateral margins of all the segments, yellowish-white; wings hyaline, iridescent, nervures honey-yellow; legs honey-yellow, base of posterior coxæ, base of their trochanters, tips of their tibiæ, and their tarsi, black. Head and thorax delicately punctured, abdomen very densely and finely punctured; areolet of wings 5-angular, beyond which the cubital nervure is obsolete; abdomen elongate, narrow, depressed. Length 2¼ lines.

One ♂ specimen.

MESOLEPTUS, Grav.

Body honey-yellow.
- Wings fasciate with dusky ..... Sp. 1
- Wings hyaline; tip of abdomen dusky 2

Body honey-yellow and black.
- Occiput and bands on abdomen black 3
- Head, mesothorax and pleura black 4
- Head and thorax black, tip of abdomen black and white 5

Body lemon-yellow, marked and banded with black 6

Body black; legs honey-yellow; head much swollen 7

1. **Mesoleptus calidus**, n. sp.

♂.—Dark honey-yellow, or fulvous; face, cheeks, broad annulus on antennæ, collar, tegulæ, line beneath, scutellum, four anterior coxæ and trochanters, their tibiæ, and posterior tarsi except extreme base and apex, pale yellowish; remainder of antennæ, except five basal joints which are reddish, posterior margin of prothorax, sutures on each side of scutellum, of pleura, spot at tip of metathorax, intermediate coxæ within, the posterior pair beneath, tips of their tibiæ, and extreme tips of all the tarsi, black; wings yellowish hyaline, iridescent, a transverse cloud before stigma, another covering areolet, and the tips of both wings, fuliginous, stigma luteous. Antennæ as long as body, slender, filiform; mesothorax trilobed, very delicately punctured; scutellum flat; metathorax rounded, rugulose, with two transverse, arcuate carinæ, the surface smoother at base; areolet 5-angular; legs long and slender; abdomen elongate, convex subclavate, very slender at base, gradually thickened to the tip, finely and indistinctly

punctured, stigmata of first segment placed in the middle, tip slightly and gradually dilated. Length 5 lines.

One ♂ specimen.

2. **Mesoleptus melleus**, n. sp.

♂.—Honey-yellow, smooth and polished; face, vertex below ocelli, clypeus, mouth, a very broad annulus on antennæ, scape, and tegulæ, pale lemon-yellow; rest of antennæ, and spot covering ocelli, black; tarsi yellowish; wings yellowish-hyaline, iridescent, apex faintly dusky, nervures brown, stigma pale; base and apex of third, and the following segments entirely, fuscous. Head short, face broad, eyes large, clypeus small, transverse; antennæ as long as the body, rather slender, filiform, subpubescent; scutellum convex; metathorax rounded, smooth and polished; wings large and broad, areolet wanting; legs slender; abdomen clavate, subconvex, subpetiolated, smooth and polished, first segment channelled at base, apical segments subcompressed. Length 3½ lines.

One ♂ specimen.

3. **Mesoleptus bardus**, n. sp.

♂.—Clothed with short pubescence; head black, face, anterior orbits, clypeus, mouth and lower part of cheeks, yellowish; on each side of clypeus and posterior orbits stained with reddish; antennæ black, with a broad yellow annulus, scape honey-yellow; thorax ferruginous, collar, tegulæ and scutellums yellow; spot on prothorax, scutellar region, sutures of thorax, and pleura beneath, black, metathorax honey-yellow; wings subhyaline, beautifully iridescent, nervures and stigma brown; legs honey-yellow, the tarsi and four anterior coxæ and trochanters yellowish, sometimes the posterior coxæ and trochanters and their femora within black; abdomen blackish, apical margin of, or dorsal stains on, all the segments dull honey-yellow. Head large, buccate, clypeus convex, anterior margin broadly rounded and margined; antennæ long, slender; mesothorax shining, subtrilobed in front, punctured on the disk; scutellum subconvex; metathorax excavated behind, elevated lines sharply defined; wings ample, areolet broad, 5-angular; legs subrobust; abdomen petiolated, elongate, flattened, first segment squarely dilated at tip. Length 3¼ lines.

Two ♂ specimens.

4. **Mesoleptus imbecillis**, n. sp.

♂.—Honey-yellow; head, pro- and mesothorax, scutellar region, and pleura, black; clypeus, mouth, collar, tegulæ, line beneath, scutellum, postscutellum, and anterior coxæ and trochanters white; wings hya-

line, iridescent, nervures brown; tips of tarsi and extreme tip of abdomen dusky. Form long, slender; head transverse, eyes large, (antennæ wanting); thorax gibbous; metathorax rounded, a subbasal, transverse, subarcuate carina, and a small whitish tubercle on each side beyond the middle; areolet 5-angular, incomplete; legs slender; abdomen petiolated, narrow, cylindrical. Length 2½ lines.

One ♂ specimen.

5. **Mesoleptus emaceratus**, n. sp.

♂.—Head and thorax black; a reddish spot on clypeus; antennæ black, with a white annulus about the middle, four basal joints honey-yellow; wings hyaline, iridescent, tips faintly dusky; legs honey-yellow, a dusky stain on sides of four basal segments, most of fifth and whole of sixth segments black, remainder white. Smooth and polished, pubescent; eyes large; antennæ longer than body, very slender, filiform, basal joints of flagellum very long; thorax gibbous; scutellum flat; metathorax coarsely rugose, with a central transverse carina; areolet 5-angular, subtriangular; legs long and slender, posterior coxæ long, ovate; abdomen petiolated, long and slender, especially at base, first segment as long as second and third together. Length 4¼ lines.

One ♂ specimen.

6. **Mesoleptus decorosus**, n. sp.

♂.—Lemon-yellow; tips of mandibles, large spot covering ocelli, spot on each side of occiput extending to eyes, line on prothorax, three broad stripes on mesothorax, base of scutellum and of postscutellum, basal suture of metathorax, a median stripe, anterior suture of pleura, line on each side of posterior coxæ, line on all the femora within, subobsolete on the two anterior pairs, an exterior line on posterior femora, tips of tarsi, submedian spot on first segment of abdomen, and the remaining segments, except rather broad apical margins, black; wings yellowish-hyaline, iridescent, nervures brown, stigma yellow; antennæ brown, darker at tips, testaceous beneath, scape yellow beneath. Smooth and polished; head subbuccate, eyes large; antennæ long, slender; scutellum convex, metathorax smooth, rounded, with a median, transverse carina; wings ample, areolet triangular; legs slender; abdomen subpetiolated, subclavate, convex, subpubescent, first segment gradually dilated to apex, a little longer than second. Length 3 lines.

One ♂ specimen.

7. **Mesoleptus ? bucephalus**, n. sp.

♂.—Black, shining; face, cheeks, pleura and metathorax covered with dense silvery pile; clypeus, base of antennæ and prothorax more or less ferruginous; wings hyaline, beautifully iridescent, nervures and stigma blackish; legs pale honey-yellow, posterior femora darker, and with their tibiæ and tarsi more or less dusky; incisures of abdominal segments more or less pale. Head large, much swollen behind eyes, which are rather large and ovate; clypeus large, convex, apex slightly emarginate; mandibles large, hook-like, acute at tip; antennæ as long as body, very slender, setaceous; prothorax produced into a neck; mesothorax strongly gibbous, subtrilobed in front; scutellum depressed; metathorax rounded, with sharply defined elevated lines; wings narrow, areolet wanting; legs long and very slender, tibial spurs short, tarsal claws simple; abdomen petiolated, long and very slender, first segment nearly as long as second and third together, stigmatic tubercles prominent and placed at about the middle. Length 3¼ lines.

Three ♂ specimens. A very curiously formed insect.

Genus **TRYPHON**, Grav.

1. **Tryphon croceiventris**, n. sp.

♂.—Black, shining, face and metathorax pubescent; base of clypeus, spot on mandibles, palpi, scape beneath, tegulæ, spot beneath, scutellum, spot on postscutellum, four anterior coxæ and trochanters, and their femora and tibiæ in front, lemon-yellow; rest of clypeus fulvous; antennæ brown, pale at base, testaceous beneath; wings hyaline, beautifully iridescent, nervures brown; legs and abdomen saffron-yellow, tips of tarsi blackish. Eyes large, clypeus with a broad, deep, transverse impression; antennæ nearly as long as body, slender, filiform; meso- and metathorax and pleura smooth and polished; metathorax rounded; areolet small, oblique; legs moderately slender, tarsal claws simple; abdomen elongate, subdepressed, sessile, first segment much longer than broad, remaining segments with a transverse impressed line on each side behind the middle. Length 2½—3 lines.

Two ♂ specimens. Looks much like a *Bassus*.

2. **Tryphon ? laticinctus**, n. sp.

♀.—Black; clypeus, mandibles, palpi, base of antennæ, four anterior coxæ and trochanters, and second abdominal segment, except apical black spot, yellowish-white; thorax ferruginous, most of pleura, and metathorax except basal middle, black; wings hyaline, beautifully iridescent, tips dusky. Form short, robust; head broad; eyes very

large; antennæ long, setaceous; thorax short, broad in front, gibbous; mesothorax with deeply impressed dorsal lines; scutellum convex; metathorax rounded above, abruptly truncate behind, elevated lines sharply defined, lateral angles prominent; stigma large, areolet very small, oblique and petiolated; legs rather robust, posterior trochanters long and slender, their femora swollen, tarsal claws simple; abdomen arcuated, subsessile, flattened, broader at tip, which is subcompressed; ovipositor as long as first segment. Length 2 lines.

One ♀ specimen.

EXOCHOIDES, n. gen.

This genus is closely allied to *Exochus*, but differs by the flat face, longer antennæ, less robust legs and by the subpetiolate and clavate abdomen. The anterior wing is without an areolet, the dividing nervure between the first and second submarginal cells being straight and continuous, or nearly so, with the second recurrent nervure, which is more or less angular.

1. **Exochoides mexicana**, n. sp.

♂.—Lemon-yellow; head and thorax clothed with pale pubescence; head black, labrum, mandibles and palpi yellowish; antennæ reddish-brown, paler at base, scape yellowish; spot on each side of prothorax, three broad stripes on mesothorax, mark beneath wings, tips of posterior femora, broadly so within, tips of their tibiæ, median spot on first segment of abdomen and basal half of remaining segments, black; tarsi brownish; wings yellowish-hyaline, dusky at tips, nervures fulvous. Antennæ nearly as long as body; mesothorax delicately punctured and shining; sides of prothorax and of pleura behind, concave; metathorax smooth and polished, subcanaliculate; abdomen smooth and polished. Length 5—6 lines.

Six ♂ specimen. (Sumichrast Coll. No. 3.)

2. **Exochoides concinna**, n. sp.

♂.—Black, shining, thinly clothed with a short, fine, pale pubescence, slightly silvery in certain lights; antennæ reddish-brown, scape whitish above; upper margin of prothorax, scutellum except base, postscutellum, two spots on metathorax behind, spot on posterior coxæ, tips of anterior femora before, most of their tibiæ, subbasal spot on the four posterior tibiæ, base of first segment of abdomen, apical margin of three basal segments, narrow lateral margin of fourth segment, and the apical segment entirely, white; wings subhyaline, iridescent, marginal cell fuliginous; femora tinged with reddish. Antennæ more

than half the length of body; thorax delicately punctured, metathorax rounded, smooth and polished; abdomen strongly clavate, smooth and polished, Length 3½ lines.

One specimen.

Genus **EXOCHUS**, Grav.

1. **Exochus cæruliventris**, n. sp.

♂.—Black, clothed with a short pale pubescence; abdomen dark steel-blue; palpi, scape beneath, tips of four anterior femora, all the tibiæ and tarsi except tips, and most of tegulæ, white; wings hyaline, iridescent, nervures black. Antennæ as long as head and thorax; mesothorax sparsely and delicately punctured; metathorax with two central longitudinal carinæ confluent with a central and a lateral oblique one at tip, areolet small, triangular, petiolated; abdomen strongly punctured, first segment bicarinated at base. Length 3—3¼ lines.

Three ♂ specimens. (Sumichrast Coll. No. 52.)

2. **Exochus tricarinatus**, n. sp.

♂.—Black, shining, subpubescent; face, mouth and tegulæ, yellowish; antennæ and legs fulvous; posterior coxæ, and sometimes their trochanters and femora, black, base of tibiæ pale; wings hyaline, iridescent, nervures black. Antennæ as long as head and thorax, the latter flattened above, closely and very finely punctured; scutellum elongate, smooth and polished, lateral margins carinate; metathorax with a lateral and two central, longitudinal carinæ; areolet of wings wanting; abdomen densely punctured, first segment with four and the second and third each with three longitudinal carinæ, those on the third segment not reaching the tip. Length 2¼—3 lines.

Two specimens.

3. **Exochus pulchripes**, n. sp.

♂.—Color vermillion, smooth and polished; head black; face except a short central line, clypeus, mouth, lower part of cheeks, line on each side of antennæ and spot on each side of ocelli, white; antennæ entirely black; prothorax and lateral margins of mesothorax black, upper margins of the former and spot on tegulæ, white; wings dusky hyaline, iridescent, nervures black; four anterior legs white, the anterior femora, tibiæ and tarsi behind, the intermediate femora above and behind except tips, their tibiæ and tarsi, and the posterior tarsi, black, rest of posterior legs vermillion. Antennæ, slender, longer than head and thorax; body smooth and polished, metathorax and abdomen without elevated lines; areolet of wings wanting. Length 2¾ lines.

One ♂ specimen. A very handsome species.

Notes on the habits of certain species of MEXICAN HYMENOPTERA presented to the American Entomological Society,

BY FR. SUMICHRAST.

No. 1.

On the habits of the Mexican species of the genus Eciton,* *Latr.*

This genus, formed by the celebrated Latreille to receive certain American ants near to *Myrmica*, is represented in the hot and temperate parts of eastern Mexico by many species which are there known by the names of *tepeguas*, *hormigas*, *soldados* or *soldaderas*. The affinity which exists between them consists very much more in the analogy of their habits than in that of their forms. In fact, the generic character drawn from the excessively lengthened form of the mandibles cannot be found in all the species, and even among those where one observes it, it is the appendage of but one division of the workers. The antennæ, filiform in the majority of cases, become at other times, by the thickening of the flagellum, almost moniliform. The physiognomy of these insects is not more defined, some species (e. g. the No. 4 of my collection) recalling by their appearance *Myrmica*, while some others approach the type of *Oecodoma*. Finally, the system of coloration is far from being constant in the same species, and appears subject to certains variation of tint resulting from the difference of locality (e. g. Nos. 4 and 69—36 and 68 of my collection.)

We know as yet, it appears, only the neuter individuals or workers of *Eciton*. The males and females have escaped the researches of collectors, and it is probable, that, thanks to the care with which these insects conceal their nests from view in more solitary places, we shall only learn by chance, some day, about the winged sexes. I shall not be disinclined to believe, that, as Mr. Smith supposes (*Cat. Form. Brit. Mus.* p. 199), *Labidus* may be the male of *Eciton;* this conjecture seeming to me to be sustained by the fact that in Mexico it is in the season when the sorties of the *Eciton* are the more frequent that the *Labidus* also show themselves. These last, which one never sees during the day,

* The names of these species will be found at the end of this paper, with remarks by Edward Norton.

show themselves in houses at evening in numbers, attracted by the light, at the time of the first rains, and their appearance generally coincides with the redoubled activity which one then remarks among the *tepeguas*.

The most characteristic trait of the ants of this genus consists in the inroads or migrations which they undertake at undetermined epochs, but in relation, it appears to me, with the atmospheric changes. What traveller, passing over the *tierra caliente** has not encountered the phalanxes of *tepeguas* upon the paths of the primitive forests? What inhabitant of these countries has not, at least once, been unpleasantly torn from the arms of sleep by the invasion of his domicile by a black army of the *soldados?*

The purpose of these expeditions of *Eciton* is, without doubt, multiple, for the circumstance that these *sorties*, as one may call them, coincide more often with a change of season, hardly permits one to consider them exclusively as simple razzias undertaken at the expense of other insects. One can believe them to be sometimes expeditions of pillage, sometimes changes of domicile, veritable migrations. I believe that the following facts, which passed under my observation at the hacienda of Potrero, near Cordova, at the end of September of the past year, show proof of this. During about three months, a colony of *soldados* (No. 4) had been domiciled under a little bridge formed by some rough trunks of trees bound together by a heap of vegetable mould. The continual excavation which engaged the ants on the under side of the bridge, threatened to cause the disappearance of all the earth which covered the flooring. Every day I watched these labors in the hope of discovering at last the interior of the formicary, but this hope was disappointed, for on the 30th September, in the morning, I found the nest completely abandoned. Its inhabitants did not return until about four months later and this reappearance which was of short duration, was followed almost immediately by a visit which these insects made to my habitation, on the 12th of February, in the night. I have made similar observations in regard to another species (No. 36), and think I can conclude that the *Eciton*, at least the two species in question, are in the habit of forming temporary nests or habitations for themselves, which they abandon from time to time, distinct from those where are found the reproducing sexes, and where is the place of the growth of the larvæ and their metamorphoses.

The nests are found in cool and shady places in great woods or among

* Tropical region.

rocks, and are tunneled more often at the foot of, and among, the roots of old trees. The earth, or the fragments of wood, which the ants cast out, sometimes forms a dome above, but at times only an irregular opening indicates the existence of a colony.*

The extraction of one such nest, beside the difficulty of penetrating to the centre through the entangled roots of the tree, is not an easy thing, for at the first alarm, the *soldados* sally forth in myriads and attack the aggressor with fury.

Beside the changes of domicile, which are so generally in relation with the atmospheric variation as to serve as a rule to the inhabitants of the country, the *Eciton* devotes itself every season to excursions for pillage, destined to supply the larvæ with nourishment. Nothing is more curious than these *battues* executed by an entire population. Over an extent of many square metres, the soil literally disappears under the agglomeration of these little black bodies.† No apparent order reigns in the mass of the army, but behind this many lines or columns of laggards press on to rejoin it. The insects concealed under the dry leaves and the trunks of fallen trees, fly on all sides before this phalanx of pitiless hunters, but, blinded by their fright, they fall back among their persecutors and are seized and despatched in the twinkling of an eye. Grasshoppers, in spite of the advantage given them by their power of leaping, hardly escape any more easily. As soon as they are taken, the *Eciton* tears off the hinder feet and all resistance becomes useless.‡

If some heap of dry leaves, some tree or bush presents itself upon the path of the columns, a party of hunters separates itself from the mass of the army and, after having ransacked it in every part, retakes its place in the advanced guard. I have observed, sometimes, that little flies, of the family of Syrphides, follow, flying above them, the column of *Eciton*, but cannot give any account of the evolutions of these Diptera.

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* This refers to the habitations of the species No. 4 and 36, which are the only ones I have been able to meet.

† Yet referring to Nos. 4 and 36.

‡ Grasshoppers, spiders and roaches form the favorite game of the *tepejuas*; the larvæ of most species of little Blattides of the genus *Anaplecta*, the *Ischnoptera* &c., abound under the dry leaves in shady places and furnish them an easy prey.

It is probable that the *Eciton* attacks the larvæ and pupæ of other ants to make them serve as food for the nourishment of their own larvæ or for sustaining themselves. I surprised, one day, in the first hours of a sombre and rainy morning, a considerable assemblage of *tepeguas* (No. 36) fastened one upon another like a swarm of bees and entirely still. Having dispersed them I perceived in the place which they covered with their bodies a quantity of little white larvæ, brought away, doubtless, from the nests of some *Myrmicidæ*. At another time I witnessed the pillage of a *nursery* of other ants by a quite numerous band of Workers minores of No. 68; alarmed by the reprisals which I made on their account, they took to flight, some of them carrying between their mandibles as many as three larvæ at once. Among the Mexican species of the genus *Eciton*, that to which they apply more specially the name of *soldados* (No. 4), may be noticed for the habit which it has of invading the habitations of the country. These visits ordinarily take place at the beginning and the end of the rainy season, and almost always during the night. The expeditionary army penetrates the habitation which it proposes to visit at many points at once, and for this purpose divides itself into many columns of attack. One is apprised very soon of their arrival by the household commotion among the little parasitic animals. The rats (*Mus tectorum*), the spiders, the cockroaches (*Periplaneta australasiæ* Fab.), abandon their retreats and seek to escape from the attacks of the ants by flight. Alimentary substances the *soldados* hold in no esteem, and they disdain even sugary things, to which ants in general are so partial. Dead insects even do not seem to invite their covetousness. It has often happened to me to be obliged to abandon my abode, without having time to carry away my collection, to which they have never done the least injury. The trouble occasioned by these insects in entering houses is more than compensated by the expeditious manner in which they purge them of the vermin, and in this view their visit is an actual benefit.

The *Eciton* are found in all the hot and temperate parts of eastern Mexico; some species even climb quite high upon the declivity of the mountains, which are the foundations to the central plateau. Such is the case with Nos. 4, 39 and 40, which I have found at a height of nearly 4000 feet, in the environs of Orizaba. The localities where the heat and humidity encourage an abundant vegetation, are those which are sought for by the *tepeguas*, which seem to fear the rays of the

sun and hazard themselves to bear their power only during the time necessary to traverse a clearing or a road.

No. 36 of my collection is quite common in the State of Vera Cruz, from the shore as far as the environs of Orizaba. It presents, among the neuters or workers which compose its societies, at least three categories of individuals; 1st, Those of great size (workers majores of Smith), having the head much enlarged and armed with mandibles, prolonged, slender and recurved into a hook: 2nd, Those of a size almost equal to the preceding, with little or no enlargement of the head, and the mandibles yet slender, but not also recurving toward the base. Among them, as in the first division, the head and the thorax are of a lighter color than the rest of the body. 3rd. The third category (workers minores of Smith) comprehends the individuals having the head and mandibles normally developed, and the color uniform. Among them the size is quite variable, they never attain to that of the two first divisions.

It is almost impossible to determine, with any certainty, the numerical proportion which each one of these three categories of workers bears in the colony; the following, based on a good number of observations, may give an approximate idea of it.

Workers	majores,	::	5 :	100.
"	intermedii	::	15 :	100.
"	minores	::	80 :	100.

This determination is so much the less easy to establish, because there often comes a column of these *tepeguas*, only composed of individuals of the two last classes. This ordinarily takes place when it goes forth on a hunting expedition, in which the workers with long mandibles rarely take part.

A similar difficulty presents itself when one undertakes to divine the role of each one of these divisions of workers in the labors of the community. I incline to think that those of the first class (workers majores) use in the interior of the nest, for the labors of piercing the galleries, of clearing away, the instruments which the enormously developed head and mandibles furnish them. To these is reserved, without doubt, the guard of the formicarium during the expeditions undertaken by the two other classes. That which takes place in the societies of the *arriero* ant (*Oecodoma mexicana*) seems to me to favor this conjecture. Among these ants, in fact, the large sized workers having great heads provided with a single ocellus, do not quit the nest at all and do not go forth to the light, except when, troubled or alarmed by

the introduction of a foreign body into the openings of their dwelling, they seek to satisfy themselves as to what is going on above.

The workers minores, (to return to the subject,) endowed with great activity and better formed for this end, are charged with the *razzias* destined to provide food for the larvæ, and perhaps they are guided in their course by the individuals of the second category which appear sometimes to rule by their movements the march of the column.

I have never seen the *tepeguas* transporting vegetable debris as do the *Oecodoma*, and it is to be presumed that the food of their larvæ is exclusively insectivorous. No doubt, also, they employ to garnish the interior of their nest, the fragments of wood from the tree which protects them, for they exhale a strong and nauseating odor like all the Formicidæ which live in decaying trunks.

No. 77 very closely resembles species No. 4, to which it seems to be allied by its form and habits.

It is distinguished from it by its light color, which is of a reddish-yellow, uniform in all parts; by the polished surface of the head of the workers majores; by the light color of the scape of the antennæ, &c. It is also more rare and more solitary in its habits. I have only found it at Potrero, in the great virgin forests which border the Rio Atoyac. Here also, I met No. 69, which is doubtless a brown variety of No. 4. This last, as well as No. 6, is of an irascible and nomadic character, and hunts also in disorderly masses. Nos. 39 and 40 have, on the contrary, quiet and timid habits. The march of their columns is made with much regularity. I have often taken the species, No. 39, at evening in my habitation, which they entered in small numbers, but whence they withdrew with haste when the lights were produced. The size of the individuals only, can serve to establish a distinction between the great and little workers, for the head and the mandibles do not present any remarkable difference.

HACIENDA DE POTRERO, 21st February, 1868.

REMARKS BY EDWARD NORTON.

The species of *Eciton* forwarded by Prof. Sumichrast may be temporarily classified as follows. (One species, No. 5, is not mentioned by him in the present paper.)

A. Metathorax more or less spinose.

1. Three classes of workers. Worker major with long mandibles.

No. 68. **Eciton hamata**, Fabr.

All classes have the head white and shining and the remainder of the body whitish-ferruginous. The antennæ are subfiliform.

This is abundant in Panama and Brazil.

No. 36. **Eciton mexicana**, Guér.

In the major and intermediate workers, the color of the head is pale brown, the thorax ferruginous and the abdomen nearly black. In the minor workers the head and whole body are black, with ferruginous tints. This closely resembles the *E. hamata*, but differs as follows: The antennæ are longer and the joints of the flagellum longer and more slender. The mandibles of second and third workers are in *hamata* aciculate longitudinally and toothed on the inner edge; in *mexicana* not aciculate longitudinally and with the biting edge smooth. The spines or angles at the back of the head of *hamata* are acute and curved outwardly. In this they are not acute. The spinose points on the metathorax of *hamata* are the termination of rather prolonged side carinæ. In this the carinæ are shorter and less prominent. In *hamata* the first node is one-half longer than wide; in this it is nearly as wide as long.

2. Two classes of workers, none with long mandibles yet taken.

No. 5. **Eciton rapax**, Smith. = *brunnea*, Norton, Am. Nat. II, 1868, p. 62. Proc. Essex Inst.

The antennæ are intermediate between No. 68. and 36, the mandibles coriaceous above, with their biting edge irregularly toothed and a large tooth towards the apex. The spines at the back of head are like those of *hamata*, of the metathorax longer. The color of the head and thorax blackish-brown, of the abdomen a clear brown.

This is found also in Brazil.

No. 39. **Eciton crassicornis**, Smith.

The color of this is a dull, dark reddish-brown, abdomen shining. Antennæ short, thickened, scape clavate, all the joints of the flagellum short, from middle to apex wider than long, paler beneath.

This is found in Brazil.

B. Metathorax unarmed with spinose processes.

a. Back of head widely emarginate, with acute angles.

No. 40. **Eciton Sumichrasti**, Norton, Am. Nat. II, 1868, 62. Proc. Essex Inst.

This is remarkable in having the back of head nearly as wide as the middle, the head, thorax and nodes very rugose and the abdomen polished. But one size of workers yet examined.

b. Back of head slightly emarginate, without spines or angulate corners.

No. 4. **Eciton tepeguas**, n. sp. Species nigra.

Worker major.—Length 0.40 inch. Deep black, shining, the flagellum, sides and apex of metathorax and legs below knees, ferruginous; antennæ as usual. Head large, slightly emarginate behind, not angulate, but somewhat rounded, and lobed at sides; mandibles rugose, running into longitudinal striæ, the inner edge with two large inner teeth, and with small pits along the inner edge. Antennæ inserted as in *E. legionis*, viz., the margin of a cavity raised about each at the front and sides and a deep channel down the middle of face. Eyes very small. Head and whole body shining, delicately reticulate and with larger scattered subobsolete pits. Parts of thorax distinct, with nó acute angles. First node longer than second, compressed, second nobe widest, globose, both truncate behind, with no spine beneath, but a short tooth extending forward from apex of second. Abdomen covered with fine short pale hair, the whole body with longer reddish hair; edge of each segment of abdomen golden. The tips of hinder femora as long as the apex of abdomen.

No. 69. **Eciton tepeguas.** Var. **ferruginea.**

Worker major.—Color almost wholly ferruginous, abdomen blackish, surface dull, only the abdomen shining.

Probably a variety of No. 4.

No. 52. **Eciton clavicornis**, n. sp.

Only the *Worker minor.* Length 0.18 inch. Polished and shining. Color piceous-black, the flagellum and legs below the knees pale brown. Antennæ short, as in E. *crassicornis*, the scape hardly clavate, the flagellum quite so, apex of scape and the flagellum, nasus and mandibles yellow-red. Mandibles with longitudinal striæ arising from little punctures along the inner edge. Cutting edge falcate, smooth. Basin of antennæ large and deep. Eyes minute. Head emarginate behind, the angles distinct, not acute (about 90 degrees.) Nodes nearly equal; the first with a long spine at base beneath curving backward, the second with a tooth extending forward. Apex of metathorax and nodes beneath rufous, legs rather short, below the tips of knees yellow-rufous. Claws slender, their inner tooth small, near the base.

This is much like *E. simillima* Smith, but differs in form of metathorax, &c.

No. 77 appears to be a species of *Myrmica.*

Description of a new species of CULICIDÆ.

BY R. OSTEN SACKEN.

Although averse to the publication of single new species, I allow myself an exception for a new and apparently rare insect belonging to an equally rare genus, and which affords, for this reason, a valuable addition to the North American fauna.

The insects commonly known under the name of mosquitoes, and distinguished by their long proboscis, stinging in the female sex, harmless in the male, are represented in our latitudes by three principal genera.

Anopheles, with a pair of palpi as long as the proboscis in both sexes.

Culex, with the palpi long in the male, short in the female sex.

Aedes, with the palpi short in both sexes.

The genus *Culex* is by far the most numerous in species. I possess fifteen or twenty North American species in my collection. About thirty European species have been described, many of which, however, are probably synonyms. *Anopheles* comes next; four European species are known, and I possess three from North America. Of the genus *Aedes* only a single species is known, *A. cinereus*, Meigen; it occurs in central Europe, and seems to be rare.*

An American *Aedes*, distinguished from the European species by its beautiful metallic colors, is therefore an interesting discovery. Some eight or nine years ago, I found a female specimen in Washington, D, C., and last year I was fortunate enough to secure the male in Brooklyn, New York.

Aedes sapphirinus, n. sp. ♂ ♀.—Fuscus; fronte, thoracis lineâ mediâ et pleurarum strigis cyaneo-micantibus; pedibus nigris; coxis, femorumque basi pallidâ; femorum tibiarumque extremo apice superne niveis. Long. corp. 0·13. Long. al. 0·12 of an inch.

Front blackish, with a metallic-blue reflection along the eyes, espe-

* Mr. Ginmerthal described a second species, *A. rufus*, in the *Bull. de la Soc. des Natur. de Moscou*, 1845; but it is very little known yet.

cially in the middle; antennæ blackish, scapus tawny; those of the male apparently 15-jointed (13+2); flagellum with 12 beautifully bearded joints; a thirteenth, elongated, linear joint has some scattered hairs, but no beard like the preceding ones. Proboscis long, reaching in the male, if bent backwards, to about the middle of the abdomen; rather conspicuously incrassated at the tip; perhaps still longer in the female (the abdomen of my female specimen is somewhat injured). Thorax brownish-tawny, darker above, paler on the pleuræ; a metallic blue longitudinal line along the middle of the thorax reaches the scutellum; three similar marks on the pleuræ, the upper of which is in the shape of a short line running from the base of the wing towards the head. Abdomen brownish above, paler below; knob of the halteres brown, stem pale. Feet brownish, paler at the base; a snow-white dot on the upper side of the tip of the femora and of the tibiæ; when looked at very obliquely these white dots appear slightly pale bluish, and the tibiæ and tarsi likewise show a faint bluish reflection. Wings clothed with brown scales, but showing, in an oblique light, numerous blue reflections, especially a stripe near the basis, between the third and fourth longitudinal veins. (Washington, D. C.; Brooklyn, N. Y., by Mr. Brevoort.)

Observation.—In my female specimen the scales are somewhat rubbed off on the feet, which for this reason appear pale-tawny; still the white dots are distinctly visible.

New COLEOPTERA collected on the Survey for the extension of the Union Pacific Railway, E. D. from Kansas to Fort Craig, New Mexico.

BY JOHN L. LE CONTE, M. D.

During the summer and autumn of 1867 I had the opportunity, in company with my friend Dr. S. Lewis, of being connected with the surveying party under charge of Gen. W. W. Wright, for the extension of the railroad above mentioned. Our journey in part lay through a region previously but little known, the valley of the Purgatory, and the Raton Mountain, and as was to be expected, a moderate number of new species of Coleoptera were found, several of which are very interesting additions to our fauna. I have added in a few instances species from neighboring regions which were previously in my collection.

CICINDELA Linn.

C. cimarrona, nigra, subtus nitida, supra opaca, mandibularum basi labroque albis, hoc tridentato, fronte pilosa utrinque fortiter rugosa, thorace trapezoideo, postice angustato, lateribus antice solum rotundatis, dorso confertim rugoso, impressionibus transversis profundis; elytris thorace fere duplo latioribus, granulato-punctatis, margine apicali haud serrato, signaturis albidis notatis, viz: vitta submarginali pone humero et ante apicem dilatato, fasciaque media obliqua nonunquam paulo curvata, vel obtuse angulata. Long. 14 — 15 mm.

South of Raton Mountain; six specimens collected by Dr. Lewis. One specimen has the white markings of the elytra much more slender and the marginal band is interrupted before and behind the middle, presenting the same form as in *C. ancocisconensis*, except that the medial band descends obliquely from the obtuse angle, instead of being curved; but on comparison it differs not only by the color and markings, but by the thorax being broader in front, less rounded on the sides, convex on the disc, and also by the more stout form, and by the apical margin of the elytra being absolutely free from serration.

The palpi are entirely black in both sexes; this character with the smooth apical margin of the elytra places this species in group VI. of my revision of Cicindelæ, *Trans. Am. Phil. Soc.* xi, 36, near *C. purpurea* with which it agrees in form and sculpture. It is perhaps the American analogue of the Russian *C. distans*, which is placed by Chaudoir in a different group.

LISPINUS Er.

L. aequipunctatus, niger nitidus, supra fere aequaliter punctatus, fronte bifoveata, thorace basi utrinque longitudinaliter impresso, quadrato, latitudine vix longiore, lateribus parum rotundatis; antennis piceis, pedibus obscure ferrugineis, abdominis segmentis ventralibus postice testaceo-marginatis. Long. 4·5 mm.

Under pine bark at Cañada de los Diegos, New Mexico. The punctures of the head are a little smaller than those of the thorax and elytra, but those of the dorsal surface of the abdomen are quite as strong as those of the thorax, though not as rugose as those of the elytra.

This species differs from all previously described by the strongly marked punctures of the dorsal abdominal segments.

OLIBRUS Er.

O. nigricollis, ovalis, convexus, capite thoraceque nigris, hoc longitudine duplo latiore, antrorsum magis angustato, basi medio subtiliter marginato, elytris laete rufo-flavis, striis internis duabus distinctis; subtus piceo-testaceus pedibus testaceis, antennis flavis. Long 3 mm.

One specimen. New Mexico. Of the size of *O. bicolor*, but somewhat broader and more regularly oval: the rows of punctures of the elytra are very fine, and scarcely visible. This species belongs to the same division of the genus as *O. bicolor*, having the metasternum connate with the mesosternum, and protuberant between the middle coxæ.*

OCHODAEUS Lep.

In the vicinity of Cañon Blanco, New Mexico, I collected six specimens of this genus, which flew into my tent attracted by the light of the lantern. They differ greatly in size, and in the sculpture of the head and elytra, and in comparison with other specimens before me from the collections of Mr. Ulke and myself, indicate that the species of North America are more numerous than has been heretofore suspected. Much larger series of specimens must be obtained before the study of the genus can be regarded as even moderately perfect.

The six specimens represent four distinct forms, none of which are precisely like the three species previously in my collection. I have endeavored to define the most prominent differences between them, and two additional ones now before me, in the following table:

* I avail myself of the present opportunity to describe a beautiful species of *Olibrus*, found by Mr. Ulke in the interior of the state of New York.

O. VITTATUS, latius ovalis, convexus, supra nigro-piceus nitidus, marginibus rufo-piceis, thorace longitudine duplo latiore, antrorsum magis angustato, basi medio subtiliter marginato; elytris margine vittaque utrinque dorsali lata rufo-testacea, striis internis duabus distinctis; subtus testaceus, antennis pedibusque fere flavis. Long. 2 mm.

Belongs also to the same division as *O. bicolor*, but is more broadly oval, having nearly the outline of *Phalacrus politus*. The outlines of the two broad elytral vittæ are not very well defined, and they almost meet at the suture near the tip.

A. Middle lobe of front with an apical elevated margin, extending to the side lobes:

Middle lobe rounded, uniformly margined:

6 mm. Thorax densely punctured.....1. **opacus.**

6 mm. Thorax and elytra more sparsely punctured.....2. **musculus.**

8 mm. Middle lobe broadly truncate.....3. **simplex.**

5 mm. Middle lobe rounded, projecting each side into a small erect tubercle; (elytral striæ deep).....4. **biarmatus.**

B. Middle lobe of front scarcely, or not at all margined: (elytral striæ deep, strongly punctured):

7 mm. Head with three apical tubercles and a posterior transverse ridge.....5. **complex.**

5 mm. Head with a small acute tubercle on the vertex.....6. **sparsus.**

7·5 mm. Head with an acute frontal tubercle, and a transverse ridge on the vertex.....7. **frontalis.**

6 mm. Head with two transverse ridges.....8. **duplex.**

Middle lobe slightly truncate, without apical tubercles.

7 mm. Head with a small posterior transverse ridge.....9. **striatus.**

7·5 mm. Head without ridges.....10. **pectoralis.**

In *opacus*, *musculus* and *simplex* the striæ of the elytra are very slightly impressed, their punctures in *opacus* and *musculus* are much larger than those of the intervals, which are arranged in triple series: in *simplex* the punctures of the striæ are scarcely larger than those of the intervals, which are closer and less regular than in the other two.

In *biarmatus* the margin of the front is curved, but more thickened than in the preceding, so that the front appears concave, and at the junction of the middle with the lateral lobes, there is on each side a small erect tubercle; the striæ of the elytra are deep, strongly punctured and the punctures of the intervals irregular.

In *complex* and *sparsus* the punctures of the head and the intervals of the elytra are much more distant than in the other species, though more so in *sparsus* than in *complex*.

O. striatus and *pectoralis* agree in size and sculpture, but differ in the form of the head between the back part of the eyes; in *striatus* (Arizona, collected by Dr. Webb), there is a very well defined transverse ridge, while in the New Mexican *pectoralis* there is merely a very gentle swelling, slightly impressed at the middle, forming two faint tubercles. The prosternum is longitudinally very prominent in the species last named, but not in any of the others.

O. opacus and *musculus* agree in the form of the front and general sculpture, except that the thorax of the former is more densely granulated, and the punctures of the intervals of the elytra are more numerous and less regularly arranged in triple series.

The hind femora in *musculus* are armed at the tip with a large acute

somewhat recurved tooth; in *striatus* and *complex* the tooth is smaller, broader and not quite so close to the extremity; in *biarmatus* it is very small, and quite remote, about one-third from the apex; the thighs are not toothed in the other species.

It is difficult to determine to which of these species is to be referred *O. americanus* Westwood, (*Trans. Ent. Soc. London.* 2nd ser., ii, 66): the description and figure represent the anterior margin of the front as biangulated, and would seem therefore rather to refer to *O. simplex* than to *musculus*. In consequence of the unexpected increase in the number of species, it is safer to await reference to the typical specimen in order to fix definitely the synonymy.

The Mexican *O. luridus* Westw. (*loc. cit.*) seems to resemble *pectoralis* Lec., above described, but the tubercles of the vertex are said to be prominent, and the peculiar form of the prosternum seen in the latter species is not mentioned.

The new species here described are 1. *opacus*, Kansas: 4. *biarmatus*, New Mexico: 5. *complex*, New Mexico: 6. *sparsus*, New Mexico: 8. *duplex*, Texas, (Coll. Ulke): 10. *pectoralis*, New Mexico.

ANOMALA Köppe.

A. cavifrons, longiuscula pallida, subnitida, capite dense subtiliter punctato, testaceo, clypeo pallidiore, rotundato, fortiter marginato et valde concavo; thorace parce punctulato, lateribus pone medium subparallelis, antice rotundatis, basi bisinuato, angulis posticis rectis subrotundatis; elytris striis subpunctatis, interstitiis paulo convexis impunctatis; pectore abdomineque parce setosis, pedibus piceo-marginatis, tarsis rufo-piceis, unguiculis integris. Long. 10·5—12 mm.

Two males and a female collected on the Smoky Hill river. This differs from the previously known American species by all the tarsal claws being acute and undivided; it therefore belongs to the group *Rhombonyx* Hope. The body is narrower than in our other species, being proportioned nearly as in *Lachnosterna longitarsis*, but less cylindrical. The club of the antennæ in the male is one third longer than the other portion, but in the female is not longer than the joints 2—6 inclusive.

SANDALUS Knoch.

S. porosus, niger, capite thoraceque opacis, confertissime subtiliter punctatis, hoc punctis majoribus intermixtis poroso, lateribus obliquis subrotundatis, angulis posticis haud acutis, dorso subcanaliculato, apice et basi late et disco utrinque vage impresso; elytris obscure rufo-piceis, confertim seriatim punctatis, basi anguste licet fortius marginatis. Long. 15 mm.

Two females found on the Arkansas, and one south of Raton Mountain, by Dr. Lewis. This species agrees with *S. niger* and *californicus* by the sides of the thorax being oblique and nearly straight, but differs

from them and agrees with *S. petrophya*, by the more opake and densely punctured thorax, with larger conspicuous punctures intermixed; it differs from all by the elytra being more deeply concave and more narrowly margined at the base.

SCIRTES Illiger.

S. ruficollis, rotundato-ovalis, nigro-piceus nitidus, punctulatus subtiliter pubescens, capite, thorace, macula elytrorum ovali communi, antennis pedibusque rufo-testaceis: thorace interdum macula apicali nigra. Long. 3 mm.

Two specimens collected by Dr. Lewis south of the Raton Mountain; I have also seen specimens from Texas. This species agrees in size form and sculpture with *S. centralis*, but differs by the head and thorax being pale reddish-yellow, and by the discoidal spot of the elytra being much larger.

PHOTINUS Lap. emend. Lac.

P. flavicollis, elongata, nigra, thorace semicirculari, laete flavo, lateribus et apice punctatis, subdiaphanis, disco medio nitido laevi canaliculato: elytris granulatis, margine late explanato, dorso utrinque linea elevata parum conspicua; abdomine segmentis duobus ultimis pallidis, antepenultimo margine postico pallido. Long. 8·5 mm.

A very distinct and beautiful species found clinging to plants in the neighborhood of the Purgatory cañon and the Raton Mountain. It seems to belong to the same section of the genus as *P. nigricans*, *decipiens* and *fenestralis*, but differs from them by the last two segments of the abdomen being pale, though they have not the appearance of being luminiferous.

NEMOGNATHA Illiger.

N. sparsa, nigra, brevissime pubescens, capite, thorace, scutello, abdomine segmentis duobus ultimis maris), femoribusque, (apice excepto), flavo-testaceis; capite thoraceque grosse parce punctatis, hoc latitudine haud breviore, lateribus antice rotundatis, postice subsinuatis, medio canaliculato; elytris sat dense punctatis, thorace sesqui latioribus; antennis nigris, articulo 3io praecedente vix sesqui longiore; maxillis pallide piceis, dimidio corporis longioribus; tibiis posticis calcare exteriore lato obtuso, interiore angustiore subacuto. Long. 6·5 mm.

Mas abdomine nigro, apice flavo, segmento 6to profunde emarginato, 5to apice canaliculato.

Femina abdomine flavo, segmento 6to emarginato, 5to convexo, haud impresso.

Several specimens found south of Raton Mountain. This species differs from all those previously described by the characters above given.

EPICAUTA Redt.

E. Stuarti, nigra supra densissime fulvo-pilosa, capite pone oculos, thoracis maculis magnis duabus rotundatis, elytrisque nigro-pilosis: his sutura limbo externo et apicali fasciaque transversa ad medium fulvo-pilosis: subtus abdomine nigro fulvoque fasciato, pedibus fulvo-pilosis, genubus, tibiis apice, tarsisque nigris; antennis nigris, articulis externis laxe articulatis. Long 7—15 mm.

Abundant near Fort Union, New Mexico. On account of the peculiar marking of the elytra I at first supposed it to belong to *Tetranyx*, but on examination found it to possess all the characters of a genuine *Epicauta*. The thorax is more robust than usual, being about one-third wider than its length; the two rounded black spots are so large as nearly to meet on the median line.

I desire in the name of this elegant species to commemorate the friendly assistance rendered to us in our scientific pursuits by Capt. Lyman Stuart, late Commissary of Subsistence, U. S. V., a member of the expedition. We are indebted to him for a series of specimens collected in the upper part of the Rio Grande Valley, on the road from Fort Garland to Santa Fe.

TOPOSCOPUS Lec. (n. g. Rhipiphoridæ.)

The single species of this genus represents on this continent the rare *Evaniocera Dufourii* Latr., of Hungary, and agrees with that species in size, form and sculpture, so closely that without examination it would not be readily distinguished.

The generic differences are, however, very great, the chief ones being as follows:

The vertex is less elevated than in *Evaniocera*; the *eyes are divided into two portions*, connected by a slender line of smooth corneous material, which is destitute of lenses, while in *Evaniocera* they are only deeply emarginate.

The 3d joint of the antennæ of the male is longer, with a basal process about four-fifths as long as the processes of the following joints, while in *Evaniocera* the 3d joint is short, prolonged externally into a process one-fifth as long as those of the following joints.

The side margin of the prothorax is more developed, extending from the hind angles nearly to the apex.

The claws are not finely pectinate, as in *Evaniocera*, but bifid at tip, and armed with three slight teeth, somewhat as in *Ancholæmus* Gerst.

T. Wrightii, elongatus piceus, confertissime punctulatus, pube subtili cinereo-sericante dense vestitus, thorace a basi antrorsum angustato, lateribus rectis obliquis, latitudine baseos vix longiore, basi profunde bisinuata, angulis posticis productis acutis, lobo medio truncato; elytris parallelis, apice conjunctim rotundatis. Long. 6—9 mm.

Mas antennis longe pectinatis, articulo 3io sequentibus 4 aequali, ramo elongato tenui basali externo munito, sequentibus brevibus transversis extrorsum in ramos valde elongatos productis. Femina latet.

Ten male specimens were collected on gramma grass at the crossing of Tecalote creek, south of Las Vegas, New Mexico. We sought diligently for the females, but without success. In comparison with *Evaniocera Dufourii*, besides the generic distinctions above mentioned, the punctuation is much finer, and the pubescence shorter, finer and more sericeous.

I desire in the name of this beautiful and interesting addition to our fauna, to commemorate the ability of Gen. W. W. Wright, the Chief Engineer and Commander of the Survey on which the species described in the present memoir were collected. His attention to the comfort and safety of the party while traveling through a hostile Indian country will not be soon forgotten by any of his companions; while the skill with which the more difficult portions of the route were examined, and the labors of his assistants directed to the most easy methods of surmounting the difficulties, will commend itself to every admirer of correct engineering.

TACHYGONUS Schönh.

T. centralis, brevissime ovatus, niger nitidus, setis griseis erectis vestitus, thorace parce fortiter punctato, lateribus parce pallide piloso, versus angulos posticos fasciculo pallido ornato; elytris grosse seriatim punctatis, fasciculo pallido postscutellari ornatis; metasterni lateribus albopilosis, antennis testaceis, tarsis nonnunquam testaceis. Long. 1·5 mm.

Trinchera Pass, on *Rhus aromaticum*. With the exception of the white hairs on the sides and at the posterior angles of the thorax, the fasciculus behind the scutellum, and the less dense white hairs of the sides of the metasternum, the body and legs are clothed with erect bristles which appear black except in certain lights, when they appear dark gray. The rostrum is smooth and shining, with a row of strongly marked punctures above the antennæ and a few scattered punctures on the side; head thickly punctured, eyes almost confluent. Thorax sparsely but strongly punctured. Elytra with rows of very large punctures, intervals marked with a series of setiferous punctures and a few transverse wrinkles; a well defined bunch of white erect hairs on the suture just behind the scutellum. Antennæ testaceous, or yellow; tarsi sometimes testaceous, sometimes blackish. Hind femora armed beneath with five or six small teeth.

DONACIA Fabr.

D. pubescens, elongata, ferruginea, supra pube sericeo-aurea dense vestita, thorace quadrato, medio utrinque paulo constricto, dorso late canaliculato, antice posticeque vage impresso, tuberculis latis parum prominulis; elytris dorso

depressis, lateribus subito declivibus, versus suturam triimpressis, apice subtruncatis, striis fortiter punctatis, interstitiis fere planis; femoribus posticis edentatis. Long. 9 mm.

One specimen collected on the Smoky Hill river. This species differs from all the others in my collection by the dense pubescence of the upper surface; the body beneath is clothed as usual with silvery short dense hairs. By description it resembles the European *D. tomentosus* Ahrens, in many of its characters, but I have had no opportunity to compare it with a specimen of that species.

COSCINOPTERA Lac.

C. axillaris, oblonga, subcylindrica, nigra, subtus densissime, supra sat dense cinereo-pubescens, labro glabro; thorace confertim punctato, linea dorsali fere obsoleta laevi; elytris fortius punctatis et rugosis, macula humerali subquadrata laete rufa ornatis. Long. 4—5 mm.

Abundant on the Arkansas and and Smoky Hill rivers. The 4th joint of the antennæ is scarcely longer than the 3d, but somewhat broader.

C. subfasciata, oblongo-cylindrica, nigra nitida, subtus densissime, supra minus dense cinereo-pubescens, capite confertim subtiliter punctato, linea longitudinali laevi inter oculos antice furcata; labro glabro; thorace confertim punctato, linea dorsali fere nulla; elytris minus subtiliter punctatis, punctis hic inde subseriatis, macula magna basali fere ad suturam extensa rubra, baseos dimidio interno nigro. Long. 6·5 mm.

Two specimens. Arizona, Dr. B. J. D. Irwin, U. S. A. A fine species, easily distinguished by the large quadrate red spot, which occupies the anterior third of the elytra, except the suture and the inner half of the base, which remain black. The 4th joint of the antennæ is almost twice as long as the 3d, and nearly as wide as the 5th; the 3d joint is rounded, and smaller than the 2d.

GRIBURIUS Hald.

G. speciosus, capite punctato, nigro, fascia angusta frontali labroque albo; thorace parce punctato laete rubro, macula magna antica transversa nigra, margine subapicali albo, apice summa anguste nigra; elytris irregulariter seriatim punctatis, sutura late limbo externo et apicali anguste albis; scutello et pygidio albis postice nigro marginatis; subtus pectoribus nigris, abdomine albo, nigro fasciato, propectore lateribus rubris, pedibus albo nigroque vittatis. Long. 6 mm.

Mas segmento ventrali ultimo apice fovea magna circulari excavato.

But two specimens of this most beautiful species were found by Dr. Lewis, south of the Raton Mountain. In comparison with *G. larvatus* the thorax is shorter, having nearly the same proportions as in *G. scutellaris*, but more rounded on the sides; the punctures of the head and thorax are less distant than in either of those species, and the striæ of the elytra are composed of more closely set and smaller

punctures, the punctures between the oblique abbreviated stria and the suture are confused.

CHRYSOMELA Linn.

C. continua, ovalis, supra ferruginea, thorace ad latera grosse punctata, margine apicali lateribusque pallidis; elytris pallidis, vitta suturali antice divergente, alterisque utrinque duabus latis postice connexis epipleurisque ferrugineis: subtus obscure ferruginea, piceo variegata; antennis articulis ultimis quinque piceis. Long. 6·5—7 mm.

South of Raton Mountain, Dr. Lewis. Of the same size, form and sculpture as *C. conjuncta*, and differing only by the absence of submarginal elytral spots and by the vittæ being broader, not sinuous, and not interrupted. The stripes, as usual are limited by well marked series of punctures; the sutural stripe is nearly smooth, the two dorsal ones are strongly punctured, the pale ground of the elytra is very feebly and sparsely punctured, and there are three rows of punctures between the outer stripe and the margin; the inner two of these are abbreviated.

I have seen specimens of this species from Arizona.

C. conjuncta Rogers, Proc. Ac. Nat. Sc., Phil. 1856, 34, tab. 1, fig. 9.

A large series of specimens collected on the Smoky Hill and Arkansas rivers shows that *C. stolata* Suffr., and *C. pallida* Bland, are merely varieties of this species. In the first named, the dorsal vittæ of the elytra are entire, and united behind; in the second the inner vitta is interrupted in front of the middle; in another variety the interruption is behind the middle, and the outer vitta is more sinuous than usual; in *C. pallida* the inner vitta is interrupted both before and behind the middle, and the outer one is still more sinuous, with a tendency at the outer angle of the sinuosity to the formation of a separate spot.

LUPERUS Geoffr.

L. luteicollis, niger, capite nitido parce subtiliter punctato, thorace flavo, dense punctulato, longitudine duplo latiore, apice fere truncato, lateribus cum basi rotundatis, angulis anticis subrectis, posticis obtusis rotundatis; elytris dense punctulatis, nigro-cyaneis, hic inde obsoletissime striatis; antennis articulo 3io praecedente sesqui longiore; 4to illis conjunctis aequali. Long. 4·5 mm.

South of Raton Mountain, and at Fort Union. A very pretty species, more allied to *L. thoracicus* than to any other in my collection. For a synopsis of our species vide *Proc. Ac. Nat. Sc., Phiala.*, 1865, 208.

L. varicornis, pallidus, subtus infuscatus, elongato-ovalis, supra haud dense punctulatus, thorace latitudine breviore, angulis posticis obtusis rotundatis; elytris thorace latioribus, paulo fortius punctulatis; antennis corpore paulo brevioribus, articulis 4—11 apice infuscatis. Long. 3 mm.

One specimen. Arizona, Mr. Ulke. Differs from the other species with yellow thorax by the elytra also being pale, and by its smaller size.

PHYLLECHTHRUS Lec.

Ph. nigripennis, elongatus, nitidus flavo-testaceus, supra laevis, thorace quadrato, dorso vage transversim impresso, lateribus late, margine apicali anguste nigris; elytris nigris, antennis fuscis, articulis 4 baseos nonnunquam testaceis. Long. 3 mm.

Kansas: three specimens given me by Mr. Ulke. This species precisely resembles *Ph. gentilis* Lec., (*Proc. Acad.*, 1865, 208), except that the elytra are entirely black, instead of having the suture and lateral margin yellow; the lateral black vittæ of the thorax are also wider, leaving the reflexed marginal bead yellow.

DIABROTICA Chevr.

D. blandula, elongata, pallida, capite postpectore, vittis elytrorum tribus infuscatis; thorace quadrato, flavo, medio transversim profunde excavato; elytris punctulatis, obsolete striatis; antennis fuscis, basi pallidis. Long. 5 mm.

Variat, elytris pallidis, sutura paulo infuscata.

Smoky Hill river, on the wild gourd. This species has the 3d joint of the antennæ much longer than the 2d, and nearly equal to the 4th, differing thereby from *D. longicornis*, to which at first sight it bears a strong resemblance.

By an error of print in the synopsis on p. 212, of the Proceedings of the Academy for 1865, the 3d group of the genus to which the present species belongs is stated to have the 2d and 3d joints of the antennæ equal, while in fact the 3d joint is longer, as in the first group. This species differs in sculpture from *D. vittata* by the elytra being only very faintly striate.

The synoptic table should therefore be corrected as follows:

A. Third joint of antennæ longer than the second;
  a. Thorax not impressed; elytra not striate.....Group 1
  b. Thorax deeply impressed; elytra striate.....Group 3
B. Third joint of antennæ equal to the second:
  a. Thorax with two faint foveæ: elytra even, not striate.....Group 2
  b. Thorax with two deep excavations; elytra carinate towards the sides.....Group 4

D. lemniscata, elongata, nigra nitida, thorace quadrato, lateribus fortiter marginatis, subsinuatis, angulis omnibus subprominulis, dorso profunde biimpresso; elytris subtilissime alutaceo-granulatis, sat dense subtiliter punctatis, fortiter marginatis versus latera subsulcatis et carina utrinque abbreviata obtusa ornatis, flavis vitta lata suturali, alteraque lata ab humero fere ad apicem extensa nigris. Long. 5·5 mm.

South of the Raton Mountain, and at Fort Union; not rare. Allied to *D. longicornis* and *atripennis*, and belonging with them to the 4th

group; differs from the former by the elytra being less strongly punctured, and not striate; from both by the arrangement of the colors of the elytra, which are yellow, with a broad common sutural black vitta, and a broad dorsal vitta extending from the base nearly to the tip; or they may be described as black with a narrow dorsal vitta, the lateral and apical margins yellow.

D. virgifera, pallide flava, ore, occipite, antennis, scutello, postpectoris lateribus, femorum linea superna, tibiis tarsisque infuscatis; prothorace quadrato, latitudine vix longiore lateribus fortiter marginatis subsinuatis, angulis fere rectis, dorso bifoveato; elytris vitta communi suturali, alteraque utrinque ab humero fere ad apicem extensa nigris, subtiliter punctatis, striis, (vel potius sulcis), sat profundis impressis, lateribus fortiter marginatis; antennarum articulo 3io praecedente sesqui longiore, 4to tamen vix dimidio aequante. Long. 5—6 mm.

Two specimens found on the wild gourd near Fort Wallace. This species is intermediate both by the sculpture and the relation of the antennal joints between those of group 3 and 4, though rather to be classed with the latter because the striæ of the elytra are more grooves than striæ, and are not marked with rows of punctures; the elevated ridge next the margin is more strongly marked than the inner ones. The antennæ are three-fourths the length of the body, the 2d joint is about two-thirds as long as the 3d, but the latter is only one-half as long as the 4th; all the joints are dark colored except the 1st, which is testaceous, with a dark line above.

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COLEOPTERA of the U. S. Coast Survey expedition to Alaska, under charge of Mr. George Davidson.

BY JOHN L. LECONTE, M. D.

I have recently received from Mr. George Davidson of the U. S. Coast Survey a small collection of insects made by him and his assistants Dr. Albert Kellogg, and Mr. W. G. W. Harford, during his recent very successful exploration of our newly acquired territory, Alaska. Although the number of new species is not large, I have thought it desirable to make known the results as speedily as possible, in order that encouragement may be given to chiefs of other parties who may be placed in a position to do service to collateral sciences by knowing that their labors are fully appreciated; and that those who are not exposed to the toils and dangers of field service, will not permit the results their work to be lost. It has been my privilege on former occasions, to acknowledge my obligations to Mr. Davidson for large and valuable collections from our Pacific States. The collection contained, besides species of hymenoptera, hemiptera and diptera, 68 species of Coleop-

tera, most of which have been already described: of these 14 are recognised by me as belonging to Alaska, and 54 to California.

CYCHRUS Fabr.

Specimens of *C. cristatus* are contained in the collection, and give me the opportunity of adding to the present communication some notes on the species of this genus which have been found in our Pacific possessions. It happens by a fortunate coincidence that I have received from Dr. Horn about the same time, specimens of *C. velutinus* Mén. I have also seen in the collection of Mr. Ulke a specimen of *C. angulatus* Harris; of the described species, therefore, only *C. dissolutus* Schaum and *C. subtilis* Schaum, remain unknown to me.

A. Legs and antennæ very long and slender; the latter three-fourths the length of the body, with the fourth joint but little shorter than the fifth; color above dull, without lustre; striæ of elytra very fine, punctured; ♂ with joints 1—3 of the front tarsi spongy beneath, the 4th with two small tufts of yellow hairs:

Thorax more strongly narrowed behind, and more strongly margined, intervals of elytra equal, margin metallic-green. Alaska to California..... 1. **angusticollis** Fischer.

Larger; thorax less narrowed behind, and very narrowly margined; color dull purplish-black; elytra margined with dark blue, three of the intervals more distinct. Southern Oregon. 2. **velutinus** Mén.

B. Legs stouter; antennæ not more than two-thirds the length of the body, with the second joint about one-half as long as the third; color above not altogether dull; elytra strongly, or at least distinctly punctate-striate:

a. ♂ with joints 1—3 of the anterior tarsi spongy beneath, the 4th with tufts of hairs and a few papillæ; elytra at the sides and apex deeply striate, intervals convex, interrupted, especially at the sides and tip:

Thorax strongly narrowed, but not constricted behind; elytra æneous, with bright metallic margin. Oregon and Alaska. 3. **marginatus** Dej.

15 mm. Black, thorax strongly constricted behind...4. **dissolutus** Schaum.

b. ♂ with the joints 1—3 of the anterior tarsi spongy beneath:

Head strongly tricarinate, middle carina high, irregular. California. 5. **cristatus** Harris.

Head with a moderately elevated medial carina. Vancouver. 6. **angulatus** Harris.

Head not carinate:

Thorax broad, gradually strongly narrowed behind, intervals of elytral striæ somewhat interrupted. California.....7. **obliquus** Lec.

Thorax narrow, moderately constricted behind. Calif....8. **striatus** Lec.

Thorax broad, suddenly and strongly constricted behind:

Elytra less convex, strongly margined. California...9. **cordatus** Lec.

Elytra ventricose, narrowly margined:

Smaller and broader. California..... 10. **interruptus** Mén.

Larger, less broad. California.....11. **ventricosus** Dej.

c. ♂ with the joints 1—2 of the anterior tarsi spongy beneath:
Thorax semiopake, very strongly constricted behind; striæ of elytra punctured. California .....12. **striatopunctatus** Chaud.
Thorax very dull, less strongly constricted behind; striæ of elytra very coarsely punctured. California .....13. **punctatus** Lec.
(17 mm. Thorax gradually narrowed behind, elytra with rows of very fine punctures. California .....14. **subtilis** Schaum.

C. Legs stouter, antennæ less slender than in the other species, but little longer than the head and thorax, second joint very little shorter than the third; elytra granulated, and with rows of large tubercles. Oregon and Vancouver...15. **tuberculatus** Harris.

Remarks and synonyms.

2. C. VELUTINUS.—Though closely allied to *C. angusticollis* this species is very easily distinguished by the bluish-black color, destitute of lustre, and by the thorax being narrower, more gradually narrowed behind, and more finely margined; the elytra are striate in the same manner, with approximate rows of small points, but three of the intervals are wider and more obvious, and the margin is very dark blue instead of green. Specimens were collected in Southern Oregon and given to me by Dr. G. H. Horn.

5. C. CRISTATUS Harris.—This species is evidently *C. reticulatus* Motsch.; the description of Mannerheim (*Bull. Mosc.* 1853,) is quite characteristic. All the specimens I have seen are from Northern California.

7. C. OBLIQUUS, n. sp.—The single specimen which I designate by this name differs from all the others before me, except *C. marginatus*, by the thorax being strongly but gradually narrowed behind, with the sides oblique and scarcely sinuate, not constricted. The elytra are broad and ventricose as in *C. punctatus*; the striæ are deep, strongly punctured, and the intervals are narrow and interrupted towards the tip and margin. The color of the thorax is a very dull opake black, as in *C. punctatus*. California, near Sacramento. Mr. S. S. Rathvon.

10. C. CONSTRICTUS Lec.—This species, of which I found two males near New Almaden quicksilver mine in California, differs from *C. ventricosus* only by the thorax and elytra being rather broader, while the insect is much smaller. It is evidently the species figured by Motschulsky as *C. interruptus* Mén.

11. C. VENTRICOSUS.—I learn by the remarks of Dr. Schaum, (*Berl. Ent. Zeit.* 1863. p. 71), that I was in error in placing *C. striatopunctatus* Chaud. as a synonym; and that the latter has but two joints of the front tarsi of the male papillose beneath: this being the case, it

is the same as *C. alternatus* Motsch.; while the other large species having three joints of the male front tarsi papillose, and which I regard as the true *ventricosus*, is *C. ovalis* Motsch.

PROMECOGNATHUS Chaud.

P. crassus, niger nitidus, thorace latitudine vix sesqui longiore, postice angustato, et lateribus sinuato, angulis posticis rectis, apice quam basi fere duplo latiore; elytris ovalibus thorace conspicue latioribus, latitudine vix sesqui longioribus, humeris fortiter rotundatis, dorso versus suturam obsolete seriatim punctatis. Long. 10·5—16 mm.

California. Varies greatly in size, the smallest specimen being scarcely longer than *P. laevissimus*, but proportionally much stouter. The elytra in the last named species are more than one-half longer than their width, while in *P. crassus* they are very distinctly broader, being only about one-third longer than their width.

The episterna of the mesothorax in all of the specimens of both species before me, attain the middle coxal cavities as distinctly as in any species of *Scarites** which I have examined; not at all as in *Miscodera* and other Broscini, in which they are completely cut off from the coxal cavities.

SIMPLOCARIA Marsh.

S. inflata, rotundato-ovata, valde convexa, nigro-aenea nitida, pilis pallidis subtilibus erectis vestita, capite thoraceque subtiliter punctatis; elytris punctulatis, haud striatis; subtus piceo-testacea, pedibus antennarumque basi dilutioribus, his articulis 5 ultimis obscuris. Long. 4·5 mm.

One specimen, California. This species is easily known by its very inflated form, resembling in outline *Amphicyrta simplicipes*. The head is more strongly punctured than the thorax; the latter is at base more than twice as wide as its length; it is strongly narrowed in front, and much rounded on the sides, the apex is broadly rounded at the middle, and the base is truncate; the apical angles owing to the compression of the sides appear sharp and narrow, the basal angles are nearly rectangular. The elytra are feebly and finely punctured, a little wider than the thorax, and but little longer than their width, much deflexed behind, and conjointly rounded at tip.

S. nitida Motsch., from Alaska, resembles this species in pubescence, but is very much narrower, and the elytra are more distinctly punctured.

On comparing a specimen of *S. metallica*, from Kenai, with the unique from Lake Superior, upon which I established *S. tesselata*,

* Conf. Schaum, Berl. Entom. Zeitschr., 1864, 124; where this opinion is disputed, and the affinities with *Broscus* defended.

they do not appear to me distinct in any important respect; the outer striæ of the elytra are somewhat more obliterated in the latter than in the former.

THROSCUS Latr.

T. validus, nigro-piceus, fusco-pubescens, capite convexo punctato, haud carinato, oculis convexis; thorace fortiter punctato, punctis subvariolosis; elytris tenuiter striatis, striis parce punctatis, interstitiis subbiseriatim punctatis, tarsis piceo-testaceis. Long. 5 mm.

One specimen, California. This species is allied to *T. punctatus* Bonv., but differs by the striæ of the elytra being very fine, and but slightly impressed; they are marked with distant punctures larger than those of the intervals, which are arranged somewhat in two irregular series.

T. sericeus, fuscus subrufescens, pube helva appressa brevi dense vestitus, capite punctulato, bicarinato, carinis integris, oculis profunde impressis; thorace confertim punctato; elytris striis bene impressis, punctatis, interstitiis subbiseriatim punctatis; antennis obscure ferrugineis, tarsis flavo-testaceis. Long. 2·5 mm.

Three specimens from San Francisco given me by Mr. Ulke. This species resembles in form *T. Chevrolatii* Bonv., but the head is more strongly bicarinate, and the pubescence is much shorter, finer and denser; by this last mentioned character, it differs from all the other species known to me.

PACTOPUS Lec. (n. g, Throscidæ.)

This new genus is founded upon an undescribed Californian insect, resembling in its characters and form *Throscus*, except that the antennæ instead of being clavate are fusiform, and the hind tarsi are received in deep narrow grooves impressed on the first, second and third ventral segments in the same manner as the grooves for the middle tarsi in both genera are impressed on the metasternum.

It will therefore be only necessary to give at present a description of the antennæ to enable this genus to be recognized.

Antennæ a little longer than the head and thorax, received in very deep sinuous grooves, which terminate in the space under the hind angles of the prothorax; 1st joint obconical, nearly twice as long as the 2d, which is slightly transverse; 3d—7th nearly square, closely articulated, about equal in thickness to the 2d, 8—10th very little larger, also quadrate and closely united, 11th one-half longer, pointed at the tip.

Tarsi long and slender, received in grooves, which are well defined: those for the middle pair are on the metasternum, divergent, and

attain the hind coxæ; those for the hind pair extend from the base of the 1st ventral segment to the hind margin of the third, and are also divergent.

P. Hornii, elongatus, nigro-piceus, subtiliter helvo-pubescens, capite convexo punctato; thorace fortiter punctato, punctis subvariolosis, latitudine baseos breviore, antrorsum valde angustato, lateribus obliquis rectis, angulis posticis validis planis, paulo inflexis; elytris parallelis apice obtuse rotundatis: striis profundis fortiter punctatis, interstitiis subtilissime punctulatis. Long. 5·5 mm.

California; one specimen given me by Mr. H. Ulke. I have seen one also in the collection of Dr. G. H. Horn, to whom it gives me much pleasure to dedicate this interesting addition to our fauna, in commemoration not only of his continued labors during several years, in our Pacific States, but also of the many valuable observations on the Coleoptera of those regions published by him since his return.

EXOPIOIDES Guér.

E. incisa, rufo-picea, elytris obscure ferrugineis, supra subtilissime, subtus longius pubescens; capite dense granulato, inter oculas linea frontali transversa impresso, occipite transversim impresso, foveaque media nitida insculpto: thorace capite paulo angustiore, ab apice sensim angustato, latitudine apicis haud longiore, valde convexo, dense subtiliter granulato et rugoso, apice vage, basi fortiter licet anguste marginato, dorso canaliculato: elytris cylindricis postice declivibus, apice singulatim emarginatis et bidentatis, basi punctatis, postice sensim granulatis. Long. 13 mm.

One specimen, California. This interesting species has the form of *Polycaon*, but differs from that genus by the antennæ having only 10 joints; and of these 10, the 3d and 4th are really connate, and only a slightly sinuous outline is left to indicate the compound nature of the joint. The labrum is larger, more prominent and more deeply emarginate than in *P. Stoutii* and *occipennis*, but scarcely more so than in *P. exesus*; in *P. pubescens* the labrum is very transverse, and not emarginate. The 4th and following joints of the antennæ of the two species first named are much longer than the 3d, in the last two the 3d and the following to the 8th are equal in length. In the first two the tufts of hair on the 2d and 3d tarsal joints are very short, in the last two much longer, and in *Exopioides* still longer and denser, so as to closely resemble membranous lobes.

It is proper to add to the characters given above that the front tibiæ of *Exopioides* are shorter, and more triangular in form, and that the terminal hook is stouter and more curved than in *Polycaon*; the onychium of the last tarsal joint is quite distinct.

On the North American PLATYPTERYGINAE.

BY AUG. R. GROTE,

Curator of Entomology, Buffalo Society of Natural Sciences.

Through the kindness of Prof. P. C. Zeller, I have recently been able to see Laspeyres' article on the genus *Platypteryx* in the publication of the Gessellschaft Nat. Freunde. Berlin, 1803, a work which has now become extremely rare. The date of this work shows that instead of being anterior, as I had considered it (*Proc. Acad. Nat. Sci., Phila.*, 1862), it is posterior to the description of the same genus under the name of Drepana, by Franz v. P. Schrank, in the *Fauna Boica*, Vol. 2. p. 147—155 of this Author, and which bears the date of 1802. In this latter work the type of Schrank's genus is the European D. sicula; Schrank also includes the remaining European species, adding, however, an European Noctuid, misled by a coincidence in the shape of the primaries. Laspeyres does not fall into this error, but accurately and laboriously circumscribes the genus, under which he includes the entire group now regarded as a sub-family of Bombycidae—the *Platypterycidae* of Stephens, for which the corrected form Platypteryginae should be retained. The genus Platypteryx is divided by Laspeyres into sections: "Fam. A: Alis falcatis; Fam. B: Alis subfalcatis; Fam. C: Alis rotundatis." These divisions are demanded by the structure of the moths, and are afterwards considered as distinct genera by the English Entomologists, Leach and Stephens. Laspeyres' Fam. A contains the main body of the species, this author considering the European *P. falcula* typical of the section. For this section Stephens retains the name Drepana, *Schrank*, under which the genus is primarily indicated. It is to this that our two North American species, described by myself (*Proc. Acad. Nat. Sci.*, p. 59, 1862, and p. 346, 1863), belong. For Laspeyres' Fam. B, the English Author retains the generic term of Laspeyres, who restricted this section to the single European species P. lacertinaria. We have a nearly allied species in the United States, and which represents the genus with us. It is the *Edapteryx bilineata* of Dr. Packard. This Author (*Proc. Ent. Soc., Phil.*, p. 375—376, 1864), overlooks the fact that his genus and species have a European representative,* which indeed so closely resembles Dr. Packard's *E. bili-*

* Equally ignorant of this fact at the time, I figured Dr. Packard's species as *Edapteryx bilineata* (*Proc. Ent. Soc. Phil.* Vol. 3, Plate 6, Fig. 9.)

neata, that the specific distinctions between the two are not very obvious, though, in the present paper there are regarded as sufficient for the purpose of validating the species. We have seen how closely *Platypteryx fabula*, Grote, resembles the European Drepana falcataria. The propriety of considering Laspeyres' Fam. B as a different genus from his Fam. A, is additionally evidenced by its description as distinct under the new name of *Edapteryx* by Dr. Packard, a name which should, however, give way to that of Laspeyres as amended by Stephens. Laspeyres' third section of Platypteryx, his Fam. C, Leach, in 1815, erects into a distinct genus under the name of Cilix, which has found universal acceptance. This genus, which contains but a single European species, C. spinula, is unrepresented in the United States. A fourth genus, Dryopteris, *Grote* (1862), is unrepresented in Europe, and falls into a distinct section of the sub-family, differing more strongly from any of the sections of Laspeyres' genus Platypteryx than do these sections among themselves. It has an Asiatic ally in Oreta, *Walk.*, which closely resembles it in ornamentation, but is much stouter.

Two species described as North American are not considered valid in the following list of our species. These are Drepana fasciata, *Stephens* and *Drepana marginata*, Walk. Since Stephens and Haworth wrote, the first is unidentified. It should be recognisable from the character ascribed to its secondaries; "posterior wings with a single streak," which will at once separate it from either of our two species of Drepana; this character is unusual, and reminds us of the Phalaenid genus Drepanodes, *Guenée*. The second I have seen in the British Museum. It is a simple variety of Dryopteris rosea. In the Berlin and British Museums are identified specimens of Platypteryx genicula, *Grote*. All the species here accepted are known to me. No Platypterygides appear to be known from California.

Family BOMBYCIDAE.

Subfamily PLATYPTERYGINAE.

DREPANA, *Schrank* (1802).

arcuata, *Walker*.

Drepana arcuata, Walker, Cat. B. M., p. 1164, (1855).

Platypteryx fabula, Grote, Proc. Acad. Nat. Sci., p. 59, (1862).

genicula, *Grote*.

Platypteryx genicula, Grote, Proc. Acad. Nat. Sci., p. 59, (1865).

PLATYPTERYX, *Laspeyres* (1808).

bilineata, *Grote*.

Edapteryx bilineata, Packard, Proc. Ent. Soc., Phil., p. 374, (1864).

DRYOPTERIS, *Grote* (1862).

rosea, *Grote.*

Drepana rosea, Walker, C. B. M., p. 1164, (1855).

Drepana marginata, Walker, C. B. M., p. 1165, (1855).

Gilix americana, Herrich-Schaeffer, Lep. Exot., p. 60, f. 470, (1856).

Platypteryx formula, Grote, Proc. Acad. N. Sci., Phil , p. 60, (1862).

Dryopteris rosea, Grote, Proc. Acad. N. Sci., Phil., p. 360, (1862).

irrorata, *Packard.*

Dryopteris irrorata, Packard, Proc. Ent. Soc., Phil., p. 377, (1864).

The *Platypteryx erosa* ⸸ of Dr. Harris' Catalogue, Ins. Mass., is stated by Dr. Packard (Syn. U. S. Bomb.,) to refer to Lacosoma chiridota, *Grote*, a moth related to Perophora as first shown by Dr. Packard, (l. c.) The alate female Lacosoma has been recently discovered.

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Notes on the North American LEPIDOPTERA in the British Museum and described by Mr. Francis Walker.

BY AUG. R. GROTE AND COLEMAN T. ROBINSON.

We have recently enjoyed the opportunity of examining the North American Moths contained in the British Museum Collection and which have been described by Mr. Francis Walker in the "Lists of the Lepidopterous Insects" published by that Institution. Bringing with us material for comparison, and aided by the kind attentions of Dr. Gray, Messrs. Walker, Waterhouse and Butler, we have been able to identify many of the species described by Mr. Walker which were previously unknown to American Entomologists except by name and their notoriously insufficient limitation in the work above alluded to.

It is perhaps unnecessary to do more than to refer here to the very general condemnation with which scientists have received the extended works of Mr. Walker on the Insects contained in the British Museum Collections.* It will be simply sufficient to state that the opinion has been expressed that these works should be ignored, and that the law of priority should be suspended in its operation with regard to these Publications of our Author. It is, however, perhaps, useless to discuss the propriety of a course which it is not likely could be unanimously and strictly adhered to. Since many of Mr. Walker's descriptions are recognisable and the types are contained in a Public

* *C. Stal*, Notes on the British Museum Catalogue of Homoptera; Journal of Ent. Vol. 1, p. 477 Art. xxxvi. *Anton Dohrn*, Bemerkungen über Walker's Cat. of Homop. in the Coll. Brit. Mus., etc. Stettiner Ent. Zeit. pp. 97—102, 1863. *Lederer*, Wiener Ent. Monats. Band 7, pp. 253—255, 1863. *Zeller*, Ent. Zeit. Stettin, 27 Jahrgang, p. 137, 1866. etc.

Museum, the difficulty of carrying out such a measure, to which the future would be fruitful in opponents, must become apparent to reflecting minds. A little consideration will also show that such an action, were it entered upon, would carry with it the stain of an injustice; and Mr. Walker's very considerable and at times valuable entomological labors be an entire loss to science. The danger also in establishing such a precedent must not be forgotten. It is true there is a class of descriptions, which are embodied in these "Lists," which can hardly fail to prove an insurmountable obstruction in the way of the progress of the science for whose furtherance they were mistakenly written, unless their existence be ignored. We refer to those drawn up by Mr. Walker from specimens contained in private Collections in England; to such typical specimens the student can have access but by acts of extraordinary courtesy on the part of their different possessors. Imperfectly described for the greatest part, such types can add but little real value to the Collections in which they are contained, while to prevent these species from remaining unknown, or at best descending to posterity an unfailing source of unprofitable discussion and litigation, it would seem a proper action on the part of the owners of such specimens, were they to deposit the same as a special Collection in the British Museum, so that by actual comparison and examination it may be definitely ascertained what the species are.

The principal value of the British Museum "Lists," at least so far as those treating of Lepidoptera are concerned, lies in the immense labor which Mr. Walker has bestowed upon the compilation of the synonymy of the previously published species and (if this merit be not counterbalanced by the defective manner in which that material is treated which was regarded by the author as new) in the endeavor to arrange systematically in a single work all the species known to science up to that time and belonging to the Groups and Families therein treated.

Unfortunately a comparison of Mr. Walker's material with his work shows, that we can accept none of his conclusions without verification and that but few can stand such a test. In this way the light which such a work would naturally shed upon the interesting subject of generic representation is entirely lost, since Mr. Walker's generic determinations are as a rule unreliable in the Moths. It is not that Mr. Walker's ideas as to generic values can be made a matter of comparative discussion, or that a reasonable latitude is not allowed in a subject which is very far from being one of agreement among natu-

ralists, but the fact is amply substantiated that no sufficient care or judgment has been exercised by Mr. Walker in this matter. To illustrate: the female of our common Arctia nais (the variety with red secondaries described by Saunders as *Arctia decorata*), figures three times as a distinct genus and species, being twice regarded as new to science under the names of *Aloa colorata* and *Apantesis radians*. The genus *Tanada*, of which Mr. Walker remarks that it "is perhaps as nearly allied to the *Lithosiidae* as to the *Liparidae*, and seems to connect the two families," is founded on one of the *Arctiinae*, the species (*Tanada antica*, Walk..) being nothing more than the common albino form of Euchaetes egle (Drury) *Harris*, described also by Dr. Fitch as *Hyphantria collaris*. A second species (*Tanada conscita*, Walk..) is subsequently added to the genus, which in its turn is also what may be regarded as an albino form, but one belonging to quite a different genus, the specimen belonging to Callimorpha and being *C. restalis*, Pack., which we regard as an immaculate form of C. lecontei, *Boisd*. A third species of this "genus" is a white Phalaenid, certainly not belonging to the Bombycidae, apparently not North American and otherwise unknown to us. A rubbed specimen of Thyris maculata, *Harris*, is described as a new genus and species under the name of *Sagalassa perspicua*, while specimens of the same species are erroneously recorded as belonging to Thyris vitrina, *Boisd*. The genus of Halesidota (Halisidota, *Hübner*, Ver.) of Mr. Walker contains most dissonant material: *Hal. macularia*, Walk., is Alpenus aequalis, *Walk*., and from West Africa; *Hal. megapyrrha*, Walk., and *Hal. chrysogaster*, Walk., are identical and both the species now known as Ammalo helops (*Cram*.,) though exactly what species is intended by Cramer is not perhaps ascertained with certainty. On the other hand Ammalo nantana, *Walk*., is a Zygaenid. *Dryocampa rubicunda*, Walk., is recorded from "Brazil," but this locality is erroneous; the specimens belong to our common species and were actually collected in the United States. This species is originally described by Fabricius as being found in Virginia. In a "Supplement" Mr. Walker describes a *Dryocampa venusta*, from the United States and distinctly regards it as a representative of, or nearly allied species to his Brazilian *Dry. rubicunda*, saying of it: "The rosy costal stripe of the fore wing distinguishes it from *D. rubicunda*." Now were there two closely allied species of *Dryocampa*, one of which the Bombyx rubicunda of Fabricius, found respectively in the United States and Brazils as stated by Mr. Walker. it is evident from an examination of

Fabricius' work that it is the United States species which should retain the name *rubicunda*, and the Brazilian species receive the new specific name. Relying on Mr. Walker's generic determination and following out the apparent facts of the case, Mr. Grote has referred the *Dry. venusta* of Mr. Walker as a synonym of Fabricius' species and proposed for the *Dry rubicunda* Walk., a necessarily new name, choosing that of *Dry. Walkerii*. Upon an examination of the specimens of *Dryocampa venusta*, Walk., however, it is seen to be a male individual of Hyparpax aurora (Smith) *Hübner!*—the female of which is described afterwards with a wrong locality as *Sangata rosea!*

In the Noctuidae the errors are still more confusing and the difficult species are most inadequately described by Mr. Walker. *Feltia ducens*, Walk., (n. g. et sp.!) is Agrotis subgothica; *Mamestra (!) plagiata*, Walk., is Noctua bicarnea, *Guenée; Xylina (!) contraria*, Walk., is Hadena xylinoides, *Guenée*. The genus Microphysa contains, among others, two species of Epizeuxis, *Hübn.* (*Helia*, Guenée), one of Anthoecia, *Boisd.*, and another of Drasteria, *Hübn.* Perhaps in the whole Family no three more dissimilar genera can be found than these three, species belonging to which are arranged under a fourth but distantly related to them. This same species of Anthoecia (*A. rivulosa*, Guen.,) is described additionally as *Anthophila divergens* and *Euclidia (!) designata*, besides figuring as *Microphysa contracta!* Again *Poaphila scissa*, Walk., is Panopoda carneicosta, *Guenée*; *Poaphila amplissima*, Walk., is Parallelia bistriaria, *Hübner;* and *Poaphila nanata*, Walk., is a species of Drasteria!

The following descriptions of species referred to Hypena by Mr. Walker viz: *H. generalis*, *H. rufinalis*, *H. idaeusalis*, *H. cacuminalis*, *H. habitalis*, *H. sobrialis*, *H. factissalis*, *H. caecalis*, are to be rejected from that genus and should be entirely ignored, since the specimens upon which they are founded are so defective that the species are irrecognizable and, instead of belonging to the Deltoid or Noctuid genus to which they are referred, they belong to different genera of Crambidae and Tineidae.

The limited time which we could devote to our studies in the British Museum during our stay in England, has prevented our synonymical references from being as full as we could have wished. Such as they are, they will, we trust, considerably reduce the number of Mr. Walker's species over the descriptions of which the student has to pore and expend his time and thought too often in vain. We hope that the attention of those in Authority may be drawn to the

state in which the British Museum collection of Moths remains at present, and that the necessity which now obliges Naturalists from all parts of the civilized World to personally consult the Collection, in order to ascertain the species intended by Mr. Walker in the British Museum Lists, be obviated by a revision of the material by a competent hand.

PART I.—1854.*

Alypia octomaculata ‡ Walk., p. 60=Alypia langtonii, *Couper.*

PART II.—1854.

Ctenucha latreillana, Walk., p. 282=Ctenucha virginica, (Charp.) *Grote.*

Lycomorpha centralis, Walk., p. 288=Pyromorpha dimidiata, *H-S.*

Mevania? subcyanea, Walk., p. 443=Ctenuchidia virgo (H-S.) *Grote.*

Apistosia? terminalis, Walk., p. 478=Uranophora chalybea, *Hübn.*

Lymire melanocephala, *Walk.*, p. 490=*Echeta albipennis*, H-S.

Lithosia aequalis, Walk., p. 511, belongs to Anatolmis, *Packard.*

Mieza *igninix*, Walk., p. 527=Mieza laeta (*Eustixis pupula*, H., *Eu. laeta*, H.)

Mieza subfervens, *Walk.*, p. 528, seems distinct from the foregoing.

Cisthene subjecta, *Walk.*, p. 534=*Hypoprepia packardii*, Grote.

Crocota cupraria, Walk., p. 536, belongs to Ameria, *Walk.*

Crocota rubicundaria‡ Walk., p. 536=var. Crocota ferruginosa, *Walk.*

Deiopeia speciosa, Walk., p. 568=var. Utetheisa bella (Linn.) *Hübn.*

PART III.—1855.

♂ *Euprepia* docta, Walk., p. 592, belongs to Arctia, and is *A. mexicana*, G. & R.

Arctia americana ‡ Walk., p. 607= Platarctia parthenos, (Harris) *Pack.*

♂ *Arctia virguncula*‡ Walk., p. 609=Arctia persephone, *Grote.*

Arctia caja‡ Walk., (tt) p. 602=Euprepia americana (Harris) *Pack.*

Arctia hyperborea, Walk., p. 611, belongs to Platarctia, *Pack.*

Arctia virginalis, Walk., p. 611=Epicallia virginalis (Boisd) *Pack.*

Phragmatobia fuliginosa‡ Walk., (s-u) p. 629=Phrag. rubricosa (Harris) *Grote.*

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* The synonyms are in italics; ‡ signifies erroneous determinations, † MS. names, ‖ preoccupied names.

Phragmatobia assimilans, *Walk.*, p. 630. The two specimens (*a. b*) differ from P. rubricosa and P. fuliginosa, by their greater expanse and differently shaped primaries. These are more produced at apices below which the external margin is sinuate not rounded. We have seen no specimens of this species in any collection in the United States.

Apantesis radians, Walk., p. 632 = ♀ Arctia nais (Drury) *Hübn.*

The specimen (*a*, Georgia.) belongs to the common variety with the secondaries roseate (described as Arctia decorata by Mr. Saunders), but the hind wings are dwarfed (as occasionally happens) hence Mr. Walker's expression; "Hind wings rather broader than the fore wings and *hardly two-thirds of the length.*"

Hypercompa confinis, Walk., p. 651 = var. Call. Lecontei, *Boisd.*

Hypercompa contigua, Walk., p. 651 = var. Call. Lecontei, *Boisd.*

Spilosoma congrua, Walk., p. 669 (*c*) = ♀ Spil. virginica, (Fab.) *Walk.* Specimens *a* and *b* appear to belong to a species distinct from S. virginica which should retain the name proposed by Mr. Walker. Our notes on these two specimens are as follows: "S. congrua (♂) primaries white with sparse brown dots and an S-shaped subterminal brown line, all incomplete. Abdomen entirely white. Faint discal marks on both wings, wanting in the female. Primaries (♀) with but one or two dots, almost immaculate. Secondaries immaculate in either sex. Inwardly the fore coxae and femora are dark yellow without the black spot of S. virginica. All the tarsi and the fore tibiae are inwardly brown. The ♂ has faint discal marks on both wings wanting in ♀. This species seems slighter than S. virginica and approaches Hyphantria cunea in the markings of the primaries but is stouter than that species, the palpi and antennae as in Spilosoma."

Cycnia dubia, Walk., p. 682, belongs to Phragmatobia, *Steph.* Wings semitranslucent. Brown or mouse color. Veins on both wings whitish above. Eyes margined narrowly with white. Legs shaded with whitish outwardly. Abdomen (greasy in the specimen) with three rows of brown spots.

Halesidota tessellaris,‡ Walk., p. 733, (descrip.) = Hal. cinctipes, *Grote.*

Halesidota fulvo-flava, Walk., p. 733 = Hal. maculata (Harr.) *Clemens.*

Halesidota annulifascia, Walk., p. 734 = Hal. caryae, (Harr.) *Clemens.*

Halesidota insulata, Walk., p. 734, belongs to Pareuchaetes, *Grote.*

Halesidota palpalis, Walk., p. 735, belongs to Ameles, *Walk.* A. palpalis is at once distinguished from Ameles gortynoides (*Carathis gortyn.*, Grote, Bomb. Cuba), by its clear yellow abdomen and hind wings. A. gortynoides from Cuba is more nearly related to the Venezuelean A. rubriplaga. As at present considered, this genus is limited to the three before mentioned species, all of which have brown primaries with clustered whitish or yellow spots, recalling the Noctuid genus Gortyna. The secondaries are reduced and angulated in the ♂, larger and rounded in the ♀.

Halesidota strigosa, *Walk.*, p. 736=*Hal. cubensis*, Grote.

PART IV.—1855.

Orgyia antiqua‡, Walk., (*gg-kk.*) p. 784=Orgyia nova, *Fitch.*

PART V.—1855.

Tadana cinerascens, Walk., p. 991=Lochmaeus manteo, *Doubleday.*

♀ *Cecrita* guttivitta, Walk., p. 992, belongs to Heterocampa, *Doubl.*

♀ *Heterocampa varia*, Walk., p. 1023= ♀ Het. astarte, *Doubleday?* Heterocampa astarte, *Doubleday*, is nearly allied to Het. obliqua, *Pack.* (see G. and R. *Trans. Am. Ent. Soc.*, Vol. 1, figs. 26 ♂, 27 ♀), and the two, though perhaps identical, may be regarded for the present as representative species. Judging by unpublished drawings by Abbot, Mr. Walker's type of *H. varia* is the ♀ of H. astarte, a species figured by Abbot in the ♂ sex, and with a ♀ with which Mr. Walker's type of *H. varia* corresponds. The B. M. specimens of H. astarte are all males, and were *H. varia*, Walker, the true ♀ of H. astarte, the latter could be readily distinguished from H. obliqua. On another plate, Abbot figures a female H. brunnea, G. & R., without either the ♂, food-plant or immature stages. Are these all forms of one variable species?

Heterocampa biundata, *Walk.*, p. 1025=*Lochmaeus olivata*, Pack.

Heterocampa manteo, *Walk.*, p. 1024=*Het. subalbicans*, Grote.

Edema producta, Walk., p. 1031, belongs to the Noctuid genus Ingura.

Edema fuscescens, Walk., p. 1031, belongs to Ingura (Noctuidae).

Parathyris satellitia, Walk., p. 1090, belongs to Apatelodes, *Pack.*

Alpis defoliata, *Walk.*, p. 1094= *Oylothrix salebrosa*, Clemens.

♂ Ianassa lignicolor. *Walk.*, p. 1101=*Xylinodes virgata*, Pack.

Euclea cippus,‡ Walk., p. 1143=Euclea querceti, (H. S.), *Pack.* *Euclea monitor*, Pack., seems to be synonymous.

Neaera chloris, *Walk.*, p. 1140=*Limacodes viridus*, Reakirt. *Callochlora vernata*, Packard, is synonymous. Belongs to Parasa.

Limacodes undifera, Walk., p. 1149=Limacodes scapha, *Harris.*

Drepana arcuata, *Walk.*, 1164=*Platypteryx fabula*, Grote.

Drepana rosea, Walk., p. 1164=Dryopteris rosea, *Grote.*

Drepana marginata, Walk., p. 1165= *Var.*, Dryopteris rosea, *Grote.*

Attacus cynthia, Walk., p. 1220=Samia cynthia (Drury), *Hübn.*

Attacus lunula, Walk., p. 1221, belongs to Samia, *Hübn.*

Samia promethea, Walk., p. 1223=Callosamia promethea, (Drury), *Pack.*

Samia angulifera, Walk., p. 1224=Callosamia angulifera (Walk.), *Pack.*

Samia cecropia, Walk., p. 1224=Platysamia cecropia (Linn.), *Grote.*

PART VI.—1855.

Tropaea, *Hübner*, Walk., p. 1260. Actias, *Leach* (1815). should apparently be retained. The N. Am. A. luna and the Asiatic A. Selene are typical species. The African forms are stouter, but after seeing specimens of Actias mimosae, (*Saturnia mim.*, Boisd.), they appear congenerical. On the other hand Saturnia isabellae, *Graells*, from Spain, seems to belong to a distinct genus, while referred by Mr. Walker to Tropaea.

Hyperchiria varia, *Walk.*, p. 1278=*Saturnia io*‡, Harr.; *Io fabricii*, Boisd. MS.

Hemileuca eglanterina, Walk., p. 1318=Pseudohazis eglanterina, (Boisd.) *G. & R.*

Hemileuca pica, Walk., p. 1318, belongs to Pseudohazis, *G. & R.* Pseudoh. pica is nearly allied to P. eglanterina, which latter it resembles in size and ornamentation. The ground color of the wings is pale yellowish-white; primaries and secondaries concolorous. It differs from the California species also in that the black lunate spot of the secondaries coalesces at its extremities with the external band.

Eacles Laocoon,‡ Walk., p. 1372=Citheronia regalis, (Fabr.) *Hübn.* For a complete synonymy of this species see our paper in the Ann. N. Y. Lyc. Vol. viii, to which may be added, however, as suggested to us by Dr. Boisduval and Mr. Hopffer, Cramer's original figures B and C (♀) on Pl. 117, Vol. 2. The species intended by fig. A (♂), described and figured first, must retain the name of Citheronia laocoon (Cram.) G. & R. The figures of the female (B and C) alluded to above, are, however, sufficiently indifferent as to prevent the positive recognition of the species intended.

Eacles princeps, Walk., p. 1374, belongs to Citheronia, *Hübn.*

Gastropacha occidentis, Walk., p. 1392=Gastrop. americana, *Harris*.

Clisiocampa decipiens, Walk., p. 1488 = Clis. americana, *Harris*.

Artace albicans, *Walker*, p. 1492. The locality, "Georgia?" is probably erroneous, since specimens of the species examined by us in the Berlin Museum (Rio, v. Langsdorf), came undoubtedly from Brazil. This species is congeneric with A. punctistriga, *Walk.*, taken rarely from New York and Pennsylvania to Georgia (apud Walker) and Texas, but which is not mentioned by Dr. Packard in his Synopsis of U. S. Bombycidae (*Proc. Ent. Soc. Phil.*); the genus is allied to Tolype. *Artace punctivena*, Walk., p. 1492, is founded on a *greasy* specimen of A. albicans; hence the expressions: "Tawny, shining," used by Mr. Walker in describing the supposed species.

Dryocampa rubicunda, Walk., p. 1497 = Anisota rubic., (Fabr.) *Grote*. The locality: "Brazil," given for this species is erroneous, the specimens being from the United States.

PART VII.—1856.

Cossus populi, Walk., p. 1515, belongs to Xyleutes, *Hübn.* "Striæ or reticulations of the primaries close. A prominent ante median and subterminal line."

Cossus plagiatus, Walk., p. 1515, belongs to Xyleutes, *Hübn.* "Paler than X. populi. A pale median irregular patch on primaries, and one from apex downwards, not extending to apical angle."

Hepialus carnus, *Walk.*, p. 1552. The specimen is too defective for identification.

Horamia pretus, Walk., p. 1632. The varieties described here are distinct species.

Tanada antica, Walk. p. 1475=alb. var. Euchaetes egle (*Hyphantria collaris*, Fitch.)

Notodonta plagiata, Walk., p. 1749. The specimens in the British Museum under this name belong to the European N. tritophus,

PART VIII.—1856.

Sagalassa perspicua, Walk., p. 7=Thyris maculata, *Harris*.

Sannina uroceriformis, Walk., p. 64=Aegeria exitiosa, *Say*.

Thyris vitrina,‡ Walk., p. 73=Thyris maculata, *Harris*.

Pergesa annubus,|| Walk., (nec. Cramer) p. 151=Choerocampa ceratomoides, *G. & R.*

Deilephila galii, ‡ Walk., p. 167 = Deilephila chamaenerii. *Harris*. Our United States species is considered now to be distinct from the European. So Deilephila lineata, (Fabr.) *Harris*, is distinct from the European Deilephila livornica; Fabricius originally described our

American species, and afterwards erroneously regarded the European species as the same as his *Sphinx lineata*, Syst. Ent. (1775). Our species is correctly figured by Abbot; Cramer figures it (Vol. 2, p. 41 Pl. 125 D) as *Sphinx daucus*. Stephens (*Ill. Brit. Ent.*, *Haust.* I, 126,) adopts Cramer's specific name for our species, while his *Deilephila lineata*, ‡ l. c. is not Fabricius' Sphinx lineata, as above cited, but the European Deilephila livornica. For remarks on these species see *Grote*, "Sphingidae of Cuba," *Proc. Ent. Soc. Phil.*, 1865.

Philampelus pandorus, *Walk.*, p. 174 = *Philampelus satellitia*, ‡ Harris. This is our United States species, and from examination should retain this name since the Sphinx satellitia of Linnaeus, as which it was regarded by Dr. Harris, is now known to be its South American and West Indian ally: Philampelus lycaon of our Synonymical Catalogue. Drury's figures are insufficient. Cramer's *S. licaon* (Pl. 55, fig. A,) is Philampelus satellitia, (Linn.) *Walk.* Hubner's *Pholus licaon* is a var. of P. satellitia, but not the typical form which wants the roseate anal patch of the secondaries. The material in the Berlin Museum shows the varieties of this species very fully. The Phil. lycaon of Mr. Grote (Sphingidae of Cuba), figured in our Synonymical Catalogue (*Pholus licaon*, Hübn., nec Cram.), should be known as Philampelus satellitia *L.*, var. posticatus, *Grote*. *P. ampelophaga*, *Boisd.* (Harris. apud Walk.), is a MS. name (Jardin des Plantes), for our U. S. Phil. pandorus.

Philampelus vitis,‡ Walk., (nec Linn., Drury, Smith, Fabr., W. V.) p. 176=Phil. linnei, *G. & R.*

Philampelus jussienae, Walk., p. 177=Philampelus vitis, (Linn,) *Harris.*

Macrosila collaris, Walk., p. 201=Diludia brontes, (Drury), *G. & R.*

Daremma undulosa, *Walk.*, p. 231=*Sphinx Brontes*,‡ Boisd. Sp. Gen.=*Ceratomia repentinus*, Clem. = *Macrosila brontes*,‡ Walk., nec Drury.

Macrosila albiplaga, Walk., p, 202, belongs to Diludia, *G. & R.*

Macrosila forestan, Walk., p. 203 = Diludia florestan, (Cram.) *G. & R.*

Macrosila morganii, Walk., p. 206, belongs to Amphonyx, *Poey.*

Macrosila nyctiphanes, Walk., p. 209, belongs to Pseudosphinx, *Burm.*

Sphinx hannibal, *S.* lucetius, *S.* carolina, *S.* cingulata, *S.* convolvuli, belong to Macrosila, *Walk.* (Boisd. MS. emend. Clem., Grote).

Smerinthus princeps, Walk., p. 255=Smerinthus modestus, *Harris.*

(In the Museum of the Jardin des Plantes, many of the Sphingidae are under unpublished MS. names of Dr. Boisduval's. The following are superseded by Mr. Walker's descriptions: *Bracsia hipparsus*⸸ = Cautethia noctuiformis, (Walk.), *Grote*; *Pachylia tristis* ⸸=Pachylia resumens, *Walker*. *Anceryx piperis* ⸸ is = Dilophonota cinerosa, *G. & R.*; *A. andae* ⸸ and *A. silenus* ⸸ belong to the first group of Dilophonota, *Burm.*, and are allied to the Cuban D. rimosa, *G. & R.* Other apparently unpublished MS. names in other families are: *Io fabricii* ⸸=Hyperchiria varia, *Walk.*, (*Saturnia io* ⸸ Harris); *Spilosoma velocipedum*⸸=Spilosoma virginalis, *Pack.*, (this name might be retained for the Californian species of Spilosoma, since that chosen by Dr. Packard has been too frequently used in nearly allied genera in the Arctiinae); *Halisidota salicis*⸸=Hal. californica, *Walk.* *Adelocephala raspa* ⸸=Adelocephala albolineata, *G. & R.* The ♂ of A. 4-lineata, *n.*, is in Mus. Berol.; the antennae pectinate.)

Part IX.—1856.

Diphtera jocosa, Walk., p. 36, belongs to Moma *Hübn.* This species, originally described by Guenée under the genus Diphtera, *Ochs.*, is subsequently figured by Herrich-Schaeffer as *Moma fallax.* Walker's var. *β*: *Thorax cervino-albidus*; *alae anticae albidae, punctis fasciisque duabus latis* (1 *a diffusa*) *nigris* — is a faded specimen, with the black bands contorted. This specimen seems from the etiquette to have been the type of M. Guenée and is an extreme variety or abnormal form of Herrich-Schaeffer's *M. fallax.*

Acronycta Psi ‡ Walk., (p.) p. 42=Acronycta occidentalis, *G. & R.*

Acronycta longa Walk. var. (nec. Guen.) p. 60=Acronycta noctivaga, *Grote.*

Mythimna contraria, Walk., p. 78=Ceramica exusta, *Guenée.*

Leucania extranea, Walk., p. 93=Leucania unipuncta, *Haw.*

Eudryas Stae. Johannis, *Walk.*, p. 144. This beautiful species is allied to our North American E. grata, but is very obviously distinct from it. The species is not improbably South American; so far at least it has not been discovered within the limits of the United States.

Feltia ducens Walk., p. 203=Agrotis subgothica, *Haw.*

Mamestra unicolor, Walk., p. 233=Noctua clandestina, *Harris.*

Mamestra ordinaria, Walk., p. 232=Mamestra devastator. This species has received several names. It is the *Agrotis devastator* of American Authors.

PART X.—1856.

Miana unduliifera, Walk.,.p. 258=Erastria nigritula, *Guenée.*

Celaena subcedens, Walk., p. 264=Apamea modica, *Guenée.* The following descriptions under the genus Celaena by Mr. Walker refer to a single species: Cel. punctifera *Walk.*, p. 263, *C. inclinata* Walk., *C. semifurca*, Walk.

Agrotis incallida, Walk., p. 330= ♀ Agrotis venerabilis, *Walk.*

Graphiphora expansa, Walk., p. 399=Nephelodes minians *Guenée.*

Agrotis perlentans, Walk., p. 332. The specimen seems to be a rubbed specimen of A. tritici.

Hopalia indicans, Walk., p. 359=Hecatera laudabilis, *Guen.*

PART XI.—1857.

Raphia propulsa, Walk., p. 529=Dianthoecia capsularis, *Guen.*

Hadena rectilinea‡, Walk., (p. *t*) p. 579=Hadena xylinoides, *Guen.*

Hadena xylinoides‡, Walk., (part. *c*) p. 584 (err. 884) is an Auchmis?

Xylina contraria, Walk., p. 627=Hadena xylinoides, *Guen.*

Acronycta circulifera, Walk., p. 709=Diphtera deridens, *Guen.*

Apamea? insignata, Walk., p. 729=Mamestra dubitans, *Walk.*

Apamea demissa, Walk., p. 728=Eurois latex, (Guen.) *Walk.*

Xanthia spurcata, Walk., p. 749 = Xanthia bicolorago, *Guen.* Specimens of X. bicolorago are also included under X. ferruginea.

Hadena contenta, Walk., p. 754=Xylophasia apamiformis, *Guen.*

PART XII. 1857.

Acontia debilis, Walk., p. 786=Tarache candefacta, *Hübn.* We are disposed to regard *Acontia biplaga*, Guenée, as a variety of Tarache aprica, *Hübner.* Tarache erastrioides (*Acontia erastrioides*, Guenée), is a distinct and common species allied to T. candefacta.

Acontia delecta, Walk., p. 779, belongs to Tarache and is *Acontia metallica*, Grote. The habitat is given as "unknown" in the B. M. Lists; it is now identified as the species from our Atlantic District described and figured by Mr. Grote in the Proc. Ent. Soc. Phil. The species will be known hereafter as Tarache delecta, Hübner's generic name having precedence over *Acontia*, Ochs. The species is figured by Abbot on Hibiscus palustris.

Erastria rubicunda, Walk., p. 808 belongs to Callopistria.

Erastria inscripta, Walk., p. 808=Bryophila teratophora, *H-S.*

Microphysa divergens, Walk., p. 830=Anthoecia marginata (Haw.) *Grote.* The specimen is faded and old. This is the *Pyralis marginatus* of Haworth and the *Anthoecia rivulosa* of Guenée. This latter

name might be retained since there is a European species of Heliothis bearing the specific name of *marginata*, described before our common species was named by Haworth.

Microphysa sobria, Walk., p. 835, belongs to Drasteria, *Hübn.*

Microphysa contracta, Walk., p. 836=Anthoecia marginata (Haw.) *Grote.*

PART XIII.—1857.

Siavana repanda, *Walk.*, p. 1009, belongs to the Phalaenidae.

Homoptera calycanthata‡, Walk., p. 1054=Zale horrida *Hübner.* This is not Guenée's or Abbot and Smith's species and does not belong to Homoptera. *H. calycanthata*‡, Bethune (*Can. Nat.*), is also Zale horrida, *Hübn.*; this latter erroneous identification is probably derived from the British Museum Collection.

Homoptera obliqua‡ Walk., p. 1054, is a rubbed specimen of H. minerea, *Guenée.*

Catocala parta‡, Walk., p. 1193, is C. amatrix *Hübner* sp. with one specimen (a) C. briseis, *Edwds.*

Catocala amatrix‡, Walk., p. 1195=Catocala parta, *Guenée.*

Catocala nurus, Walk., p. 1195=var. C. amatrix, *Hübn.* sp.

Catocala selecta, Walk., p. 1197=Catocala amatrix, *Hübner*, sp.

Catocala nuptula, Walk., p. 1205=Catocala grynea (Cram.), *Walk.*

Catocala amica‡ Walk., p. 1208=Allotria elonympha, *Hübner.*

PART XIV.—1858.

Poaphila amplissima, Walk., p. 1473=Parallelia bistriaria *Hübner.*

PART XV.—1858.

Microphysa? scriptipennis, Walk., p. 1765=Epizeuxis americalis, *Guen.* sp. This species is figured by Abbot on Phlox speciosa.

Microphysa? mollifera, Walk., p. 1765, belongs to Epizeuxis, *Hübn.* (*Helia*, Guen.).

PART XVI.—1858.

Hypena. For remarks on eight of Mr. Walker's species referred to this genus see introductionary comments in the present paper.

Doryodes acutalis‡, Walk., p. 73 is not Guenées genus or species.

PART XVII.—1859.

Rhodaria tyralis‡, Walk. (nec Guen.), p. 317=Botys laticlavia, *G. & R.*

Ennychia glomeralis, Walk., p. 330, belongs to Botys *Led.*, and is considered identical by Lederer with the European B. octomaculata, (Linn.) *Led.*

Samea elealis, Walk., p. 351, belongs to Botys *Led.*, and is *Botys adipaloides*, G. & R. *Samea liparalis*‡, Walk., p. 354, and *Botys taedialis*, Walk., are synonyms of the same species.

Asopia vulgalis‡, Walk., (nec Guen.) p. 364, belongs to Botys *Led.*

PART XVIII.—1859.

Botys offellusalis, Walk,, p. 732=Botys ranalis (Guen.). This is *Botys gracilis*, G. & R., and is also described additionally by Mr. Walker as *Botys strictalis* and *Botys olliusalis*.

Botys lacoalis, Walk., p. 733=Botys oxydalis, *Guen.* Also described by Walker as *Botys cinctipedalis*.

Spilodes helvialis, Walk., p. 772 belongs to Botys *Led.*, and is *Botys citrina*, G. & R. Also described by Mr. Walker under the names of *Botys thycesalis* and *Botys apertalis*.

PART XIX.—1859.

Botys euphaesalis, Walk., p. 1008=Botys illibalis, (*Hübn.*)

Among Mr. Walkers' descriptions in the Pyralidae are the following which should be totally rejected for the reason that the specimens upon which the species are founded are totally useless and irrecognizable from their defective condition: *Scopula orasusalis*, *S. thoonalis*, *S. stipatalis*, *S. caliginosalis*, *S. marginalis*.

PART XX.—1860.

Choerodes transducens, Walk., p. 18= ♂ Eutrapela clemataria (Smith) *Hübner*.

Choerodes transferens, Walk., p. 19= ♀ Eutrapela clemataria (Smith) *Hübner*.

Epione calipusaria, Walk., p. 120, belongs to Eurymene, *Dup.*

Epione agyllaria, Walk., p. 121=Eurymene calipsusaria (*Walk.*).

Endropia refractaria‡ Walk., p. 151 = ♀ Endropia hypochraria (H-S.) *Guen.*

Endropia mestusata, Walk., p. 154= ♂ Endropia hypochraria (H-S) *Guen.*

Endropia hypochraria‡ Walk., p. 150=Endropia homuraria, n. s. ♂. Closely allied to E. hypochraria and best described comparatively. Fresh specimens are intense ferruginous above with purplish reflections, not clear brown with an olivaceous tinge as in its ally. Wings narrower than in E. hypochraria and the angles of the external margins appear more determinate. Markings of the wings as in E. hypochraria, but the dark broad shade which precedes the common postmedian line, is not so distinct as in its ally. Beneath, the wings are in-

tense deep orange, the common line followed externally by a bright purplish shade. Both species vary in the depth of color but the palest E. homuraria is always ferruginous, while E. hypochraria, occasionally so pale as to be of a dirty yellowish grey, never acquires the rusty brown of its ally. The caputal and thoracic scales are more warmly colored in E. homuraria and the fringes of the wings beneath are purplish. The subterminal clouded shade, which crosses both wings above in E. hypochraria and is more or less distinct, is obsolete in E. homuraria. *Expanse* 56 mil. *Length of body* 16 mil.

Of common occurrence throughout the Atlantic District.

Endropia madusaria, *Walk.*, p. 153=*Endropia vinosaria*, G. & R.

Endropia oponearia, Walk., p. 153=Endropia madusaria, *Walk.*

Ellopia pultraria‡ Walk., p. 160. This is not Guenée's species, but a ♂ Ellopia endropiaria, *G. & R.* Ann. Lyc. ♀ *Ellopia panisaria* Walk. p. 163, and ♀ *Ellopia ? amyrisaria*, Walk., p. 164 are identical and belong to Numeria. ♂ *Endropia lateritiaria*‡, Walk., p. 151 and ♂ *Caberodes ? agreasaria* Walk., are identical and also belong to Numeria. Neither of these species are otherwise known to us. The specimens registered as ♂ *Caberodes imbraria* p. 168, ♂ *C. superaria* id., ♀ *C. ineffusaria* p. 169 and ♂ *C. floridaria* id., seem to us to belong all to C. metrocamparia, *Guenée;* ♂ C. remisaria is darker and maculate but hardly seems distinct.

Tetracis pandaria, Walk., is evidently the ♀ of his Caberodes remissaria, which may thus be a distinct species.

Azelina honestaria, Walk., p. 258=Azelina hübneraria, *Guenée.*

Azelina ? zalissaria, Walk., seems also to be a variety of the foregoing; it differs by the exterior line being straight.

Metanema aeliaria, Walk., p. 260 belongs to Endropia *Guen.*

Sangata rosea Walk. p. 265. The locality given of the Cape (Africa) is probably erroneous since the specimens appear to be all females of our United States Bombycid Hyparpax aurora (Smith) *Hübner.* Finally *Selenia aesionaria* Walk., *Azelina neonaria*, Walk., and *Macaria laticincta* are the same species belonging to Hyperitis and closely allied to if not identical with Hyperitis alienaria *Guenée.*

PART XXI.—1860.

Boarmia defectaria, Walk., p. 344=*Boarmia larvaria* Walk. id. Whether the species is identical with either of Guenée's described under these names is not known to us.

Boarmia subluaaria, Walk., p. 345, *B. signaria* Walk. ♀ p. 346. *Boarmia indicutaria* Walk., p. 346 and *Tephrosia intrataria*,

Walker, all refer to the same species but whether this is certainly Guenée's B. sublunaria is not known to us.

Boarmia intractaria, Walk., p 349=Boarmia momaria, *Guen.* Walk.

Boarmia ephyraria, Walk., p. 349=*Boarmia humaria* var. Walk.

Boarmia illaudata, Walk., p. 397=Boarmia momaria *Guenée.*

Tephrosia spatiosaria, Walk., p. 403 is partly (a) *B. sublunaria*, and partly (b-d) *Boarmia humaria.*

Tephrosia amplaria, Walk., p. 405 = Bronchelia liriodendraria (*Smith*).

Tephrosia submuraria, Walk., p. 406=Teph. anticaria, *Walk.*, p. 404.

Bronchelia disserptaria, Walk., p. 451 = Bronch. liriodendraria (*Smith*).

PART XXIII.—1861.

♀ *Nemoria? denticularia*, Walk., p. 536=Aplodes glaucaria, *Guen.*, Walk., p. 586 (var.?) and ♂ *Nemoria? densaria*, Walk., refers to the same species.

Acidalia restrictata, Walk., p. 722=Acid. enucleata, *Guenée.*

PART XXIII.—1861.

Acidalia reconditaria, Walk., p 786=Acid. enucleata, *Guenée.*

Macaria haliata, Walk., p. 885=Macaria granitata, (*Guen.?*) Walk.

Macaria ? indeclinata, Walk., p. 888=Endropia hypochraria (H-S.).

Macaria irregulata, Walk., p. 890=Macaria granitata (supra).

Tephrosia dispuncta, Walk., refers to this same species.

PART XXIV.—1862.

Lobophora fusifasciata, Walk., p. 1258, belongs to Eupithecia, and is nearly allied to E. curvilineata, *G. & R.*

PART XXV.—1862.

Melanippe reciprocata, Walk., p. 1294=Baptria albovittata (*Guen.*).

Scotosia lobophorata, Walk., p. 1347= Eupithecia fusifasciata (Walk.).

PART XXVI.—1862.

Ellopia seminudata, *Walk.*, p. 1508=*Ellopia bibularia*, *G. & R.*

Ellopia sub-privata, Walk., p. 1509, belongs to Eurymene, *Dup.*

Macaria latiferrugata, Walk., p. 1640, belongs to Metanema, *Guenée.*

Lobophora atroliturata, Walk., p. 1710, belongs to Eupethecia, and has been subseqently described by us as *Eupethecia geminata.*

In the Phalaenidae (*Geometrites*), the generic determinations of Mr. Walker are very generally erroneous. The material seems to have been described under the genera without reference to coincidence of structural character, or indeed to casual resemblance. Thus, while Guenée's Eurymene alcoolaria is correctly identified (probably from a type specimen), a very similar and closely allied species figures twice as an Epione, and again as an Ellopia. In the most difficult genera (i. e., Boarmia, Tephrosia, etc.,) the descriptions are recklessly multiplied, and the material being very often in imperfect preservation, the difficulty of ascertaining what is meant from the short descriptions, usually unaccompanied by comparative remarks (which would be indeed often impossible to give, owing to the real specific identity of many specimens described by Mr. Walker as distinct), is insuperable. Specimens belonging in reality to only *five* species of Boarmia are described under *thirteen* different specific names.

PART XXVII.—1863.

Urola michrochysella, *Walk.,* p. 181=*Catharylla nummulalis*, ‡ Zeller (nec. Hübn.).

Urola subaenescens, Walk., p. 182=var U. michrochrysella.

Urola pulchella, Walk., p. 183=Urola auratella (Clem.).

Catharylla fuscipes, Zeller, Chil. et Cram., p. 51=Urola nummulalis (*Argyria nummulalis*, Hübn, fig. 185—186).

PART XXVIII.—1863.

Teras subauratana, Walk., p. 289=Tortrix reticulatana (Clem.).

Batodes bipustulana, Walk., p. 310 = Grapholitha costomaculana (Clem.).

Cacoecia transiturana, Walk., p. 312, belongs to Tortrix.

Cacoecia ? velutinana, Walk., p. 313, belong to Tortrix.

Cacoecia triferana, Walk., p. 314=Tortrix velutinana, (Walk.).

Lophoderus mulaleucanus, *Walk.*, p. 335=*Ptycholoma semifuscana*, Clemens.

Sciaphila confixana, Walk., p. 340=Sericoris permundana, *Clem.*

Sciaphila decisana, Walk., p. 340=Sericoris fasciatana, *Clem.*

Sciaphila meanderana, Walk., p. 341=Sericoris permundana, *Clem.*

Mr. Walker's *S. perductana*, p. 341, *S. habesana*, p. 342, *S. luctiferana*, p. 342, are represented each by a single specimen in such inferior condition that the species are irrecognisable.

Sciaphila? ferriferana, Walk., p. 343=Sericoris gratiosana, *Clem.*

Mr. Walker's *S. perstructana*, p. 343, and *S. indivisana*, p. 344, are irrecognisable from the bad condition of the single specimens representing the species.

Conchylis gratana, Walk., p. 359, belongs to Tortrix and is=*Croesia? virginiana*, Clem.

Paedisca albicepsana, Walk, p. 379=Anchylopera striatana, *Clem.*

Grapholita conflexana, Walk., p. 384=Anchylopera striatana, *Clem.*

Grapholita discigerana, Walk., p. 384=Anchylopera spiraefoliana, *Clemens.*

Grapholita discoferana, *Walk.*, p. 386=*Ancyl. dubiana*, Clem.

Carpocapsa distigmana, Walk., p. 394=Poecilochroma? dorsisignatana, *Clem.*

Carpocapsa clavana, Walk., p. 395=Sericoris inornatana, *Clem.*

Dichrorampha scitana, Walk., p. 413=Stigmanota interstinctana, *Clemens.*

Hyponomeuta ordinatellus, Walk., p. 530=Hyponomeuta multipunctella, *Clemens.*

Part XXIX.—1864.

Depressaria confertella, Walk., p. 563 = Machinia tenterifoliella, *Clemens.*

Depressaria clausella, Walk., p. 564=Depressaria cinereocostella, *Clemens.*

Part XXX.—1864.

Argyria, p. 976. This generic name is adopted from Hübner for the genus Urola, *Walk.* (ante); Argyria microchrysella (*Urola micr.*, Walk., p. 181), is distinct from A. nummulalis, *Hübner*, to which it is here referred as a synonym. This is our common species, the *Cathyrylla nummulalis* of Zeller but not of Hübner, whose A. nummulalis is described as *Catharylla fuscipes* by Prof. Zeller.

Part XXXI.—1864.

Charidea? rubroscapsus, Walk., p. 98. Ménétriès species is recently (Desc. Am. Lep., No. 3) referred by us to Ctenucha, *Kirby*, and described from specimens in the Berlin Museum.

Spilosoma candida, Walk., p. 291=Hyphantria textor, *Harris.*

Spilosoma mexicana, Walk., p. 291, belongs to Leucarctia, *Packard*, and differs from ♀ L. acraea by the abdomen being black above, the segments narrowly annulate with yellow.

Aloa colorata, Walk., p. 302= ♀ Arctia nais, *Hübn.*, var.

Halesidota megapyrrha, Walk., p. 308=Ammalo helops (Cram.) *Walk.* The locality "North America" (p. 309) is probably incorrect. Whether this is Cramer's species is not certain; it is so regarded by Dr. Boisduval, and by its punctate thorax is distinguished from the West Indian A. impunctus, *Grote.*

Halesidota translucida, Walk., p. 310=Halesidota Edwardsii, *Packard.*

Halesidota macularia, Walk., p. 314=Alpenus aequalis, *Walk.;* the locality "New York" (p. 315) is erroneous.

PART XXXII.—1865.

Tanada conscita, Walk., p. 377=Callimorpha *vestalis*, Pack.

Cerura turbida, Walk., p. 307=Heterocampa tessella (Pack.) *G. & R.*

Notodonta stragula‡, Walk., p. 410. The specimens (a-d) belong to N. basitriens, *Walk.*

Notodonta plagiata,‖ Walk , p. 411=Notodonta tritophus of Europe with an erroneous locality. On page 1749, Part 7 (ante), Mr. Walker describes a Notodonta plagiata which may or may not be the same as this. In case it is different and correctly determined it would retain the name.

♂ *Heterocampa ducens*, Walk., p. 417=Coelodasys biguttatus, *Pack.*

♂ *Heterocampa corticea*, Walk., p. 418=Coelodasys biguttatus, *Pack.*

♀ *Heterocampa compta*, Walk., p. 418=Coelodasys biguttatus, *Pack.*

♀ *Heterocampa turbida*, Walk., p. 419=*Cecrita?* bilineata, *Pack.*

♂ *Heterocampa tripartita*, Walk., p. 419=Dasylophia interna, *Pack.*

♂ *Heterocampa punctata*, Walk., p. 420=Dasylophia anguina (Smith) *Pack.*

Heterocampa ustipennis, Walk., p. 421=Coelodasys cinereofrons, *Packard.*

Heterocampa significata, Walk., p. 421=Oedemasia badia, *Pack.*

Stauropus viridescens, Walk., p. 416=Heterocampa biundata, *Walk.* Three species of Heterocampa are described from Mr. Norris' Collection on pp. 422-423. The descriptions are insufficient to enable us to ascertain what species are intended and from the foregoing generic references of Mr. Walker's species of "Heterocampa" it will be seen

to be useless to conjecture to what genus the species actually belong. They are not improbably redescriptions of some of our common Ptilodontinae.

♀ *Exaereta* lignigera, Walk., p. 423, belongs to Ianassa, Walk., (*Xylinodes*, Pack.) and is very probably the ♀ of Ianassa lignicolor, *Walk.* (*Xyl. virgata*, Pack.).

Edema semirufescens, Walk., p. 424=Coelodasys unicornis (Smith) *Pack.*

Edema humilis, Walk., p. 425=Coelodasys unicornis (Smith) *Pack.*

Edema? associata, Walk., p. 426=*Cecrita?* bilineata, Pack.

♂ *Edema? transversata*, Walk., p. 427=Ianassa lignicolor, *Walk.*

Edema? plagiata, Walk., p. 427, belongs to Parorgyia, *Pack.* "Two approximate rivulous distinct blackish transverse bands between which a whitish patch at base of cell enclosing an incomplete reniform spot which is formed by a black annulus. A white spot before internal angle margined inwardly with a blackish shade. A deeply waved subterminal line; a narrow terminal line all blackish and indistinct. This is a species of moderate size." P. plagiata, is otherwise unknown to us; the foregoing descriptive remarks are from our note book.

Charadra *contigua*, Walk., p. 446=*Diphtera* deridens, Guenée. Since this species cannot be retained in Diphtera, Walker's generic name may be adopted and the species known as Charadra deridens. It is a Noctuid and also described by Walker (ante) as *Acronycta circulifera.*

We saw no specimens of the genera described on pp. 447—451. There appears no proper ground for the construction of any of these "genera" from the descriptions, and the species are probably known under previous names.

(*Attacus ricini*, p. 525, belongs to Samia *Hübn.* This name is adopted from Boisduval Ann. Soc. Ent. Fr. 3d Ser. ii. 755, and *A. lunula*, Walk., (ante) referred as synonymous. *Attacus* cumingii, Hutton, and *Attacus* guerini, Moore, belong also to Samia, all congeneric with S. cynthia.)

Dryocampa venusta, Walk., p. 574=Hyparpax aurora (Smith) *Hübn.*

Cymatophora (!) *viridescens*, Walk., p. 601, belongs to Hadena (?).

Saligena personata, Walk., p. 606=Raphia frater, *Grote.*

Part XXXIII.—1865.

Varnia, Walk., p. 825. Whether the species from Asia and South America, which are described here with our as yet single species from the United States, are congeneric with it, cannot be decided by us

owing to our want of material. They are usually larger and brilliantly colored. The genus is first described by Dr. Clemens (who mistakenly regarded it as belonging to the Tortricidae) under the name of Dysodea, Proc. Acad. Nat. Sci. Phil. p. 349 (1860), where a very interesting account of the peculiar larva may be found. Our species is Dysodea oculatana, *Clemens*=*Varnia plena*, Walk., p. 826=*Platythyris fasciata*, G. & R. Ann. N. Y. Lyc. Vol. viii, Plate 13, fig. 4—5. The fact of the identity of this latter with his Dysodea oculatana was communicated to us by Dr. Clemens who referred to the circumstance that the position he had assigned the species, in a classificatory point of view, made the identification of his description difficult. The first description of a species of this genus is by Dr. Boisduval, whose *Thyris* vitrina, Mon. Zyg. pl. 1, fig. 5, belongs to this genus. Of the locality of the species Dr. Boisduval says: Cette espèce se trouve dans differentes contreès de l'Amerique septentrionale; on me l'a aussi envoyeè comme se trouvant en Andalousie, mais il parait qu'elle y est beaucoup plus rare que dans les États-Unis (l. c. p. 20). Differences in his description and figure, when compared with our species, induced us to describe the latter as new, forming a new genus to receive them both and keeping it as a group—Platythyrini—near Thyris *Illig.*, to which genus Dr. Boisduval refers the first species noticed by Entomologists. Had Dr. Clemens seen Boisduval's figure he would have been probably enabled to refer his species as allied to Thyris vitrina. Staudinger, in his recently published Catalogue of European Lepidoptera, refers to Boisduval's species as American, but probably merely as a matter of opinion. The species figured by Boisduval, and which should be known as Dysodea vitrina, has not yet been taken to our knowledge in the United States unless we can suppose it to be the same with that described later on by Dr. Clemens and ourselves. We have a second species described by Mr. Walker, as from the United States, but also doubtfully. This is Dysodea aequalis (*Varnia aequalis*, Walk., p. 825=*F*(*V*)*arnia flagrata*, Walk., p. 826). In regard to the location of the genus, we had left it as a group of Thyridae; for its structural details our remarks (Ann. N. Y. Lyc. l. c.) and those of Dr. Clemens (l. c.) will be of interest. Mr. Walker refers it to the Noctuidae where it will not unlikely be finally referred.

Plusiodonta? purpurascens, Walk., p. 842, belongs to Calpe, and is= *Calpe canadensis*, Bethune.

Oraesia sobria, Walk., p. 846=Calpe purpurascens (Walk.).

Euclidia designata, Walk., p. 985=Anthoecia marginata (*Haw.*).

Poaphila scissa, Walk., p. 987=Panopoda carneicosta, *Guenée.*
Remigia discissa, Walk., p. 1009=Litomitus elongatus, *Grote.*

PART XXXIV.—1865.

Fabatana oviplagalis, *Walk.*, p. 1265=*Asopia anthoecioides*, G. & R.
Pyrausta sumptuosalis, Walk., p. 1281, belongs to Botys (emend. Led.), and is=*Botys haruspica*, G. & R.
Rhodaria signatalis, Walk., p. 1282= Botys signatalis (Walk.), *G. & R.*
Herbula repletalis, Walk., p. 1285=Botys insequalis (Guen.)
Botys cinctipedalis, Walk., p. 1391=Botys oxydalis, *Guenée.*

PART XXXV.—1866.

Azelina stygiaria, Walk., p. 1548=Azelina huebneraria, *Guen.*
Azelina fadaeria, Walk., p. 1548=Endropia hypochraria (H-S.).
Ennomos consisaria, Walk., p. 1551=Endropia serrata (Drury).
Ennomos lutaria, Walk., p. 1552=Ennomos magnaria, *Guenée.*
Arrhodia egenaria, Walk., p. 1575=Perophora melsheimerii, *Harris.*
Acidalia mensurata, Walk., p. 1621=Acidalia enucleata, *Guenée.*
Acidalia continuaria, Walk., p. 1622=Acidalia enucleata, *Guenée.*
Acidalia repletaria, Walk., p. 1624=Acidalia favillifera, *Walk.*, id.
Larentia longipennis, Walk., p. 1671 = Eupethecia fusifasciata (Walk.)
Coremia pigrata, Walk., p. 1681=Coremia alternata, *Walk.*, id.
Repa cana, Walk., p. 1898=Clemensia albata, *Pack.* Two species of Halisidota are described by Mr. Walker in the Appendix to "The Naturalist in British Columbia," by John Keast Lord, 2 vols., London: 1866. Of these *Halesidota angulifera*, Walker, p. 335, is identical with Hal. californica, *Walk.;* Halesidota? roseata, *Walk.*, p. 336, seems to be a new and distinct species and to be properly referred to Halesidota.

In a List of the Lepidoptera of North America, now preparing for the press, we shall give further references from our notes of Mr. Walker's species, and we hope our endeavors to adopt *all* the tenable names of the English Entomologist will be taken as an evidence of our desire to act impartially in the matter, as also that nothing in the present paper will be taken as reflecting personally upon a gentleman whose courtesy and the extent of whose literary labors invite every consideration.

A LIST OF THE ICHNEUMONIDÆ OF NORTH AMERICA,

with descriptions of new species.

BY E. T. CRESSON.

PART II.

ICHNEUMON, Linn. (Additions.)

mexicanus, *Cresson*, ♂ ♀. Mexico.
brevipennis, *Cresson*, ♀. Col.
zapotecus, *Cresson*, ♀. Mexico.
encaustus, *Cresson*, ♀. Mexico.
Parredes, *Cresson*. ♀. Mexico.
tepanecus, *Cresson*, ♀. Mexico.
Cholula, *Cresson*, ♀. Mexico.
Toluca, *Cresson*. ♂. Mexico.
Chalco. *Cresson*, ♂. Mexico.
Alvarado, *Cresson*, ♂. Mexico.
decorosus, *Cresson*, ♂. Mexico.
centrosus, *Cresson*, ♂. Mexico.
jugiosus, *Cresson*, ♀. Mexico.
limitaris, *Cresson*, ♂. Mexico.
tenuicornis, *Cresson*, ♂. Mexico.
monitus *Cresson*, ♀. Mexico.
totonacus, *Cresson*, ♂. Mexico.
frivolus, *Cresson*, ♂. Mexico.
tragicus, *Cresson*, ♂. Mexico.
infulatus, *Cresson*. ♀. Mexico.
exquisitus, *Cresson*, ♂ ♀. Mexico.
Montezuma, *Cresson*, ♂. Mexico.
Nestor, *Cresson*, ♀. Mexico.
Toros, *Cresson*, ♀. Mexico.
famelicus, *Cresson*, ♂. Mexico.
tenebricus, *Cresson*, ♂ ♀. Mexico.
intentus, *Cresson*, ♂. Mexico.
gracilentus, *Cresson*, ♀. Mexico.
Arista, *Cresson*, ♂. Mexico.
maritus, *Cresson*, ♂ ♀. Mexico.
Tuxtla, *Cresson*, ♀. Mexico.
subspinosus, *Cresson*, ♂. Mexico.
toltecus, *Cresson*, ♂ ♀. Mexico.
teres, *Cresson*, ♂. Mexico.
lectus, *Cresson*, ♂ ♀. Mexico.
chichimecus, *Cresson*, ♂. Mexico.
lenis, *Cresson*, ♀. Mexico.
aztecus, *Cresson*, ♂. Mexico.
rutilus, *Cresson*, ♀. Va.

HOPLISMENUS, Grav.

rixosus, *Cresson*, ♀. Mexico.
otomitus, *Cresson*, ♀. Mexico.
ornatus *Cresson*, n. sp., ♀.= N. Y.
thoracicus. *Cresson*, ♂ ♀. Pa.
munitus, *Cresson*, ♂ ♀. Mexico.
propinquus, *Cresson*, ♀. Mexico.
picturatus, *Cresson*, ♀. Mexico.
dissonus, *Cresson*, ♀. Mexico.
minax, *Cresson*, ♀. Mexico.
limatus, *Cresson*, ♂. Mexico.
abnormis, *Cresson*, ♀. Mexico
concinnus, *Say*, ♂. Ills.
Ichneumon conc., Say.
morulus, *Say*, ♂ ♀. E. M. & W. S.
Ichneumon mor., Say.
flavitarsis, *Cresson*, ♂. Col.
Troqus flav., Cresson.
occiputalis, *Cresson*, ♂ ♀. Mexico.
acclivus, *Cresson*, ♂ ♀. Mexico.
esurialis, *Cresson*, ♂ ♀. Mexico.
scutellaris, *Cresson*, ♂. Mexico.

ŒDICEPHALUS, Cresson.

longicornis, *Cresson*, ♀. Mexico.
albovarius, *Cresson*, ♀. Cuba.
sororius, *Cresson*, ♀. Mexico.
gracilicornis, *Cresson*, ♂ ♀. Mexico.

JOPPA, Fabr.

inclyta, *Cresson*, ♀. Mexico.
Sumichrasti, *Cresson*, ♂ ♀. Mexico.
decorata, *Cresson*, ♂. Mexico.
elegantula, *Cresson*, ♂. Mexico.
fumipennis, *Cresson*, ♂ ♀. Mexico.
maurator, *Brullé*. — Pa., Car.
alternans, *Brullé*.— Mexico.
ferrugator, *Fabr.*, *Brullé*. — Pa., Car.
Ichneumon ferrug. Fabr.
suturalis, *Brullé*. — Mexico.
conica, *Brullé*, ♂ ♀. Mexico.
? *Ichn. breviventris*, Cress. ♂. Cuba.
? **egregia**, *Cresson*. ♀. Mexico.
? **aciculata**, *Cresson*, ♂ ♀. Mexico.

TROGUS, Grav.

obsidianator. *Brullé*, ♂ ♀. E. M. & W. S.
atrocæruleus, *Cresson*, n. sp., ♀. = La.
austrinus, *Cresson*, n. sp., ♂ ♀. Ga. Fla.
marginipennis, *Cress.*, n. sp., ♂. Dakota.
fulvipes, *Cresson*, n. sp., ♂. Me.
atrox, *Cresson*, n. sp., ♀. Dakota.
nubilipennis, *Hald.*, ♀. Ct., W.Va.
occidentalis, *Cresson*, n. sp., ♂. Dakota.
Copei, *Cresson*, n. sp., ♂. W. Va.
exesorius, *Brullé*, ♂ ♀. E. M. S. & W. S.
Bolteri, *Cresson*, n. sp., ♂. = L. Sup.
elegans, *Cresson*, n. sp., ♀. Me.
Rileyi, *Cresson*, n. sp., ♀. = Ills.
flavipennis, *Cresson*, ♂. Col.
thoracicus, *Cresson*, ♂. = Cuba.
tricinctus, *Cresson*, ♀. = Cuba.
? **pusillus**, *Cresson*, ♂. = Cuba.

STILPNUS, Grav.

americanus, *Cresson*, n. sp., ♂ ♀. M. S.
clypeatus, *Cresson*, n. sp., ♂. Ills.
tenuicinctus, *Cresson*, ♂. Mexico.
hudsonicus, *Cresson*, n. sp., ♂. H. B. T.
? **compressus**, *Cresson*. Col.

MESOLEPTUS, Grav.

elongatus, *Cresson*, n. sp., ♂ ♀. Mass.
inceptus, *Cresson*, n. sp., ♂ ♀. Mass., Ct.
propinquus, *Cresson*, n. sp., ♂. Mass. Del.
assiduus, *Cresson*, n. sp., ♂. Mass.
decoloratus, *Cresson*, ♂. Ct., Ills.
sedulus, *Cresson*, n. sp., ♂. Mass., N. J.
flavifrons, *Cresson*, ♂. N. J.
insidiosus, *Cresson*, n. sp., ♂. Mass.
scapularis, *Cresson*, n. sp., ♂. = Ct.
honestus, *Cresson*, n. sp., ♂ ♀. Ct., N. J.
albifrons, *Cresson*, n. sp., ♀. = Ct.
bicolor, *Cresson*, ♂. Pa.
longicornis, *Cresson*, ♂. Me., Del.
luteifrons, *Cresson*, n. sp., ♂. = H. B. T.
fucatus, *Cresson*, n. sp., ♀. Ct., W. Va.
calidus, *Cresson*, ♂. Mexico.
melleus, *Cresson*, ♂. Mexico.
bardus, *Cresson*, ♂. Mexico.
cultus, *Cresson*, n. sp., ♂. N. J.
concolor, *Cresson*, ♀. E. & M. S.
unicolor, *Cresson*, ♀. Pa., Del.
discolor, *Cresson*, ♂. Del.
antennatus, *Cresson*, ♂, Del.
eximius, *Cresson*, n. sp., ♂ = Ct.
imbecillis, *Cresson*, ♂. Mexico.
vultus, *Cresson*, ♂. Del.
facetus, *Cresson*, n. sp., ♂. W. Va.
subtenuis, *Cresson*, ♂. Ills.
albocollaris, *Cresson*, n. sp., ♂. Ills.
triangularis, *Cresson*, n. sp., ♂. Ills.
emaceratus, *Cresson*, ♂. Mexico.
pulcherrimus, *Cresson*, n. sp., ♂. = Ct.
decorosus, *Cresson*, ♂ Mexico.
decens, *Cresson*, n. sp., ♂. Ct., W. Va.
? **muliebris**, *Cresson*, n. sp., ♂. W. Va.
? **peregrinus**, *Cresson*, n. sp., ♂ ♀. Ct. N. J.
? **bucephalus**, *Cresson*, ♂. Mexico.
? **ignotus**, *Cresson*, n. sp., ♀. W. Va.
? **nasutus**, *Cresson*, n. sp., ♂ ♀. Pa.

TRYPHON, Grav.

communis, *Cresson*, n. sp., ♂ ♀. E., M. S.
seminiger, *Cresson*, ♂ ♀. Mass., Ct., Ills.
affinis, *Cresson*, ♀ E. & M. S.
americanus, *Cresson*, ♂. Can., E. M. W. S.
scutellaris, *Cresson*, n. sp., ♀. = Ct.
festivus, *Cresson*, ♂. Ills.
varifrons, *Cresson*, n. sp., ♂. Mass., Ct.
tibialis, *Cresson*, ♀. Ills.
signatipes, *Cresson*, n. sp., ♀. = H. B. T.
analis, *Cresson*, ♂ Pa.
semirufus, *Cresson*, ♀. Ills.
croceiventris, *Cresson*, ♂. Mexico.
obscurus, *Cresson*, ♂. Col.
Stilpnus obs., Cresson.
rufocinctus, *Cresson*, ♀. Ills.
compressiventris, *Cresson*, n. sp., ♂ ♀. Mass., Ct.
minimus, *Cresson*, ♀. Ills.
capitatus, *Cresson*, ♂ ♀. Ct., Pa.
pleuralis, *Cresson*, ♀. N. J.
cinctus, *Cresson*, ♂. = Cuba.
submarginatus, *Cress.*, ♂ ♀. E. M. & W. S.
Burgessi, *Cresson*, n. sp., ♂. Mass.
tarsalis, *Cresson*, n. sp., ♂ ♀. = Ct.
limatus, *Cresson*, ♂. Del.
æthiops, *Cresson*, n. sp., ♀. Mass., Ct.
? **nasutus**, *Cresson*, n. sp., ♀. Ills.
? **laticinctus**, *Cresson*, n. sp., ♀. Mexico.

?rufithorax, *Cresson*, n. sp., ♂. = Cuba.
?exiguus, *Cresson*, ♀. = Cuba.
crassus, *Cresson*, n. sp., ♂ ♀. Mass. N.J.
dimidiatus, *Cresson*, n. sp., ♂. N.J., Pa.
pedalis, *Cresson*, ♂. Ills.
annulipes, *Cresson*, n. sp., ♀. = H. B. T.
burrus, *Cresson*, n. sp., ♀. = Ct.
subcrassus, *Cresson*, n. sp., ♂ ♀. E. M. S.
occidentalis, *Cresson*, n. sp., ♀. = Ills.
frontalis, *Cresson*, n. sp., ♀. = Ct.
philanthoides, *Walsh*, n. sp. ♀. Ills.
articulatus, *Cress.*, n. sp., ♀. = H.B.T.

BASSUS, Grav.

tibialis, *Cresson*, n. sp., ♀. Ills.
?
orbitalis, *Cresson*, ♀. Col.
frontalis, *Cresson*, n.sp., ♀. E. M. W. S.
concinnus, *Cresson*, n. sp., ♀. = Ct.
frigidus, *Cresson*, n. sp., ♀. = H. B. T.
maculifrons, *Cresson*, ♀. Col.
agilis, *Cresson*, n. sp., ♂. Ct., Ills.
pleuralis, *Cresson*, n. sp., ♀ Ohio.
scutellaris, *Cresson*, n. sp., ♂ ♀. Ills.
sycophanta, *Walsh*, ♂ ♀. E. M. W. S.

CTENISCUS, Haliday.

annulipes, *Cresson*, n. sp., ♂. Mass.
sexlituratus, *Grav.*, ♀. (Eur.) Can.
vitticollis, *Cresson*, n. sp., ♂. Mass.
mediatus, *Cresson*, ♂. Ills.
clypeatus, *Cresson*, n. sp., ♀. = H. B. T.
consors, *Cresson*, n. sp., ♀. = Ct.
flavicoxæ, *Cresson*, ♀. Del.
orbitalis, *Cresson*, ♂. Pa.
dorsalis, *Cresson*, ♂. Ills.

EXYSTON, Schiodte.

excelsus, *Cresson*, ♀. Col.
Cteniscus exc., Cresson.
abdominalis, *Cresson*, ♂. Col.
Cteniscus abd., Cresson.
venustus, *Cresson*, ♂. Col.
Cteniscus ven., Cresson.
clavatus, *Cresson*, ♂ ♀. E., M. & W. S.
Cteniscus clav., Cresson.

EXOCHOIDES, Cresson.

mexicana, *Cresson*, ♂. Mexico.
claviventris, *Cresson*, ♂. = Cuba.
Tryphon? clav., Cresson.
trifasciata, *Cresson*, ♂. Pa.
Tryphon? trifasc., Cresson.
concinna, *Cresson*, ♂. Mexico.

EXOCHUS, Grav.

lævis, *Cresson*, ♂ ♀. E., M. & W. S.
propinquus, *Cresson*, n. sp., ♂ ♀. E. S.
atrocoxalis, *Cresson*, n. sp., ♀. Dakota.
albifrons, *Walsh*, n. sp., ♀. Ills.
carinatus, *Cresson*, ♂ ♀. E., M. & W. S.
Tryphon car., Cresson.
tricarinatus, *Cresson*, ♂. Mexico.
pallipes, *Cresson*, ♂. Ct., Ills.
pleuralis, *Cresson*, ♂. Ills.
dorsalis, *Cresson*, ♂. N. J.
semirufus, *Cresson*, n.sp., ♂ ♀. E. & M.S.
pulchripes, *Cresson*, ♂. Mexico.
validus, *Cresson*, ♂. Cuba.
?
apicalis, *Cresson*, ♂. Ills.
fulvipes, *Cresson*, ♂ ♀. Ct., Pa.
pygmæus, *Cresson*, ♂. Can., Ills.
cæruliventris, *Cresson*, ♂. Mexico.

NOTES AND DESCRIPTIONS.

For the descriptions of the Mexican species, see pages 1—38 of this volume of the *Transactions*.

Joppa maurator.—The *Ichneumon insolens*, Cresson, may be identical. This latter species is, however, not a *Joppa*.

Joppa ferrugator.—This may be identical with *Ichneumon? trogiformis*, Cresson, which has filiform antennæ in both sexes.

Trogus tricinctus is probably a *Joppa;* and **Trogus? pusillus** an *Œdicephalus.* Not having specimens of either species before me, I have allowed them to remain, for the present, as originally described.

Hoplismenus ornatus.—♀. Head, thorax and antennæ black; broad orbits, cheeks, clypeus, labrum, palpi, annulus on antennæ, anterior and posterior margins of prothorax, as well as a spot on each side, two lines on mesothorax, a line over the tegulæ, a short one beneath, scutellum and postscutellum, lateral basal angles of metathorax, a large spot on each side, two longitudinal marks on the posterior truncation, covering the spines, and a large irregular mark on the pleura, connected with a small spot beneath the posterior wing, all white; disk of clypeus, mandibles and tegulæ dusky; antennæ as long as the body, porrect, filiform, scape beneath fulvous; thorax closely punctured; scutellum flattened, quadrate, the sides at base carinated, apex truncate; metathorax rugulose, transversely striated behind, the elevated lines sharply defined, forming near the base a large, square central area, and on each side of the posterior truncation a moderately long, subacute spine; wings hyaline, iridescent, nervures and stigma pale fulvous, areolet triangular; legs robust, shining, bright fulvous, spot on the coxæ behind, most of the trochanters, and the posterior tarsi, yellowish-white; abdomen shining, concolorous with the legs, with a lateral white spot on the tip of the first three segments; first segment slender, slightly and gradually dilated at tip. Length 4¼ lines.

Hab.—New York, (Coll. Mr. E. Norton). One ♀ specimen.

Trogus atrocæruleus.—♀. Opaque blue-black, mesothorax tinged with obscure green; face and clypeus densely and strongly punctured and shining; antennæ brown-black, blue-black at base, subtestaceous beneath toward the tips; thorax confluently punctured; scutellum much elevated, very obtuse, and densely punctured; metathorax rugose, elevated on the disk, with a subcordate central area, deeply emarginate behind, posterior portion very abruptly truncate; wings black, with a deep, brilliant violaceous reflection; areolet subtriangular, oblique, not petiolated, the second recurrent nervure received beyond the middle; legs entirely blue-black, with a slight tinge of green at base; abdomen blue-black, immaculate, subconvex, the fourth and following segments smooth and polished. Length 9¼ lines.

Hab.—Louisiana, (Coll. Mr. E. Norton). One ♀ specimen.

T. austrinus.—♂ ♀. Dull black, opaque; head ferruginous, broader in ♀, anterior orbits of ♂ lemon-yellow; antennæ orange-yellow, longer and paler in ♂, ferruginous at base in ♀; thorax clothed with a short black pubescence; mesothorax, upper portion of prothorax, and the scutellum obscure ferruginous, the latter much elevated, conical, subobtuse, densely pilose; metathorax uneven, coarsely rugose, smoother at base in front of transverse carina, the disk elevated into an obtuse, shining tubercle, posterior portion not abrupt; tegulæ brown; wings blackish, with a brilliant æneous reflection, areolet triangular, petiolated, receiving the second recurrent nervure before the middle; legs black, the two anterior pairs, except base, more or less fulvous, posterior pair of ♀ tinged with brownish; abdomen long, subclavate, being gradually dilated toward the apex, dull opaque black, very densely sculptured, incisures rather deeply impressed; dilated portion of first segment flattened, with a square red mark on the disk. Length 10—10½ lines.

Hab.—Georgia, ♂ (Ridings); Florida, ♀ (Norton). One ♂, one ♀, specimens.

T. marginipennis.—♂. Deep black, opaque, body immmaculate, clothed with a short black pubescence, face shining; antennæ brown-black; scutellum considerably elevated, very obtuse, densely punctured, deeply excavated at base; metathorax rugose, elevated above, with a small, shining, six-sided central area having a lateral and two posterior, well-defined carinæ diverging from it, posterior portion very abrupt; pleura polished, sparsely punctured, tegulæ piceous, shining; wings bright yellow, the apex as far in as the tip of areolet, and the broad posterior margin of the hinder wings, fuliginous; nervures and stigma fulvous, areolet triangular, not petiolated, receiving the second recurrent nervure in the middle; legs entirely black, shining; abdomen very densely sculptured, a little shining at tip, slightly depressed, incisures between the segments deeply impressed. Length 8¾ lines.

Hab.—Dakota Territory, (Mr. Henry Ulke). Two ♂ specimens. This looks very much like an *Ichneumon.*

T. fulvipes.—♂. Black, shining, finely punctured; labrum, tips of mandibles and palpi, except base, pale fuscous; antennæ two-thirds the length of the body, tapering toward the tips which are very slender, brown-black, sericeous; scutellum much elevated, sub-obtuse; metathorax closely punctured, with the elevated lines strongly developed, shining, and forming on the disk a rather large, rounded area; tegulæ tinged with fulvous; wings uniformly dark fusco-hyaline, glossy, with a beautiful violaceous reflection. Legs pale fulvous; coxæ, trochanters, base of middle femora, and the posterior pair entirely, black. Abdomen opaque black, tinged with purple, densely rugulose, the segments depressed above and strongly constricted; venter smooth and highly polished. Length 8 lines.

Hab.—Maine. One specimen.

T. atrox.—♀. Deep black, opaque, clothed with a short black pubescence; head large and broad. shining, front quadrate, anterior margin of clypeus polished and truncate; mandibles tinged with reddish; antennæ brown-black, strongly sericeous toward the tips; scutellum elevated, very obtuse, pilose, deeply excavated at base; metathorax coarsely rugose, the disk elevated, with a small, oblong central area, having a lateral and two posterior, ill-defined carinæ diverging from it, posterior portion abrupt; wings yellowish-fuscous with a slight purple reflection, darker at base and before the apex, nervures brownish, stigma and costa fulvous, the former with a subhyaline margin beneath; areolet triangular, not petiolated, receiving the second recurrent nervure near the base; legs black, tarsi brown, anterior tibiæ and tarsi rufo-testaceous; abdomen subconvex, very densely sculptured, incisures not deep, second segment fulvo-ferruginous, margined all around with black. Length 7½ lines.

Hab.—Dakota Territory, (Mr. Henry Ulke). One ♀ specimen.

T. occidentalis.—♂. Large, more slender than usual; head large, broad, fulvo-ferruginous, anterior orbits paler, the smooth excavation behind antennæ blackish; (antennæ wanting); mesothorax ferruginous, with a broad, central, black stripe extending to the middle; prothorax ferruginous, black in the middle; scutellum and postscutellum fulvo-ferruginous, the former obtusely elevated, punctured, shining, and clothed with yellow pubescence; metathorax rugose, black, with a broad, subarcuate, transverse, ferruginous mark on the posterior portion, bounded anteriorly by a well-defined transverse carina proceeding from the central area which is elevated, very small and transverse,

having a smooth, convex, shining space in front; pleura shining black, with a large ferruginous stain beneath the anterior wing; tegulæ fulvo-ferruginous; wings long, ample, fuliginous, with a brilliant violaceous reflection, the base of both anterior and posterior pair, a streak beyond the stigma of anterior pair, and a long streak along the costa of posterior pair, yellow-hyaline; nervures brown, costa, stigma and nervures at base of wings fulvous; areolet triangular, petiolated, oblique, receiving the second recurrent nervure before the middle; legs fulvo-ferruginous, tibiæ and tarsi varied with yellowish, coxæ blackish, tinged with reddish, posterior femora blackish at tip within; abdomen longer and narrower than usual, subconvex, slightly shining, especially at apex; the first and second segments entirely, the third except base, and narrow lateral margins of the fourth segment, fulvo-ferruginous, remainder black; first segment much elevated before the apex, the disk of which is sulcate; beneath fulvous, dusky at apex. Length 10 lines.

Hab.—Dakota Territory, (Mr. Henry Ulke.) One ♂ specimen.

T. Copei.—♂. Large, black, opaque, densely punctured; a longitudinal pale spot on each side of the face; antennæ tinged beneath with testaceous; mesothorax with slightly impressed longitudinal lines; scutellum convex, deeply excavate at base; metathorax rugose, truncate behind, and on the disk a shining elevation, with a shallow medial fovea; wings large, violaceous-black, nervures black, areolet as in *obsidianator*, except that it is more petiolated; legs black, anterior tibiæ and tarsi brownish; abdomen ferruginous, shaped much like that of *obsidianator*, except that it is more convex, rather more robust, and the first segment much less prominent near the apex; petiole of first segment slender, black. Length 10 lines.

Hab.—West Virginia. One ♂ specimen. This fine species was collected and given me by my much esteemed friend Prof. E. D. Cope, to whom it is respectfully dedicated.

T. Bolteri.—♂. Long, narrow, black; head quadrate, not narrowed beneath; face, anterior orbits, a broad line on lower half of posterior orbits, clypeus, mandibles and palpi, lemon-yellow; antennæ rather long, subserrate, black, the scape yellow beneath; tegulæ, a spot before and a short line beneath each anterior wing, scutellum, and a spot on postscutellum, fulvous; scutellum obtusely elevated; metathorax rugose, much elevated on its disk, the carina across the middle sharply defined, the central area very small and transverse; wings yellowish hyaline, slightly dusky at tips, areolet petiolated, legs yellow varied with pale fulvous, posterior coxæ at base behind and their femora behind, black, extreme tips of their tibiæ within and the apical joint of their tarsi dusky; abdomen long, narrow, sides parallel beyond the basal segment; first segment, except at base, the whole of the second, the third, except a basal black band, and the second to fifth ventral segments, yellowish fulvous; fourth and following segments above black; basal segment gibbous before the apex. Length 10½ lines.

Hab.—Lake Superior. (Coll. Mr. A. Bolter.)

T. elegans.—♀. Entirely honey-yellow, golden sericeous, more obvious on the legs and abdomen; the face, tarsi and tip of abdomen, paler colored than the the rest of the body; base and tips of the antennæ tinged with fuscous; scutellum much elevated, obtuse; metathorax rugose, with indistinct elevated lines, the basal middle prominent. Wings yellowish-hyaline, with a brilliant

golden gloss; about the middle of the wing, at the tip of the externo-medial cell, a triangular black mark, and at the tip of the wing a large, irregular, black cloud; stigma yellow, nervures black. Abdomen darker at base than at tip, the segments not strongly constricted. Length 9 lines.

Hab.—Maine. One specimen. This fine species is readily recognised by its handsomely ornamented wings.

T. Rileyi.—♀. Large, robust, entirely ferruginous; head large, quadrate, eyes small, cheeks prominent; tips of mandibles blackish; antennæ long, tapering to a fine point at tip, fulvous, base ferruginous, tip blackish; scutellum obtusely elevated; metathorax rugose, elevated on the basal middle, carinæ sharply defined; wings fuscous with a golden gloss, stigma fulvous, nervures black; basal third of marginal cell, base of both wings and a costal streak on the posterior pair, dilated a little beyond the middle where it ends, yellow; areolet petiolated; legs color of body, somewhat golden sericeous, as well as the thorax beneath; abdomen long, clavate, robust, and subconvex beyond the basal segment, which is slender at base and dilated at tip, the disk of which is raised into an obtuse tubercle; extreme tip slightly dusky. Length 13 lines.

Hab.—Illinois. (Coll. Mr. C. V. Riley).

Stilpnus americanus.—♂ ♀. Deep black, smooth and polished; mouth more or less reddish; antennæ rather stout, slightly thickened towards the tip in ♀, basal third or half reddish, the rest blackish; mesothorax trilobed, but not prominently so; metathorax deeply excavated behind, with a stout tubercle on each side: tegulæ yellowish; wings hyaline, beautifully iridescent, nervures and stigma pale brown, areolet 5-angular, complete; legs, including the coxæ, fulvous, the posterior coxæ dusky at base; abdomen flat, smooth and polished, beyond the first segment in ♀ it is circular or semicircular when viewed from above, in ♂ oblong-ovate; first segment narrow, deeply channeled down the middle, somewhat aciculate in ♂. Length 2—2½ lines.

Hab.—New York, New Jersey and Pennsylvania. Four ♀, one ♂, specimens.

S. clypeatus.—♂. Black, shining, face and mouth pubescent; clypeus, mandibles and palpi, lemon-yellow; antennæ nearly as long as the body, rather robust, of uniform thickness, reddish-brown, scape yellow; tegulæ and a spot before, yellow; metathorax rough, rugose, transversely so behind, the posterior slope divided into three long areas; wings hyaline, iridescent, nervures and stigma brown, the latter large, the marginal cell large and subtriangular, the areolet 5-angular; legs yellowish-testaceous, whitish at base, posterior coxæ, tips of their femora, most of their tibiæ and tarsi, dusky; abdomen elongate, narrow, with a long slender petiole, piceous, the apical margins of the second and following segments narrowly, and the venter, pale testaceous, Length 2 lines.

Hab.—Illinois, (Dr. Lewis.) One ♂, specimen.

S. hudsonicus.—♂. Black, shining, thinly pubescent; mandibles, except tips, and the palpi, whitish; antennæ about two-thirds the length of the body, the scape pale beneath; metathorax rugulose, with sharply defined elevated lines, forming numerous irregular cells; tegulæ pale fulvous; wings hyaline, iridescent, nervures and stigma brown, the latter large, the marginal cell large and subtriangular, the areolet subquadrate; legs fulvous, pale at base, posterior coxæ black, extreme base of their tibiæ, most of their tarsi, and tips of the four

anterior tarsi dusky; abdomen elongate, subdepressed, apical margin of second segment, whole of the third, the fourth except sides, and the base of the fifth, rufo-ferruginous. Length 2½ lines.

Hab.—Hudson's Bay Territory, (Coll. Mr. E. Norton.) One ♂ specimen.

Mesoleptus elongatus.—♀. Elongate, black, covered with a thin, short, whitish, sericeous pile; head transverse, wider than the thorax; face flat, dull yellow, with a square black spot beneath the antennæ; clypeus, mandibles, except tips, and palpi, yellow; antennæ about as long as the body, slender, yellow, the basal joint more or less blackish above, the apical joints sometimes dusky; thorax short and stout; mesothorax trilobed, smooth and polished; metathorax rugose down the middle; tegulæ pale yellow; wings long, narrow, hyaline, iridescent, nervures luteous, stigma very narrow, areolet petiolated, triangular, often much reduced, sometimes subobsolete; legs slender, the two anterior pairs yellow, their coxæ paler, posterior pair honey-yellow, their trochanters and tarsi pale yellow, tips of their tibiæ blackish; abdomen long, clavate, petiolated, convex, shining, obscure honey-yellow, first segment one-half longer than the second, sublinear, the stigmatic tubercles prominent, placed a little beyond the middle; apex subcompressed, the fifth and following segments black. Length 5 lines.

The ♂ has the face of a brighter yellow, the basal joint of antennæ beneath is pale yellow, the posterior coxæ are more or less tinged with dusky, and the apex of the abdomen is not subcompressed.

Hab.—Massachusetts. One ♀, three ♂, specimens.

M. inceptus.—♂. Head transverse, black, finely pubescent; face, clypeus, mandibles except tips, sometimes a spot beneath the eyes, and the palpi, lemon-yellow; the yellow of the face extends slightly upwards on each side of antennæ; antennæ about as long as the body, slender, fulvous, the basal joints more or less blackish above, the scape lemon-yellow beneath; thorax shining, finely pubescent; mesothorax trilobate; scutellum elevated, deeply excavated at base, sometimes with a yellowish spot on the disk; tegulæ, spot before and a short line beneath, and sometimes a spot behind each anterior coxa, lemon-yellow; metathorax shining, with a narrow rugose space down the middle, sometimes bounded on each side by a sharp carina; wings hyaline, iridescent, nervures brown, stigma paler, areolet small, sometimes minute, triangular, petiolated; legs slender, the coxæ, trochanters and four anterior legs lemon-yellow; posterior coxæ above, their femora, tibiæ and tarsi more or less honey-yellow, base of their tibiæ paler; sometimes the posterior coxæ are ferruginous, dusky at base beneath; abdomen elongate, clavate, very finely pubescent, especially at tip, dark honey-yellow, often more or less ferruginous; basal segment petiolate, slightly dilated towards the tip, with two sharp carinæ above extending from the base to beyond the prominent stigmatic tubercles which are situated slightly beyond the middle, black, the apex ferruginous or honey-yellow; the second and following segments, especially the apical ones, are sometimes slightly stained with fuscous, sometimes immaculate; the second segment occasionally has a blackish stain on each side at base; one dark specimen has the antennæ dusky above, especially at tips, the scutellum tinged with rufous, the posterior coxæ black, with a rufous stain above, and the extreme tips of their femora, tips of their tibiæ and their tarsi, dusky, the abdomen is blackish, with the apex of the second and third segments and the two following segments entirely dull rufous. Length 4—4½ lines.

The ♀ has a small black mark between and beneath the antennæ, and the apex of the abdomen is subcompressed.

Hab.—Massachusetts, Connecticut. Seven ♂, one ♀, specimens. Closely allied to *elongatus*.

M. propinquus.—♂. Same form as the preceding species; black, shining; face, clypeus, mandibles except tips, and the palpi, yellow; a short median black line beneath the antennæ; antennæ as long as the body, slender, fulvous, blackish at base above, sometimes entirely dusky above, scape pale beneath; thorax immaculate, except a small yellow spot before the tegulæ; metathorax shining, with a subrugose, more or less deep, channel down the middle; tegulæ lemon-yellow; wings hyaline, iridescent; areolet petiolated, triangular; legs fulvo-ferruginous, the four anterior coxæ and all the trochanters lemon-yellow, posterior tibiæ and tarsi more or less dusky; abdomen same form as in preceding species, with the first segment similarly sculptured; black, third and fourth segments flavo-ferruginous, sometimes these two segments have large, blackish, lateral stains; venter yellowish or fulvous, more or less varied with dusky, the apex black. Length 3½—4 lines.

Hab.—Mass., Del. Three ♂ specimens. Distinguished from *inceptus*, principally, by the color of the abdomen.

M. assiduus.—♂. Same form as the preceding; black, shining; anterior orbits beneath antennæ, a U or V-shaped mark on the face, clypeus, sometimes a spot on the cheeks beneath the eyes, mandibles except tips, and the palpi, lemon-yellow; antennæ slender, scarcely as long as the body, dusky ferruginous, scape yellow beneath; mesothorax strongly trilobed, with a lateral yellow line dilated anteriorly; metathorax subrugose, especially down the middle; tegulæ and a spot in front, lemon-yellow; wings hyaline, iridescent, areolet oblique, small, petiolated; legs colored as in the preceding species; abdomen subpetiolate, strongly clavate, subconvex above, fulvous or pale ferruginous, with the basal and two apical segments more or less black; first segment depressed, rugulose, shorter and broader than in the three preceding species, the stigmatic tubercles prominent; apical segments smooth and shining. Length 3½ lines.

Hab.—Massachusetts. Two ♂ specimens. Easily recognized by the markings of the face.

M. sedulus.—♂. Same form as *assiduus*, but more robust; black, shining, finely and thinly pubescent; face densly clothed with a silvery pile; clypeus, mandibles except tips, and the palpi, yellow; antennæ as long as the body, slender fulvous, more or less dusky above, scape black above and yellow beneath; tegulæ and spot in front, lemon-yellow; metathorax shining, with tolerably well-defined elevated lines; wings hyaline, iridescent, areolet sub-triangular, petiolated, somewhat oblique; legs slender, honey-yellow, four anterior coxæ, the posterior pair beneath, and all the trochanters lemon-yellow, tips of posterior tibiæ and their tarsi dusky; abdomen subpetiolate, strongly clavate, convex, shining, fulvo-ferruginous, with the first and generally the two apical segments black; first segment gradually dilated towards the tip, channeled at base, the stigmatic tubercles very prominent, and placed about midway between base and apex; remaining segments smooth and shining. Length 3½ lines.

Hab.—Massachusetts., New Jersey. Three ♂ specimens.

M. insidiosus.—♂. Head, thorax, posterior coxæ, and first abdominal segment except tip, black: face, anterior orbits, clypeus, mouth, lower part of cheeks, scape beneath, collar, hook-shaped line on each side of mesothorax anteriorly, tegulæ, spot before and another beneath, scutellums, most of pleura beneath, four anterior legs, tips of posterior coxæ, and their trochanters, bright lemon-yellow; antennæ rather longer than body, slender, fulvous, dusky at base above; metathorax rounded, almost smooth, finely pubescent; wings ample, hyaline, iridescent, areolet wanting; legs slender, posterior femora, tibiæ and tarsi ferruginous; abdomen subpetiolated, clavate, tip of first, and the following segments entirely, fulvo-ferruginous; first segment gradually dilated to apex, stigmatic tubercles prominent, and placed midway between base and apex. Length 3½ lines.

Hab.—Massachusetts. (Ridings.) One ♂ specimen.

M. scapularis.—♂. Black, subpubescent, shining; face, clypeus, spot beneath each eye, mandibles except tips, and palpi, yellow; antennæ as long as the body, slender throughout, brown, paler beneath, scape yellow beneath; mesothorax tinged with reddish, central longitudinal lines well impressed, on each side a broad sutural yellow line dilated anteriorly and extending posteriorly for a short distance on the impressed lines; scutellum yellow; postscutellum ferruginous; metathorax shining, ferruginous at base, with several longitudinal, tolerably well-defined carinæ, the dorsal ones close together and confluent posteriorly; tegulæ, a double spot beneath, and an irregular line on each side of pleura beneath, just behind the anterior coxæ, yellow; wings hyaline, iridescent, areolet oblique, petiolated, second recurrent nervure straight; legs rather slender, honey-yellow, two anterior pairs much paler, their coxæ and trochanters and also the posterior trochanters, pale yellow, tips of posterior tibiæ, and of all the tarsi, dusky; abdomen slender, subclavate, shining, rufous, most of the first, sides of the second and the three apical segments more or less, black; first segment with a stout flattened petiole, with the stigmatic tubercles prominent and situated at about the middle; venter mostly black. Length 4 lines.

Hab.—Connecticut. (Coll. Mr. E. Norton.) One ♂ specimen.

M. honestus.—♂ ♀. Pale ferruginous, thinly pubescent; head brown-black, face, clypeus, mandibles except tips, and palpi, pale yellow, the former tinged laterally with fulvous in ♀; antennæ as long as the body, slender, especially at tips, blackish, with a more or less distinct yellowish annulus beyond the middle, apex fulvous, scape ferruginous, paler beneath; sides of prothorax, scutellar region and space beneath the wings, blackish; collar, scutellum, tegulæ and a spot before, pale yellow; metathorax perfectly smooth, polished, convex and thinly pubescent; wings hyaline, iridescent, nervures and stigma brown, areolet triangular, subpetiolated; legs color of the body, the four anterior coxæ and trochanters, basal half of posterior tibiæ and most of their tarsi, pale yellow; apical half of posterior tibiæ black; abdomen shining, subpetiolated, clavate, subdepressed, entirely ferruginous, more slender in ♂; first segment gradually dilated towards the tip, depressed, without distinct stigmatic tubercles. Length 3½ lines.

Hab.—Connecticut; New Jersey. Two ♀, one ♂, specimens.

M. albifrons.—♀. Differs from *honestus* only in being larger and more robust, by the broader head, which is black, with the face, clypeus, mandibles except tips, spot beneath eyes, space on each side of antennæ, and the palpi, white;

the face is much broader than in *honestus*, the antennæ have a very distinct, broad whitish annulus, beyond which the joints are reddish-brown, the scape is white beneath; the mesothorax, prothorax except collar, and the scutellar region, are black, the former tinged with obscure reddish; the areolet of the anterior wings is wanting and the basal segment of abdomen is longer, more slender and with the stigmatic tubercles prominent; the apex of abdomen is dusky (probably discolored) and subcompressed. Length 4½ lines.

Hab.—Connecticut. (Coll. Mr. E. Norton.) One specimen. A more handsome species than *honestus*, to which it is closely allied.

M. luteifrons.—♂. Same form as *longicornis*; pale honey-yellow, head broad, black, the face, clypeus, mandibles and palpi yellow; clypeus with long hairs, ocelli large and very prominent; antennæ longer than the body, slender throughout, entirely luteous-yellow, except extreme tips which are dusky; collar, tegulæ and a spot before, yellow, the lateral margins of the mesothorax are faintly broadly yellow; metathorax smooth, convex and pubescent; wings ample, hyaline, beautifully iridescent, nervures and stigma pale yellow; areolet subtriangular, oblique, very slightly petiolated; legs slender, color of the body, the two anterior pairs pale at base; abdomen long, slender, subclavate; first segment long, parallel, depressed, the stigmatic tubercles prominent and placed before the middle. Length 3½ lines.

Hab.—Fort Resolution, Great Slave Lake, H. B. T. (Coll. Mr. E. Norton.) One ♂ specimen.

M. fucatus.—♀. Ferruginous or brown-ferruginous, polished; subpubescent; head transverse, prominent behind the eyes; mandibles mostly pale yellow, the anterior orbits, and clypeus sometimes tinged with yellow; occiput, cheeks and vertex sometimes more or less black; antennæ more than half the length of the body, blackish, more or less ferruginous at tips, sometimes so at base, thorax sometimes entirely black, except the mesothorax which is always ferruginous, generally only the sutures are black; metathorax with sharply defined elevated lines, the two central ones forming a more or less narrow channel which is more or less transversely striated, sometimes interrupted in the middle by a cross carina; in two specimens the metathorax is black with the large enclosed space on each side of the central channel ferruginous; the pleura sometimes black, stained with ferruginous and *vice versa*; wings hyaline, faintly yellowish, beautifully iridescent, areolet wanting; legs tolerably slender, pubescent, sometimes entirely ferruginous with the tips of posterior tibiæ black, and their tarsi yellow, sometimes more or less black, especially the posterior pair; generally the four posterior coxæ, the middle femora behind, the tips of posterior femora, and of their tibiæ are black: the posterior tarsi are always yellowish, dusky at tips; abdomen depressed, strongly clavate, very slender at base; first segment slightly dilated at tip, the stigmatic tubercles prominent and placed at the middle, base sometimes blackish; the apical segments are sometimes dusky. Length 4—4½ lines.

Hab.—Connecticut; West Virginia. Eight ♀ specimens. The coloration of the head, thorax and legs is quite variable.

M. cultus.—♂. Honey-yellow, subpubescent, shining; the face, except a stain down the middle, clypeus, spot on each side of ocelli, a spot beneath each eye, mandibles except tips, and the palpi, lemon-yellow; antennæ nearly as long as the body, black, with a broad lemon-yellow annulus near the tips, the joints

pubescent, and becoming gradually shorter to the tips; metathorax short, with sharply defined longitudinal carinæ, the two central ones subparallel, slightly diverging posteriorly, the channel between them with carina across the middle; tegulæ pale yellow; wings ample, hyaline, iridescent, areolet small, subtriangular and petiolated; legs shorter and stouter than usual, color of the body, the two anterior pairs paler; abdomen elongate, subparellel, subdepressed, petiolated, the petiole tolerably slender and deeply channeled, the apex dilated, with two sharp carinæ on the middle, becoming obsolete before reaching the apex of the segment, the lateral margin carinate, as well as that at the base of the second segment. Length 4½ lines.

Hab.—New Jersey. One ♂ specimen.

M. eximius.—♂. Elongate, slender, parallel, pale honey-yellow; head transversely subquadrate; black, broad orbits, interrupted behind the summit of eyes and deeply indented on each side behind antennæ, the face, clypeus, mandibles except tips, and palpi, white; antennæ slender, pubescent, black, shading into yellowish beyond the middle, the scape white beneath; prothorax black, with the anterior and posterior margins white beneath with a white spot in front of each anterior coxæ; mesothorax black, with a white spot on the disk; scutellum and post-scutellum white, the region on each side of the former black; pleura black on the anterior margin and beneath, honey-yellow and white on the sides, a white oblique line on each side beneath; tegulæ and a curved line beneath white; metathorax honey-yellow, pubescent, transversely rugulose; wings hyaline, iridescent, nervures pale brown, areolet wanting; legs slender, honey-yellow, the four anterior coxæ and trochanters white, posterior tibiæ and tarsi slightly dusky; abdomen long, slender, narrow, petiolated, pubescent, basal segment slender, slightly dilated at tip, stigmatic tubercles indistinct. Length 4½ lines.

Hab.—Connecticut. (Coll. Mr. E. Norton.) One ♂ specimen.

M. facetus.—♂. Slender, subpubescent, shining, black, clypeus and mandibles reddish, pubescent; palpi very long and slender, white, blackish at base; antennæ long and slender, opaque black, with a broad white annulus a little beyond the middle, scape beneath reddish; thorax gibbous, scutellum obtusely elevated, brownish, as well as the post-scutellum; metathorax obsoletely stained on the middle and sides with luteous, with distinct elevated lines, forming on the disk an elongate central area; tegulæ palish; wings hyaline, beautifully iridescent, nervures brown, areolet moderately large, triangular; legs slender, pale luteous, with blackish stains on the coxæ and four anterior femora above, posterior legs black, their tarsi pale, tips of all the tarsi dusky; abdomen slender, petiolated, subdepressed, first segment long and slender, only slightly dilated at tip, stigmatic tubercles obsolete; tip of first segment, most of second and third, and base of fourth segment, obscure yellowish, more or less varied with blackish. Length 3 lines.

Hab.—West Virginia. (Ridings.) One ♂ specimen.

M. albocollaris.—♀. Long, slender, black, eyes large and prominent, front deeply excavate behind the antennæ; anterior orbits, not reaching the summit of eyes, face, clypeus, mandibles, space beneath eyes, and the palpi, white; antennæ as long as the body, slender, black, scape large, globose, white, dusky above; collar, tegulæ and a large mark before, white; scutellum piceous; metathorax smooth and shining; pleura fulvous, somewhat varied with white, a

dusky space beneath anterior wings; wings hyaline, iridescent, nervures and stigma brown, areolet wanting; legs long and slender, pale yellowish, the coxæ larger than usual, the two anterior pairs and the trochanters white, apical half of posterior tibiæ black; abdomen long, slender, subparallel, depressed, petiolated; third and fourth segments yellowish-white, marked on the side with blackish, the apical segment obscure whitish; first segment with prominent stigmatic tubercles, placed at about the middle. Length 3 lines.

Hab.—Illinois. (Dr. Saml. Lewis.) One ♂ specimen. Seems to belong to *Megastylus* Schiodte.

M. triangularis.—♂. Black, shining, clothed with a short, pale pubescence; head broad, eyes large and prominent, face densely pubescent, mandibles reddish, palpi white; antennæ slender, pale luteous, slightly dusky above; thorax short, gibbous, metathorax short, declivious, densely pubescent, with a sharply defined carinæ across the middle; tegulæ and a dot before pale luteous; wings hyaline, iridescent, nervures brown, stigma large, areolet subquadrate, oblique, second recurrent nervure arcuated outwardly and received by areolet near its tip; legs slender, two anterior pairs, and all the coxæ and trochanters, whitish, the posterior pair elongate, the femora honey-yellow, the tibiæ and tarsi dusky, especially at tips; abdomen clavate, petiolated, the first segment long and almost linear, being very slightly broader at tip, minutely, longitudinally aciculate as well as the second segment, stigmatic tubercles not prominent; tip of first segment, sometimes the basal middle of second, a large triangular mark on the second, third and fourth, and middle of the fifth segment, pale luteous; apex pale and pubescent. Length 2—3 lines.

Hab.—Illinois. (Dr. S. Lewis.) Two ♂ specimens.

M. pulcherrimus.—♂. Shining; head lemon-yellow, tips of mandibles, the vertex, except orbits, and occiput black; antennæ longer than the body, slender, filiform, pale fulvous, the base above and the apex blackish, scape beneath yellow; thorax above and abdomen black, subpubescent, with a faint subiridescent reflection; margins of prothorax, a subcuneiform mark on each side of mesothorax anteriorly, a mark on the disk, acutely pointed on each side anteriorly, tegulæ, scutellum, postscutellum and the margins of their lateral regions, a spot on each side before the scutellum, the pleura except a large mark beneath the wings, a spot behind the posterior wing, a triangular mark on metathorax posteriorly and an irregular line on the sides, all lemon-yellow; metathorax smooth and rounded; wings hyaline, iridescent, nervures brown, stigma pale, areolet obliquely triangular, petiolated; legs long, especially the posterior pair, slender, yellow tinged with fulvous, posterior coxæ black behind, as well as base of their trochanters, tips of their tibiæ and of the tarsi dusky; tibiæ with numerous short acute spines; tarsal claws pectinate; abdomen subpetiolate, long, narrow, subconvex, smooth and shining, the apical margins of all the segments above, rather broadly white; first segment with the stigmatic tubercles prominent and situate a little before the middle. Length 3¾ lines.

Hab.—Connecticut. (Coll. Mr. E. Norton.) One ♂ specimen.

M. decens.—♂. Black, shining, finely pubescent; face, cheeks beneath, clypeus, mandibles except tips, and palpi white; antennæ as long as the body, slender, brown-black above, testaceous beneath, the scape beneath and sometimes the base of flagellum beneath, whitish; line on collar, a large cuneiform

mark on each side of mesothorax in front of wings, spot on tip of scutellum, tegulæ, a spot before and beneath, and the pleura beneath between the four anterior coxæ, all white; metathorax indistinctly sculptured, without elevated lines; wings hyaline, iridescent, nervures black, stigma brown, areolet wanting; legs slender, pale honey-yellow, four anterior coxæ and trochanters white, posterior trochanters and femora above, tips of their tibiæ and their tarsi, black, tibial spurs whitish; abdomen long, petiolated, clavate, subdepressed, shining, finely pubescent at tip, first segment long, much dilated at tip, the stigmatic tubercles prominent and placed at the middle, extreme lateral and apical margins, more or less, of the third and following segments white; beneath whitish, spotted with black. Length 3¾—5 lines.

Hab.—Connecticut, (Norton); West Virginia. (Ridings.) Two ♂ specimens.

M? muliebris.—♂. Very long and slender, shining, subpubescent; head broad, transverse, black, eyes very large and prominent, anterior orbits, face, clypeus, cheeks beneath, mandibles except tips, and the palpi white; antennæ about as long as the body, slender throughout, brown, pale at base, scape white beneath, basal joints of flagellum long; prothorax white, its posterior margin more or less black; mesothorax black, strongly trilobed, the middle lobe prominent with a more or less distinct, white spot on each side anteriorly, a large pale luteous spot on the disk, between the wings; scutellum and postscutellum white, the space on each side blackish; metathorax small, feebly sculptured, shining, black, a broad lateral stripe and a median spot, pale luteous; pleura white with a transverse black spot beneath the wings; tegulæ and a spot beneath also white; wings hyaline, beautifully iridescent, nervures and stigma black, areolet triangular, slightly oblique in one specimen; legs slender, whitish, the femora more or less tinged with yellow, the posterior coxæ at tips, their trochanters above, tips of their femora, and their tibiæ and tarsi more or less dusky; abdomen long, petiolated, subdepressed, subopaque, the basal segment long, moderately slender, scarcely dilated at tip, with the stigmatic tubercles prominent, and placed before the middle, remainder of abdomen subparallel, only slightly and very gradually dilated towards the apex; black, spot on tip of first segment, the basal and apical margins of the five following segments, and the apical segment entirely, white, beneath pale, banded with blackish. Length 4 lines.

Hab.—West Virginia. (Ridings.) Two ♂ specimens. A handsome species, with a remarkably slender form, the abdomen being double the length of the head and thorax.

M? peregrinus.—♀. Black, shining, subpubescent; head large, between quadrate and subglobose, pubescent, face silvery, mandibles white in middle, palpi white; antennæ black, brownish at base and apex; prothorax, mesothorax and scutellum ferruginous, the central lobe of mesothorax black: metathorax shining, pubescent, with well-defined elevated lines, forming on the disk an elongate area; tegulæ white; wings hyaline, iridescent, areolet rather small, 5-angular, the second recurrent nervure rounded outwardly; legs very slender, the two anterior pairs entirely whitish, except their tarsi which are dusky, the posterior pair brown-black, their coxæ and trochanters fulvous; abdomen long, slender petiolated, subcompressed at tip, first segment long and slender, subcylindric, scarcely dilated at tip, slightly arcuated, stigmatic tubercles dis-

tinct placed at about the middle, the upper surface of the segment, between the middle and apex, with a deep channel; apical margin of the third and following segments narrowly white; ovipositor about half the length of the abdomen, fulvous, sheaths black. Length 3¾ lines.

♂.—Closely resembles the ♀, but the face is not silvery; the two basal joints of the antennæ are white; the posterior legs are paler, being only dusky, with their coxæ and trochanters whitish, and the abdomen is more slender and not at all subcompressed at tip. Length 3½ lines.

Hab.—Connecticut ♂, New Jersey ♀. One ♂, one ♀, specimens. The form of the ♂ much resembles that of *muliebris*, but the head is larger and the antennæ shorter and stouter. The ♀ has somewhat the form of some small species belonging to the Ophionidæ.

M? ignotus.—♀. Black, shining, subpubescent; head large, quadrate, almost subglobose, eyes smaller than usual, ovate, prominent, face pubescent, palpi whitish; antennæ black, rather stout; thorax short, gibbous, immaculate; scutellum prominent, with a deep excavation in front; metathorax sloping, transversely striated, especially on the apical half, the elevated lines well-defined at base, subobsolete at tip, the middle with a long, broad enclosed space, flat, or slightly concave, the anterior half smooth and shining, the posterior half transversely striated; tegulæ piceous; wings hyaline, iridescent; nervures pale brown, stigma dark brown, areolet 5-angular, the outer nervure wanting; legs slender, black, the trochanters and four anterior femora tinged with reddish, their tibiæ and tarsi yellowish; abdomen petiolated, polished, rufous; first segment long linear, and very slender, black at base which is flattened above, the stigmatæ situated near the apex which is slightly dilated and subconvex; remaining segments fusiform when viewed from above, flattened, polished, the tip subcompressed and truncate in profile; ovipositer not exserted. Length 4 lines.

Hab.—West Virginia. (Ridings.) One ♀ specimen. This is a curiously formed insect and will doubtless constitute a new genus.

M? nastutus.—♂ ♀. Dull honey-yellow; head subtransverse, black, the face of the ♀ with a nose-like protuberance, almost flat in the ♂; beneath the antennæ a reddish spot; clypeus of ♂ reddish on the middle; mandibles ferruginous, palpi pale yellow; antennæ long, very slender, black, the basal joints honey-yellow, a broad white annulus about the middle; prothorax prolonged into a neck; mesothorax much flattened on the disk; metathorax rather large, with tolerably well-defined elevated lines, forming an elongate central area; wings rather short and narrow, hyaline, iridescent, nervures and stigma luteous, costa brown, areolet wanting, second recurrent nervure very long and almost straight; legs long and slender, color of the body; abdomen a little longer than head and thorax, petiolated, depressed, first segment rather broadly dilated beyond the middle; ovipositor of ♀ about half the length of the abdomen, the sheaths black, white at tips. Length 3½ lines.

Hab.—Pennsylvania. (Cresson.) One ♂, one ♀, specimens. Remarkable for the nose-like elevation on the face of the ♀.

Tryphon communis.—♂ ♀. Black, shining, subsericeous; head broad and short, face pubescent, clypeus very transverse, yellow, fringed with long hairs, mandibles, except tips, and the palpi pale yellow; antennæ as long as the head and thorax in ♀, longer in ♂, brown, testaceous at tips and at base beneath,

sometimes blackish throughout; thorax very densely punctured, almost granulose; scutellum prominent, the upper surface more or less flattened, triangular, with a broad, deep excavation at base; metathorax short, shining, with sharply defined longitudinal carinæ, crossed obliquely by transverse carinæ, forming areas, the central one subquadrate, sometimes open before and forming one cell to the base of the metathorax; tegulæ pale yellow; wings hyaline, iridescent, dusky at extreme apical margin, nervures and stigma black, the latter whitish at base, areolet triangular, more or less petiolated, sometimes much reduced, rarely wanting; legs, including all the coxæ, honey-yellow, tips of posterior femora, and most of their tibiæ, blackish, the latter sometimes yellowish, with the tips only black; claws simple; abdomen subsessile, subclavate, smooth and shining, more or less strongly sericeous especially at tip, rufo-ferruginous or honey-yellow, the first segment generally black, except tip, sometimes the apical segments are blackish or dusky sometimes the segments are black, tinged above with reddish; basal segment rough, with two longitudinal central carinæ, strongly divergent and prominent at base, but not reaching the tip, lateral margin subcarinate without distinct stigmatic tubercles. Length 3—5 lines.

Var. a.—♂. Abdomen entirely black.

Var. b.—♂ ♀. Coxæ, trochanters and sometimes posterior femora, black.

Hab.—H. B. T., Mass., Ct., N. Y., Pa. Thirty specimens. Very closely allied to *seminiger*, but that species has the scutellum carinate down the middle, rounded at tip, with the lateral margin more or less strongly recurved.

T. scutellaris.—♀. Black, shining, face, except a dot beneath antennæ, clypeus, mandibles except tips, and palpi, yellowish; antennæ nearly as long as the body, rufo-testaceous, dusky at base above; tegulæ, a sutural, subinterrupted, line before, and a spot beneath, the scutellum, and spot on postscutellum, yellow; scutellum subconvex; metathorax rugose, smooth and polished at base, the carinæ sharply defined, forming areas, the central one large and extending to the base; wings hyaline, the apical third dusky, nervures and stigma blackish-brown, areolet triangular, subpetiolated; legs honey-yellow, posterior coxæ tinged with dusky, claws simple; abdomen subsessile, oblong-ovate, shining, dark reddish-brown, the first segment black at base, with two sharply defined central longitudinal carinæ, divergent at base, and becoming obsolete a little beyond the middle, lateral margins carinate, with prominent stigmatic tubercles situated a little before the middle. Length 3¼ lines.

Hab.—Connecticut. (Coll. Mr. E. Norton.) One ♀ specimen.

T. varifrons.—♂. Black, shining; face, clypeus, mandibles except tips, and the palpi, pale yellow; sometimes the face is black, with a large yellow spot on the middle, notched above with black; antennæ about as long as the body, brown-black; tegulæ, a spot before and another beneath, yellowish; scutellum convex, sometimes tinged with testaceous, or with a yellowish spot at tip; metathorax uneven, with a broad subrugose excavation down the middle, bounded laterally by a sharp carina; wings hyaline, faintly dusky, iridescent, nervures and stigma brown, the former pale yellow at base of wing, areolet subtriangular, oblique; legs honey-yellow, coxæ brown-black, tips of posterior tibiæ and their tarsi dusky; abdomen subsessile, slightly subclavate, depressed, shining, subsericeous, ferruginous, more or less black at base and apex; first segment with two sharply defined, central, longitudinal carinæ, divergent at base, but not extending beyond the middle, lateral margins carinate. Length 2½—3 lines. *Hab.*—Massachusetts; Connecticut. Three ♂ specimens.

T. signatipes.—♀. Black; a spot on each side of face, clypeus, and mandibles, except tips, yellowish; palpi pale, blackish at base; antennæ about as long as the body, black; scutellum prominent, convex; metathorax with sharply defined carinæ; tegulæ white; wings hyaline, iridescent, nervures and stigma black, areolet oblique, petiolated; legs ferruginous, the two anterior pair paler, posterior trochanters above, extreme tips of their femora, tips of their tibiæ and their tarsi entirely, black, remainder of posterior tibiæ white, claws simple; abdomen subpetiolated, ovate, depressed, shining, second segment dark rufous, first segment with a central longitudinal channel, apex broadly dilated. Length 2½ lines.

Hab.—Hudson's Bay Territory. (Coll. Mr. E. Norton,) One ♀ specimen. Allied to *tibialis*, but quite distinct.

T. compressiventris.—♀. Black, shining; eyes prominent; spot or stain on middle of face, sometimes indistinct or wanting, clypeus, most of mandibles, and the palpi, lemon-yellow; antennæ brown, paler beneath; a large, broad, more or less hooked mark on each side of metathorax, tegulæ, a spot before and another beneath insertion of hind wings, lemon-yellow; metathorax opaque, rugulose, without distinct elevated lines; wings hyaline, iridescent, nervures brown, at base of wings whitish, stigma brown, areolet wanting; legs long and slender, honey-yellow, the four anterior coxæ and trochanters lemon-yellow, claws simple; abdomen sessile, very much compressed at tip, and polished; basal segment quadrate, opaque, black, tip more or less reddish, second to fifth segments honey-yellow, the remainder, sometimes including part of the fourth or fifth segments, black; base of second segment sometimes black; apex of abdomen truncate when viewed laterally, ovipositer short. Length 2½ lines.

♂.—Colored like the ♀, except that the face entirely and anterior orbits are yellow; the abdomen is depressed and not at all compressed at tip, the first segment is more elongate and the stigmatic tubercles, which are situated near the base, are very prominent. Length 2½ lines.

Hab.—Mass., Conn. Six ♀, two ♂, specimens. The sessile abdomen, strongly compressed at tip, in ♀, will distinguish this species from any other of this genus known to me.

T. submarginatus varies by having only the sides of the face, or a spot above clypeus, white; by the scutellum having a Y-shaped white mark, or only its sides and tips white; by the thorax beneath being sometimes entirely black, by the posterior tibiæ being black, with a broad white annulus, and by the whitish apical margin of the abdominal segments being sometimes distinct and entire, sometimes more or less obsolete, and the venter white, spotted laterally with black. The ♂ has the abdomen narrow and almost cylindrical. Seven specimens, from Great Slave Lake, British America, Maine, Massachusetts, Connecticut and Illinois.

T. Burgessi.—♂. Black, subopaque; head transverse, face convex; all beneath antennæ, anterior orbits, cheeks, scape beneath, collar, a hook-shaped line on each side of mesothorax, a large spot on the disk, furcate anteriorly, apex and sides of scutellum, postscutellum, tegulæ, spot before and another beneath, two spots behind posterior wing, tip of metathorax, pleura except large mark beneath wings, four anterior coxæ and trochanters, and apical margin of abdominal segments, white; antennæ longer than body, slender; metathorax smooth and rounded, a fulvous spot on each side behind; wings hyaline, iridescent, nervures brown-black, areolet small, triangular, petiolated; legs long and slender, especially posterior pair, posterior coxæ, and all the femora except

extreme base and apex, bright fulvous, spot on four anterior tarsi, base of posterior trochanters, narrow annulus near base and apex of their femora, tips of tibiæ, annulus near base, and their tarsi except extreme base, black, rest of legs white; abdomen elongate, subsessile, subdepressed, smooth and shining. Length 3¾ lines.

Hab.—Massachusetts. One ♂ specimen. It gives me much pleasure to dedicate this lovely species to my friend Mr. Edward Burgess, who captured it at Beverly, Mass., and kindly presented it to this Society.

T. tarsalis.—♀. Black, shining; a U-shaped mark on the face, confluent beneath with a spot on the clypeus, the latter, except a dusky dot on the anterior middle, and the mandibles, except tips, white; palpi pale, dusky at tips; antennæ nearly as long as the body, black, rufo-testaceous beneath; a cuneiform mark on each side of mesothorax, tegulæ, a spot before and another beneath, most of scutellum and the postscutellum, white; metathorax rugose, with a well-defined, rounded central area, and a broad, deep excavation at tip, surrounded by a sharply defined carina; most of pleura, above and beneath, and a round spot on each extreme side of metathorax, fulvo-ferruginous: wings hyaline, subiridescent, nervures and stigma black, areolet wanting; legs, including the coxæ, bright fulvo-ferruginous; posterior trochanters, femora, tibiæ and tarsi, black, tips of their trochanters, and a narrow annulus near base of their tibiæ, white, their tarsal joints flattened, claws simple; abdomen subsessile, somewhat shining, apical margin of the second and following segments more or less distinctly, narrowly white; first segment with two central, longitudinal carinæ, divergent at base, but not extending to the tip of the segment; apical segments subcompressed, the tip subtruncate when viewed laterally; venter banded with white. Length 5 lines.

♂.—Long, slender, black; face, anterior orbits, clypeus, mandibles, cheeks beneath and the palpi, white; antennæ long and slender, blackish above, dusky beneath, towards the base white; line on collar, cuneiform mark on each side of mesothorax, tegulæ, spot before and another beneath, pectus and pleura beneath, extending up on the sides of the latter, and spot on scutellum, white; metathorax almost smooth and subpubescent; wings hyaline, iridescent, nervures and stigma brown, the former whitish at base of wings, areolet wanting as in ♀; legs long and slender, the two anterior pairs whitish, their femora faintly tinged with fulvous; posterior coxæ fulvous, their trochanters black at base, white at tip, their femora black, their tibiæ and tarsi blackish, the former pale at base, tibial spurs white; abdomen long and slender, petiolated, clavate, first segment long, gradually dilated to the tip, with the stigmatic tubercles prominent and placed at the middle; apical middle of the third and following segments with a transverse white spot, becoming broader and larger on the apical segments, lateral margins of these segments also narrowly whitish; beneath pale, varied with dusky. Length 4½ lines.

Hab.—Connecticut. (Coll. Mr. E. Norton.) Two specimens. This is closely allied to *submarginatus;* the ♂ may not belong to this species, although the color and markings are much the same.

T. æthiops.—♀. Black, shining; face long, narrow; eyes long and narrow, slightly emarginate on each side of antennæ, which are fulvous, black at base, robust and longer than head and thorax; a short, yellowish line beneath tegulæ; scutellum elevated, the upper surface semicircular, carinate on each side at base, which is deeply excavated; metathorax subpubescent, with a well-defined, subquadrate central area, apex rather abruptly truncate; tegulæ piceous; wings

hyaline, iridescent, nervures and stigma black, areolet small, obliquely triangular, petiolated; legs short and robust, black, tips of four anterior femora and their tibiæ except tips, and the basal half of the posterior pair, whitish; claws simple; abdomen subsessile, subclavate, shining and convex at tip, very closely and finely punctured, first segment with two central, longitudinal carinæ not reaching the tip. Length 3¼—3¾ lines.

Hab.—Massachusetts; Connecticut. Two ♀ specimens.

T. nasutus.—♀. Head piceous, shining; anterior orbits, most of cheeks, spot on middle of face, clypeus, mandibles, and palpi, whitish; upper portion of clypeus produced into a long prominent, nose-like projection, slightly hooked when viewed laterally; beneath this the clypeus is slightly concave; antennæ long, slender, black, paler beneath, the scape beneath and a narrow annulus near the apex of flagellum, whitish; mesothorax ferruginous, shining, prominently trilobed in front; prothorax black, margined above and beneath with white; scutellum pale ferruginous, blackish on the sides, metathorax rugulose, smoother down the middle, black, the extreme sides whitish; pectus and pleura whitish, the latter tinged with fulvous beneath the wings; tegulæ whitish; wings hyaline, iridescent, nervures pale brownish, stigma luteous, areolet wanting; legs long and slender, entirely pale luteous, extreme tips of the posterior tibiæ dusky, claws simple; abdomen narrow, subcylindrical, subsessile, longitudinally rugulose, opaque black above, luteous beneath; apical segments above with pale indistinct apical margin; ovipositor exserted one-fourth the length of the abdomen. Length 2 lines.

Hab.—Illinois. (Dr. Saml. Lewis). One ♀ specimen. Remarkable for the nose-like projection of the clypeus.

T. rufithoracicus.—♂. Black, shining; head transverse, eyes large and prominent, face narrow, clypeus whitish; antennæ slender, blackish, pale at base; thorax entirely fulvo-ferruginous, the posterior part of the metathorax slightly dusky; tegulæ whitish; wings hyaline, faintly dusky, iridescent, nervures and stigma brown, areolet obliquely subtriangular; legs rather robust, entirely pale luteous, except posterior tibiæ and tarsi, which are dusky; abdomen subsessile, clavate, polished, piceous, first segment with prominent stigmatic tubercles. Length 1½ line. *Hab.*—Cuba. (Coll. Dr. Gundlach, No 537.) One ♂ specimen.

T. crassus.—♀. Robust, black, shining, sparsely clothed with a short pale pubescence; mouth brownish; antennæ rather longer than the head and thorax, dull black; thorax feebly punctured; scutellum elevated, deeply excavated at base, the elevated tip with a large, deep, shining fovea; metathorax rugose, short, truncate behind, the elevated lines sharply defined, and forming a large, subquadrate central area; wings hyaline, nervures and stigma black, areolet subpetiolated, oblique or almost longitudinal; legs short, robust, ferruginous, coxæ and trochanters black, tips of posterior tibiæ and tarsi, dusky; claws pectinate; abdomen oblong-subovate, depressed, sessile or nearly so, shining, with a thin appressed, pale pubescence; first segment carinate at sides and on each side of middle, the latter rounded and connected at tip; second segment deeply, transversely impressed on each side at base. Length 3½ lines.

♂. Smaller and more slender than ♀; clypeus pale brown; mandibles and palpi luteous; antennæ brownish, pale at base beneath; scutellum rounded and subcarinate at tip, not foveate as in ♀; tegulæ and base of wings pale luteous; wings iridescent, the areolet more oblique; legs including the coxæ and trochanters, uniformly bright fulvo-ferruginous, extreme base of posterior tibiæ

and of their tarsi, whitish; abdomen subsericeous, the basal segment longer than in ♀, with the carinæ less developed. Length 3 lines.

Hab.—Mass., ♂; N. J. ♀. Two specimens. This and the next species seems to belong to *Erromenus*. Holmgren.

T. dimidiatus.—♂. Robust, black, shining, head and thorax sparsely clothed with pale pubescence; clypeus entirely or in part rufous or ferruginous; antennæ longer than the head and thorax, dull black; thorax feebly punctured; scutellum somewhat elevated, the upper surface depressed, the base deeply, excavated transversely, the posterior margin fringed with long, pale pubescence; metathorax short, truncate behind, rugulose, with well-defined elevated lines, forming an elongate central area; tegulæ pale piceous, the anterior margin pale, sometimes entirely pale; wings hyaline, iridescent; nervures and stigma brown-black, both pale at base, areolet oblique, subpetiolated; legs short, robust, ferruginous, coxæ and trochanters black, extreme base of posterior tibiæ and of tarsi palish; claws pectinate; abdomen robust, subclavate, subconvex, subsessile, black, second, third and fourth segments ferruginous, sometimes the fourth is entirely black, or more or less tinged with brown; the apical segments are sometimes pale at tip; first segment carinated on the sides and on each side of the middle, the latter not reaching the tip of the segment. Length 3—3½ lines.

Hab.—N. J., Pa. Seven specimens.

T. annulipes.—♀. Black, shining, thinly clothed with a short pale pubescence; face silvery; clypeus, most of mandibles and palpi pale yellow; antennæ longer than the body, slender, brown-black, paler at tips; mesothorax impunctured; metathorax with well-defined elevated lines, forming a large subquadrate central area; tegulæ and nervures at base of wings pale yellow; wings hyaline, iridescent, nervures and stigma brown-black, the latter pale at base, areolet subpetiolated, triangular; legs rather slender, bright ferruginous, the four anterior coxæ, all the trochanters, the four anterior tibiæ except tips, and base of their tarsi, yellow; extreme tips of posterior femora, their tibiæ, except a broad whitish annulus nearer the base, and the apical half of their tarsal joints black; claws pectinate; abdomen subpetiolated, subclavate, polished, black, with the second, third and middle of the two following segments rufo-ferruginous; first segment elongate, gradually dilated to the tip, carinated on the sides and on each side of the middle, the latter reaching the tip of the segment. Length 3½ lines.

Hab.—Ft. Resolution, Great Slave Lake. (Coll. Mr. E. Norton.) A pretty species, with handsomely ornamented legs. The tip of the abdomen beneath has a bunch of small, worm-like objects, of a whitish color, arranged transversely with the heads outside. This and the six following species seem to belong to *Polyblastus*.

T. burrus.—♀. Black, shining, clothed with a short pubescence; clypeus piceous, most of mandibles and the palpi, pale yellow; antennæ longer than head and thorax, reddish-brown, paler at base beneath; mesothorax with a well-impressed longitudinal line on each side of middle, becoming obsolete before the base; a spot before and another beneath tegulæ ferruginous; scutellum triangular, subconvex above, deeply excavated at base; metathorax with sharp elevated lines, forming an elongate central area, which is slightly striated transversely; tegulæ yellowish; wings hyaline, iridescent, nervures and stigma brown, the latter pale at base, areolet petiolated, oblique, elongate; legs entirely ferruginous, except tips of posterior tibiæ, which are dusky; claws pec-

tinate; abdomen subpetiolate, depressed, oblong-ovate, polished, ferruginous; first segment longitudinally aciculate, gradually dilated to the tip, with two well-defined, longitudinal carinæ on the middle, not reaching the tips, the stigmatic tubercles prominent and situated about the middle. Length 3¾ lines.

Hab.—Connecticut. (Coll. Mr. E. Norton.) One ♀ specimen.

T. suberassus.—♂ ♀. Robust, black, shining, thinly clothed with a pale pubescence; clypeus more or less ferruginous; most of mandibles and palpi, yellow; antennæ as long as head and thorax in ♀, longer in ♂, reddish-brown, dusky at tips in ♀, black in ♂, scape beneath yellowish; thorax densely and finely punctured; mesothorax with no longitudinal impressed lines; metathorax with well-defined elevated lines, posterior truncation rugulose and bounded by a sharply defined carina; tegulæ and nervures at base of wing yellowish-white; wings hyaline, nervures and stigma black, the latter conspicuously yellowish white at base, areolet petiolated, obliquely triangular; legs including the coxæ, ferruginous, two anterior pair at base and in front yellowish, tips of posterior femora, of their tibiæ and of their tarsi more or less dusky; claws pectinate; abdomen subsessile, oblong-ovate, subdepressed, ferruginous, or yellowish-ferruginous, the base and apex generally more or less black; sometimes the lateral margin of the basal segments are blackish, and sometimes the carinæ on the first segment are black, while the remainder of the segment is about as long as its apical breadth, with two well-defined, central, longitudinal carinæ on the basal half. Length 3—3½ lines.

Hab.—Mass., Conn., Pa. Five specimens. Closely allied to *dimidiatus*, but the legs are less robust, and the sculpture different.

T. occidentalis.—♀. Robust, black, shining, thinly clothed with pale pubescence; front slightly prominent; face, clypeus, lower part of cheeks, mandibles, except tips, and palpi, pale lemon-yellow; antennæ longer than head and thorax, pale fulvous, dusky at base, scape yellowish beneath; mesothorax not impressed longitudinally; pectus beneath, spot on each side of pleura beneath, tegulæ and nervures at base of wings pale yellow; scutellum with a shallow fovea at tip and a deep, transverse excavation at base; metathorax rugulose, with sharply defined elevated lines, forming an elongate, subquadrate, central area, posterior truncation bounded by acute carinæ; wings hyaline, iridescent, nervures and stigma blackish, the latter conspicuously whitish at base, areolet petiolated, triangular, scarcely oblique; legs ferruginous, the two anterior pairs yellow at base and in front, tips of posterior femora, of their tibiæ and of their tarsi, dusky; claws pectinate; abdomen subsessile, subdepressed, shining, ferruginous, the three apical segments above black; first segment about as long as its apical breadth, its dorsal middle with a blister-like elevation, with two central longitudinal carinæ at base; second segment transverse, with a transverse impression near apex; venter yellowish, especially at tip. Length 3¾ lines.

Hab.—Illinois. (Coll. Mr. E. Norton.) One specimen.

T. frontalis.—♀. Black, shining; face, spot on each side of vertex at summit of eyes, clypeus, mandibles, palpi, and spot beneath eyes, lemon-yellow; antennæ longer than head and thorax, fulvous, blackish at base above and beneath; mesothorax slightly gibbous anteriorly; scutellum prominent, mostly lemon-yellow; tegulæ, spot in front, and base of wing nervures, pale yellowish; metathorax rugose, with tolerably well-defined elevated lines, posterior portion scarcely truncate; wings hyaline, iridescent, nervures blackish, areolet subpetiolated, oblique, nearly longitudinal; legs ferruginous, the two anterior pairs

yellow at base, posterior coxæ and trochanters stained with blackish, tips of their tibiæ and most of their tarsi dusky; claws pectinate; abdomen subsessile, subclavate, shining ferruginous, basal half of first segment and stains on the two apical segments, black; first segment longer than its apical breadth, with two well-defined carinæ on the basal half. Length 3¼ lines.

Hab.—Connecticut. (Coll. Mr. E. Norton.) One specimen.

T. philanthoides.—♀. Robust, black, shining, subpubescent; face and clypeus grossly punctured, the former prominent in the middle, with two approximate, rounded, yellow spots on the middle, and a small transverse one immediately beneath the antennæ; mandibles tinged with rufous; antennæ longer than head and thorax, reddish-brown, dusky at tips, the scape beneath yellow; prothorax larger than usual, with a yellow mark on each side above; mesothorax narrow anteriorly; scutellum prominent, rounded and convex behind, deeply, transversely excavated at base, with a large, yellow, lunate mark occupying most of the surface; postscutellum with a transverse yellow mark; metathorax very short, abruptly truncate behind, the elevated lines very sharply defined; tegulæ piceous; wings subhyaline, iridescent, stained with fuscous, especially along the costa, nervures and stigma brown, the former paler at base, areolet subpetiolated, subtriangular; legs short, black, tips of trochanters and of femora, the four anterior tibiæ and tarsi, and the basal two-thirds of the posterior tibiæ, lemon-yellow; claws pectinate; abdomen sessile, robust, subcylindrical, subconvex above, densely strongly punctured, subsericeous at tip, all the segments transverse, and prominent on the dorsal middle; apical margin, much broader on the first, of all the segments, except the last, bright lemon-yellow; first segment quadrate, with two well-defined central, longitudinal carinæ, not reaching the apex; apical segment truncate posteriorly; venter yellowish. Length 3¾ lines.

Hab.—Illinois. (Benj. D. Walsh.) One ♀ specimen. This very distinct species, Mr. Walsh refers to a new genus which he calls *Catocentris*.

T. articulatus.—♀. Black, shining; clypeus, mandibles and palpi pale yellow; antennæ longer than head and thorax, brown-black, paler at tip, scape beneath yellowish; thorax polished; mesothorax slightly impressed on each side anteriorly; metathorax with elevated lines subobsolete; tegulæ, spot before, and base of wing nervures whitish; wings hyaline, beautifully iridescent, nervures and stigma black, areolet wanting; legs slender, ferruginous, four anterior coxæ and all the trochanters whitish, posterior coxæ black, tips of posterior femora, of their tibiæ, and their tarsi, blackish, base of their tibiæ yellowish; claws pectinate; abdomen subpetiolated, depressed, ovate, or somewhat spatulate, polished, piceous, apical margin of all the segments pale luteous, with a patch of the same color on the basal middle of the third and fourth segments; first segment smooth and polished, rapidly dilated to the tip, without any distinct median carinæ; venter pale, dusky at tip. Length 2 lines.

Hab.—Hudson's Bay Territory. (Coll. Mr. E. Norton.) One specimen.

Bassus tibialis.—♀. Black; spot on mandibles, palpi, tegulæ, two spots before, apical margin of scutellum, and base of posterior tibiæ, white; rest of posterior tibiæ and tarsi black; stain on scutellum, pleura and rest of legs honey-yellow; wings hyaline, iridescent, nervures brown, base of stigma pale, areolet small, oblique, petiolated; antennæ brown, scarcely as long as body; mesothorax very finely punctured; metathorax delicately punctured, rather abrupt behind; abdomen depressed, the first three segments coarsely sculptured, the re-

mainder smooth snd shining; second segment with a short raised channel at base. Length 3 lines.

Hab.—Illinois. (Dr. S. Lewis.)

B. frontalis.—♀. Black; spot on middle of face, sometimes the margins of clypeus, spot on mandibles, palpi, tegulæ, a spot or a cuneiform mark in front, a short line beneath, and spot at tip of scutellum, white; legs honey-yellow, tips of posterior femora, their tibiæ, except base which is pale, and their tarsi black; wings hyaline, iridescent, nervures brown, areolet wanting; antennæ as long as body; body smooth, somewhat shining, without any distinct punctures; abdomen depressed. Length 2—2½ lines.

Hab.—Conn., Pa., Ills. Eight specimens.

B. concinnus.—♀. Black, shining: anterior orbits, clypeus, mandibles, palpi, tegulæ, spot before, two beneath, scutellum and postscutellum, lemon-yellow; clypeus bilobed at tip; antennæ subrobust, longer than head and thorax: body subpubescent; mesothorax shining, feebly punctured; metathorax rugulose down the middle; wings hyaline, iridescent, nervures and stigma brown, areolet wanting: legs pale honey-yellow, anterior coxæ, all the trochanters, and tips of femora, yellow; posterior tibiæ white, tips of the latter and their tarsi entirely black; abdomen entirely black, rugulose at base, smooth and shining at tip, first segment equilateral. Length 2¾ lines.

Hab.—Connecticut. (Coll. Mr. E. Norton.)

B. frigidus.—♀. Robust, black, finely pubescent; clypeus, mandibles, palpi, tegulæ, and a dot before, yellowish-white; clypeus broadly rounded at tip; antennæ slender, filiform, as long as the body; pleura, except space beneath wings, flanks of metathorax, and legs, honey-yellow; metathorax with sharply defined longitudinal carinæ, and a transverse one at the verge of truncation, which latter is abrupt: wings hyaline, iridescent, nervures and stigma brown, areolet wanting; posterior tibiæ and tarsi whitish, annulated with black, tips of posterior femora also black; abdomen short, robust, rugulose, smoother at tip. Length 2¾ lines.

Hab.—Great Slave Lake, H. B. T. (Coll. Mr. E. Norton.)

B. agilis.—♂. Small, black; all beneath antennæ, lower part of cheeks, scape beneath, large mark on each side of mesothorax, tegulæ, spot before, tip of scutellums, pleura, except large mark beneath wings, base of four anterior legs, and basal spot on each side of third abdominal segment above, yellow; clypeus depressed, subtruncate at tip; antennæ as long as body, slender, testaceous beneath; metathorax smooth and rounded; wings hyaline, iridescent, nervures and stigma brown, areolet wanting; legs pale honey-yellow, posterior tibiæ and tarsi blackish, base of the former more or less, and their spurs pale; abdomen depressed, shining, first segment longer than broad, with a prominent lateral tubercle before the middle; basal foveæ of second segment deep and palish and sometimes the apical margin of third segment is pale; venter more or less pale. Length 2 lines.

Hab.—Connecticut, (Norton), Illinois (Dr. Lewis.)

B. pleuralis.—♀. Black, subopaque, densely and finely sculptured; spot on middle of face, clypeus, mandibles, palpi, cuneiform mark on each side of mesothorax, tegulæ, spot beneath, most of scutellum, and the postscutellum, whitish: clypeus depressed, apex truncate; antennæ slender; flanks of metathorax, pleura, except space beneath wings, and the legs, honey-yellow; metathorax rounded,

without elevated lines; wings hyaline, iridescent, nervures and stigma brown areolet wanting: apical half of posterior tibiæ and their tarsi entirely, black; abdomen elongate, first segment longer than broad, excavate at base, with lateral tubercles prominent; second and following segments with polished apical margins. Length 3½ lines.

Hab.—Ohio. (P. R. Uhler.)

B. scutellaris.—♂ ♀. Black; anterior orbits and spot on face in ♂, clypeus, mandibles, palpi, spot on each side of mesothorax, larger in ♀, tegulæ, two spots beneath, spot beneath base of posterior wing, scutellums, short median line on apical margin of first segment, very narrow, sometimes indistinct apical margins of remaining segments, and a dot on each side of the second segment at tip, white; clypeus subemarginate at tip; antennæ longer than head and thorax rufo-testaceous, dusky above, scape blackish; most of pleura, flanks of metathorax and legs honey-yellow; tips of posterior femora, their tibiæ, except broad white annulus, and their tarsi, black; posterior middle of metathorax obliquely rugose; wings hyaline, iridescent, nervures and stigma blackish, areolet wanting; abdomen subpubescent, depressed, the first, and the second and third segments, except apical margin, rugulose, opaque, remainder smooth, shining; first segment rather longer than broad, with two central longitudinal carinæ, and a prominent tubercle on each side near the base. Length 2½—3 lines.

Hab.—Illinois. (B. D. Walsh.)

B. sycophanta (Walsh MS.)—♂ ♀. Black; anterior orbits in ♀, face entirely in ♂, clypeus, mandibles, palpi, spot on each side of mesothorax, tegulæ, two spots beneath, spot beneath posterior wing, scutellums more or less, and four anterior coxæ and trochanters, white or yellowish-white; posterior tibiæ, except broad white annulus, and their tarsi, black; sometimes the posterior tibiæ are tricolored—black, white and reddish, sometimes reddish and white; clypeus sub-bilobed in front; metathorax abruptly truncated behind, with the disk and posterior portion coarsely reticulated; wings hyaline, iridescent, nervures and stigma blackish, the later pale at base, areolet wanting; legs and abdomen reddish, often the basal segment more or less, and the three or four apical segments, black; the first four segments with a deep, transverse line behind the middle; first segment equilateral, raised on the disk and bicarinate, basal half of second, third and fourth segments rugulose, remainder smooth and shining; some specimens have the abdomen black, with a broad reddish, median band Length 2—3 lines.

Hab.—Conn., N. Y., Penn., Del., Ills. Thirty (♂ ♀) specimens.

Cteniscus annulipes.—♂. Black, shining; anterior orbits, face, clypeus, lower part of cheeks, and the mandibles except base and apex, whitish; antennæ black, pale beneath; lateral anterior margin of prothorax, two spots before anterior coxæ, a spot on pleura anteriorly, tegulæ, dot beneath, tips of scutellum and postscutellum, and two narrow lines on each side to the base of the wing, yellowish-white; pleura beneath fulvous; tip of scutellum truncate and excavated above; metathorax very uneven, abrupt behind, transversely striated, the eleveted lines sharply defined, and that on each side of the central area very prominent; wings hyaline, iridescent, nervures and stigma black, the latter with a pale spot at base, areolet small, oblique, subpetiolated; legs rather slender, pale fulvous, anterior coxæ whitish in front; posterior tibiæ and tarsi annulated with black and white; claws pectinated; abdomen sessile, subcla-

vate, opaque at base, shining beyond the second segment; apical margin of the second and following segments yellowish-white; first and second segments longitudinally rugose, the former with two central longitudinal carinæ. Length 4½ lines.

Hab.—Massachusetts. Two ♂ specimens.

C. vitticollis.—♂. Black, shining; all beneath antennæ, anterior orbits, lower half of cheeks, two longitudinal lines on mesothorax, tegulæ, line before, spot beneath, scutellum, pleura except large space beneath wings and spot behind anterior coxæ, four anterior coxæ and trochanters, tips of posterior trochanters, a central apical spot on each dorsal segment, very small on first, and increasing in size to the apical segment and the venter, white; antennæ longer than head and thorax, fulvous, brown at base; metathorax truncate behind, rugulose, elevated lines tolerably well-defined; wings hyaline, iridescent, nervures black, base of stigma pale, areolet small, oblique, petiolated; legs honey-yellow, posterior tibiæ and tarsi black, claws pectinated; abdomen sessile, depressed, first segment rugulose, remainder smooth and shining. Length 4 lines.

Hab.—Massachusetts. One ♂ specimen.

C. clypeatus.—♀. Black, shining; clypeus, mandibles and palpi pale yellow; antennæ tawny beneath; tegulæ and a dot before, pale yellow; metathorax rounded, shining, with well-defined elevated lines; wings hyaline, iridescent, nervures brown, stigma dark brown, pale at base, areolet small, oblique, subpetiolated; legs slender, yellowish-ferruginous, the anterior coxæ in front, and all the trochanters, lemon-yellow; posterior coxæ, tips of their femora, of their tibiæ and most of their tarsi, black or dusky; claws pectinated; abdomen subsessile, shining; apical half of second and the third, fourth and fifth segments, except the sides, rufo-ferruginous, the two following segments with their apical margins narrowly yellowish. Length 3 lines.

Hab.—Great Slave Lake, British America. (Coll. Mr. E. Norton.) One ♀ specimen.

C. consors.—♀. Black, shining; the face, interrupted in the middle with black, clypeus, mandibles, spot beneath eyes, and the palpi, lemon-yellow: antennæ long, slender, brown above and at base beneath, the rest tawny; tegulæ, spot before, scutellum and postscutellum, lemon-yellow; mesothorax smooth and polished; metathorax rounded, shining, with distinct elevated lines; wings hyaline, iridescent, nervures and stigma brown-black, the latter pale at base, areolet oblique, subpetiolated; legs slender, fulvo-ferruginous; the four anterior coxæ, and all the trochanters, lemon-yellow; tips of posterior femora and of their tibiæ dusky; claws pectinated; abdomen subsessile, shining, ferruginous; first segment, except extreme tip, and lateral margins of all the remaining segments black. Length 3 lines.

Hab.—Connecticut. (Coll. Mr. Norton.) One ♀ specimen.

Exyston clavatus.—Varies very much both in size and color; generally the head above and the thorax is black, but some specimens are more or less varied with ferruginous and some almost entirely of this latter color; sometimes the posterior coxæ, and apex of abdomen are black, the latter with the segments always, more or less distinctly, margined with yellowish; the trochanters are generally bright lemon-yellow and the scutellum always more or less yellow. Length 2¾—4½ lines. Fifteen ♂ ♀ specimens from Me., Ct., N. Y., Del., Ills.

Exochus propinquus.—♂ ♀. This is very closely allied to *lævis*, being of the same color, but is more elongate and less robust, and the abdomen is longer and narrower. In *lævis* there is always a reddish stain on the face immediately beneath the insertion of the antennæ; but in the present species the face is entirely black, except occasionally a faint yellowish transverse mark on the upper margin. In the ♂ there is a conspicuous transverse yellow, line beneath the antennæ. Length 3¼ lines.

Hab.—Me., Mass., Conn. Four ♀, two ♂, specimens. *E. lævis* varies in length from 1½ to 3½ lines.

E. atrocoxalis.—♀. Shining black; an angular, whitish line between the antennæ and sometimes a mark of the same color on each side of the face; antennæ entirely black; tegulæ and a spot before, white; one specimen has the scutellum margined on the sides and at tip with white and the postscutellum has a white transverse line; while in the other specimen there is merely a white dot on each side of the scutellum near the base; metathorax with a large central area; wings hyaline, iridescent, nervures black, areolet wanting; legs with the coxæ and femora not so much dilated as in *lævis*, fulvous, the coxæ and trochanters black; abdomen much longer than in *lævis*, and distinctly punctured; the first segment with two longitudinal carinæ near the base. Length 4—4¼ lines.

Hab.—Dakota Territory. (Mr. H. Ulke.) Two ♀ specimens.

E. albifrons, (Walsh, MS.)—♀. Black, shining, finely pubescent, subsericeous; face, a dot at summit of eyes, and mouth yellowish-white; a dusky spot on middle of the face; antennæ long, slender, pale testaceous beneath; tegulæ, sutural line before the wing, the apex and sides of scutellum, and the postscutellum, whitish; extreme sides of metathorax fulvous; wings hyaline, iridescent, nervures black, areolet wanting; legs bright fulvous, the anterior pair paler in front; tips of posterior tibiæ black, their tarsi white, the joints tipped with black; abdomen as in *atrocoxalis*. Length 3¾ lines.

Hab.—Illinois. (B. D. Walsh.) One ♀ specimen.

E. carinatus.—This seems to belong more properly to *Exochus*, as the face is more or less protuberant. Mr. Walsh refers it (in MS.) to a new genus which he calls *Polyrhabdus*. It varies considerably in size, and the face is sometimes entirely yellowish. Length 2—3½ lines. Fourteen specimens from Conn., Mass., and Illinois.

E. semirufus.—♂ ♀. Slender, black, polished, subpubescent; head entirely black; palpi pale; antennæ brown-black; tegulæ and a spot before, whitish; metathorax as in *lævis*; wings hyaline, iridescent, nervures pale brown, areolet wanting; legs less robust than usual, entirely ferruginous; abdomen long, narrow, polished, ferruginous, the first segment more or less black, and sometimes the apical segments are more or less dusky. Length 4 lines.

Hab.—Mass., Ct., N. Y. Five ♀, five ♂ specimens.

On the Synonomy, etc. of certain species of American LEPIDOPTERA.

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SPHINX, *Linn.*

Sphinx harrisii (*Ellema harrisii*, Clemens).

I have seen, in the collection of the British Museum, the specimens determined as *Anceryx coniferarum* by Mr. Walker in the British Museum Lists (Lep, Pt. viii, p. 224). These are two in number; the first (*a*) is a specimen of the European Sphinx pinastri, and seems to have furnished the basis of Mr. Walker's diagnosis. The second (*b*) is the true Sphinx coniferarum of Smith as figured by Abbot in the Lepidop. Ins. Ga." This individual agreed with other specimens from Georgia in the collection of Dr. Boisduval in Paris. Without material of our Northern S. harrisii at hand for comparison, these specimens seemed to me to constitute a distinct species, differing apparently in the greater size and the fewer markings of the primaries; thus approaching the European Sphinx pinastri closer than does Sphinx harrisii. Both forms (assuming them to be distinct between themselves) are to be at once distinguished from Sphinx pinastri, by their immaculate abdomen. However, until specimens of Sphinx coniferarum. *Smith*, are received from the Southern States and compared with our Northern Sphinx harrisii, the question of the specific validity of the latter cannot be settled.

I have also seen an original drawing by Abbot of Sphinx coniferarum, *Smith*, through the kindness of Dr. Gray. As compared with the British Museum specimen of the species (alluded to above) it entirely agreed, but when compared with the engraved Plate in Smith's work it differed slightly in that the markings of the primaries were less prominent; these had been somewhat exaggerated by the engraver.

With regard to Sphinx bombycoides (*Lapara bombycoides*, Walker), described very briefly in the British Museum Lists from a Canadian specimen in Mr. Saunder's Collection, I am of opinion that it will prove to be identical with Sphinx harrisii, although the short diagnosis affords no certainty on the subject.

Both S. coniferarum and S. harrisii belongs to Hyloicus *Hübner*, of which S. (Hyloicus) pinastri of Europe is typical, and which is now

regarded as a subgeneric division of Sphinx, *Linn.* (*Lethia*, Hübn.) and of which latter genus Sphinx ligustri of Europe is the highest form. The European *Sphinx convolvuli* on the other hand is regarded as belonging to Macrosila and as the lowest form of a genus well represented in America by the more typical species: M. rustica, M. carolina, etc.

A comparison of our Sphingidae with those of Europe is necessary in order to understand the limit and value of the different genera*.

HORAMA, *Hübner.*

Horama texana (*Euchromia plumipes* ‡ Clemens; *Callicarus texanus*, Grote.).

Since describing this species,† I have seen the specimens described by Dr. Clemens ‡ and regarded by him as belonging to the species illustrated by Drury under the name of *Sphinx plumipes* §. I find that they belong to Horama, and from their antennal structure are congeneric with Horama pretus, *Hübn*, and Horama diffissa, *Grote*. I am also under the impression that I saw specimens of H. texana in the British Museum, erroneously regarded as a variety of H. pretus.

SCEPSIS, *Walker.*

Scepsis fulvicollis, *Walker.*

I mention this species in order to record for it a more extended geographical range than has been hitherto allowed by Authors. I have it from Texas, Florida, Georgia, Pennsylvania and New York. The genus is represented in California by S. packardii, *Grote*. On August the 20th a specimen of S. fulvicollis came to light at Hastings, N. Y. On the 11th of September I took a number of specimens of S. fulvicollis on the flowers of the golden rod (Solidago) near Buffalo, N. Y. It is on this same plant, though not on this alone, that, later on in the year, our common grasshopper (Locusta) ascends to die: and expires clinging to the upper branchlets, to which after death its body still remains attached. A curious habit and a suggestive. As if escaping from Earth.

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* See on this point *Lepidopterological Contributions* by myself and Mr. Robinson, Ann. N. Y. Lyc. Vol. viii. 1866; on the third page of this paper, line 23, an error has occured where "Sphinx convolvuli" is printed instead of Sphinx ligustri. This is evident from the contexct, line 28 id. pag.

† *Notes on the Zygaenidae of Cuba*, Part 1, p. 12, 1866.

‡ Proc. A. N. S. Phil. p. 546, 1860.

§ Ill. Exot. Ent. Vol. 11, fig. 3.

ARCTIA, *Schrank.*

Arctia nais, *Hübner* (♀ *Bombyx nais* Drury; ♂ *Arctia phalerata*, Harris.).

Those Authors who have distinguished the *Arctia phalerata* of Harris from Drury's *Bombyx nais*, have overlooked the fact that the former is the true male of the latter, and have regarded the sexual as a specific distinction. Hübner committed then no error in his representation of the male A. nais (Zutraege Dritt. Hund. fig. 599—600) although, as stated by Dr. Packard with an opposite conclusion, he "figures what is unmistakeably *A. phalerata* Harris" (Syn. U. S. Bombyc. Proc. Ent. Soc. Phil. p. 177, 1864.).

Drury's figure (Vol. 1, pl. vii, fig. 3) represents a female with yellow secondaries which may be considered the typical form, though apparently more rarely occurring than the female with crimson hind wings. This latter may be known as Arctia nais, var. decorata *Saunders.* It is the *Arctia decorata* of Mr. Saunders and is also described by Mr. Walker under the names of *Apantesis radians* and *Aloa colorata.* I have seen the specimen in the British Museum under the former name. It is immature, the secondaries dwarfed, and this accidental peculiarity is erroneously regarded by Mr. Walker as normally structural and furnishes the principal character on which he found his genus *Apantesis.* Under these circumstances the name proposed by Mr. Saunders may be retained for the variety, although later in date of publication, having on the other hand precedence by priority over Mr. Walker's *Aloa colorata.*

The male A. nais has the secondaries usually yellow but sometimes tinged with rose color. In either sex the markings of the upper surface of the primaries are variable. This is especially noticeable in the female, in which sex the yellow bands and stripes are more or less obsolete, sometimes leaving the wings entirely velvety black with a single abbreviated stripe along the median nervure.

What seems to be a variety of the male occurs in which the markings of the primaries are very broad and distinct.

Arctia complicata, *Walker.*

This species differs from A. dahurica by its paler yellow color. On the upper surface of the primaries, the transverse band is obsolete. Unlike its ally, the K-shaped stripes are not obsolete on cell 3. The secondaries are more entirely black; these show pale yellow patches, smaller, differently shaped and more irregular than in A. dahurica. There are black scales on the vertex and two superlateral black spots on the yellow "collar". The thoracic disc is black, edged with yellow lateral scales.

I have seen Mr. Walker's type of A. complicata, from Vancouver's Island, in the British Museum collection and it appears to me to represent a valid species previously undescribed.

PHOBETRON, *Hübner.*

Phobetron pithecium, *Packard* (*Thyridopteryx ephemeraeformis* ‡ Packard).

The male specimen spoken of by Dr. Packard in the "Synopsis of the Bombycidae of the United States," and there determined as *Thyridopteryx sphemeraeformis*, proves to be, as I am subsequently informed by the Author, a male of the present species in which the sexes are quite dissimilar. This circumstance explains the fact that the true Thyridopteryx ephemeraeformis of Stephens is registered in the "Synopsis" under the name subsequently proposed for it by Dr. Harris, viz: *Oiketicus* (oeceticus) *coniferarum.*

Following out Dr. Packard's remarks (l. c.), I am led to regard Phobetron nigricans (*Thyridop. nigricans*, Pack. l. c.) as a distinct form, although I have as yet seen no specimens of this second species of the genus.

ADONETA, *Clemens.*

Adoneta spinuloides (*Limnacodes spin.* H-S.; *Adoneta voluta*, Clemens; *Cyclopteryx* ‖ *spin.* Pack.).

An examination of the types of Dr. Clemen's *Adoneta voluta*, now in the possession of the American Entomological Society, enables me to refer the species as identical with one previously illustrated by Dr. Herrich-Schaeffer. The generic term employed by Dr. Packard in the "Synopsis" had also been previously used by Guenèe.

The typical specimen of Adoneta leucosigma (*Cyclopteryx* ‖ *leucos.* Pack,) is also contained in the collection of the Entomological Society. It is a male and as yet the sole representative of the species that I have seen.

TELEA, *Hübner.*

Telea montezuma (*Saturnia montezuma* Sallè).

This species from Mexico, which I have seen in the Museum at the Jardin des Plantes in Paris, resembles our United States Telea polyphemus quite closely, but is at once distinguished and characterized by the uneven external margin of the wings.

ACRONYCTA, *Ochsen.*

Acronycta vinnula (*Microcoelia vinnula* Grote).

I here correct my original generic reference of this species which is easily recognized by the olivaceous shading of the upper surface of the primaries and its small compact form. It is as yet rare in collections.

DERRIMA, *Walker.*

Derrima henrietta (*Philomma henrietta* Grote).

I have seen in the British Museum Collection the type of Derrima stellata, *Walker*. It is a female and closely resembles *P. henrietta* with which it is congeneric. Mr. Walker places the genus as belonging to the group of genera regarded as a Family under the name of *Acontidae*. I am still of the opinion that the genus is allied to Anthoecia and Heliothis. The squamation is rough and lustreless, not smooth and lustrous as in Tarache (*Acontia*) and its allies. From D. henrietta, of which I have a very numerous series of both sexes, Mr. Walker's D. stellata differs as follows: the fringes on both wings are long and pink; the secondaries above and both wings beneath are suffused with pink; the ocellate spots on the primaries above are a little larger, pure white narrowly margined with black scales, not with suffused ferruginous borders (in which the lower spot is generally absorbed) as in D. henrietta; the pink terminal space of the same wings is shaded with yellow and the ground color of both wings beneath is yellow shaded with pink on the borders; finally the narrow line, which defines the pink terminal space inwardly, appears to be straight, not scalloped and defined by white dots as in D. henrietta.

I have placed a specimen of D. henrietta in the British Museum Collection.

CALLEDAPTERYX (n. g. Phalaenidae).

Head small; eyes globose and large; antennae short, simple, rather stout and closely scaled. Labial palpi slight, divaricate, passing beyond the front. Legs stout, smoothly scaled; hind tibiae with two pair of stout spurs, lower pair half the length of the tarsi.

Wings with scalloped margin. Primaries with the costa rising and slightly arched to the rounded apices; below these the external margin is deeply and evenly semi-circularly cut out to extremity of first median nervule, below which point the margin retires straightly and evenly inwardly obliquely to the exerted internal angle. Internal margin very sinuate, retiring inwardly behind the angle. Neuration: Costal nervure simple; subcostal nervure throwing off from its upper side the first, second and third s. c. nervules on the margin, from a point at about the middle of the wing: these nervules approximate and equidistant at base, 1 and 2 simple, 3 shortly furcate just before the margin; fourth and fifth s. c. nervules thrown off together at the extremity of the nervure; fourth, furcate before the apex of the wing, the sixth is simple, joining the external margin at the subapical excavation; a

discal fold; the cell is open; median nervure three branched, first and second m. nervules thrown off together at the extremity of the nervure; third, more remote; a submedian fold; internal nervure simple. Secondaries with the costal edge roundedly exerted at base, the costal nervuse here bent upwardly and the tegument extended beyond it. The real apices of the wing are rounded and comparatively retired, but the external margin is pointedly projected beyond and below them at the extremity of the subcostal nervure or its upper branch or first nervule. Below this the external margin is slightly excavate to extremity of the lower branch or second s. c. nervule. Below this again the margin is more widely excavate, rising to the extremity of the first median nervule which is exerted to a point on a line with the extremity of the first s. c. nervule. Beyond this the margin is even to internal angle.

This genus is founded to receive a pretty little Phalaenid with beautifully cut wings, apparently allied to Drepanodes *Guenèe* and Timandra *Walker*. When at rest the primaries are spread out horizontally, but the secondaries are depended, the internal margin folded over the abdomen; thus a wide space is left between the anterior and posterior wings.

Calledapteryx dryopterata, n. s.

Entirely pale ochreous, sometimes entirely of a pale wood brown. Two transverse, dark, somewhat olivaceous lines cross the primaries at the middle; these are subparallel, outwardly angulated, narrow, and appear somewhat as the margins of an obsolete mesial band, being shaded and the space between them partly filled in with dark irrorations on the internal margin where the inner line is marked with two blackish or darker disconnected spots. The outer line is obsolete below the discal fold. A faint semicircular dark line before the subapical excavation on external margin. Fringes short, blackish. Secondaries resembling primaries. The two median lines are continued, more distinct and medially outwardly angulated and appear also to be obsoletely geminate with a paler included shade, the short fringes blackish. Beneath paler than above, immaculate, very sparsely and coarsely mixed with dark scales, or irrorate. Body and appendages concolorous with the wings, immaculate.

Expanse,—20 m.m. *Length of body*, 5 m.m.

Habitat.—Atlantic District (N. Y., Penna.). Imago flies in July and August.

TORTRIX, *Linn.*

Tortrix rileyana, n. s.

♀. Deep ochreous. Primaries evenly washed with purplish, leaving the fringes and costal edge dark ochreous. The markings take the shape of dark velvety brown rounded maculations, generally of small size and faintly shaded with ochreous on the edges. Three of these subterminally at the base of the wing, subequal, situated interspaceally between the nervures. At a little within the middle of the costa are two fused maculations, the most prominent. Before and beyond these, some faint costal marks. At the extremity of the discal cell, above median nervure, is the first of a series of maculations, normally four in number but not constant, usually uneven in size. A subterminal series of spots is inaugurated on costa by a large compound shaded maculation. Below this, over the median nervules, sweeps an outwardly rounded series of small approximate dots. Two dots on costa, within and at the apex, and a faint terminal series of minute streaks is shortly discontinued. Secondaries of a lustrous bright deep ochreous; pale along costal margin and darker shaded along internal margin. Beneath, as are the secondaries above; both wings immaculate, primaries the darker. Body and appendages concolorous, bright deep ochreous. Antennae simple.

Expanse, 28 m.m. *Length of body*, 10 m.m.

"No 234, Larva on Hickory". Two specimens.

♂. Much smaller than the above, of a paler color. The upper surface of primaries not washed with purplish but merely of a darker ochreous than the secondaries. The maculations entirely similar but ferruginous, paler than in the ♀ and the slighter costal marks are obsolete. Abdomen with a moderate anal tuft. Legs at base and under thoracic surface almost whitish.

Expanse, 20 m.m. *Length of body*, 6 m.m.

"No. 234. Larva on Symphoricarpus." Two specimens.

Four specimens received from Mr. C. V. Riley, to whom I take pleasure in dedicating the species. Whether the differences noted above are sexual (which I incline to believe) or variations concomitant with the different food plants, I am unable to say and have not sufficient material to decide. The two male specimens agree with each other as do the two of the opposite sex.

Belongs to Tortrix *Linn.*, as more recently defined by Lederer and Heineman.

The costa of primaries is rounded from the base outwardly towards the apex, before which it is depressed, the apex rising, acuminate. The external margin recedes immediately below the apices, and is thence outwardly rounded, hardly oblique. The full secondaries are hardly produced at the apical angles. The neuration is typical and normal. The labial palpi are advanced beyond the front; third joint small, conical, scaled; middle tibiae with a single, the thicker hind tibiae with two pair of spurs.

Description of a new HESPERIAN.

BY WM. H. EDWARDS.

HESPERIA WACO, n. sp.

Male. Expands $\frac{8}{10}$ inch.

Upper side: both wings honey-yellow, immaculate, edged by a fine black line; secondaries black at base; a black ray from base along the costa and another a little within the abdominal margin; fringes color of wings.

Under side a little paler yellow; base of primaries black and same color for a little distance along the inner margin.

Body yellow above, white beneath; thorax white; palpi yellow-white.

From a single specimen, in the collection of Prof. Townend Glover, who received it from Dr. G. Lincecum, Texas.

Catalogue of COLEOPTERA from South Western Virginia.

BY GEO. H. HORN, M. D.

The accompanying list of species, prepared at the request of Prof. E. D. Cope, comprises all those collected by him and Prof. Leidy during an extended Geological exploration of the mountainous regions of several of the South-western Counties of Virginia. The object of the trip being one of some importance to Geological Science, the time devoted to Entomology was of necessity quite limited and the results consequently not large, sufficient it is hoped, to remind others while similarly exploring of what may be attained by a small occupation of leisure and the great gain to our knowledge of distribution by the aggregation of small collections from different regions of the country.

The opportunity now afforded will be made use of and several other interesting species described or noted, from regions not remote, though in neighboring States.

Cicindela unipunctata.
rugifrons.
punctulata.
rufiventris.
Omophron americanum.
Nebria pallipes.
Carabus limbatus.
vinctus.
Cychrus Andrewsii.
Ridingsii.
stenostomus.
canadensis.
Pasimachus elongatus.
Galerita Lecontei.
Casnonia pensylvanica.
Lebia bivittata.
atriventris.
axillaris.
Calathus gregarius.
Platynus angustus.
melanarius.
sinuatus.
punctiformis.
Evarthrus obsoletus.
Pterostichus honestus.
stygicus.
lachrymosus.
sustentus.

Amara avida.
musculis.
Dicælus purpuratus.
teter.
Cratacanthus dubius.
Agonoderus lineola.
pallipes.
Anisodactylus rusticus.
nigrita.
baltimorensis.
Eurytrichus terminatus.
Harpalus faunus.
compar.
Bradycellus dichrous.
lugubris.
Anophthalmus pusio, *n. sp.*
Bembidium inæquale.
Hydaticus basillaris.
Gyrinus *sp. indet.*
Hydrophilus glaber.
Necrophorus velutinus.
Silpha peltata.
marginalis.
Coproporus ventriculus.
Conosoma crassum.
Creophilus villosus.
Staphylinus badipes.
maculosus.

Staphylinus cinnamopterus.
Philonthus cyanipennis.
Cryptobium bicolor.
badium.
Lithocharis corticina.
Hister merdarius.
Scaphidium piceum.
Phenolia grossa.
Cychramus adustus.
Clinidium conjungens.
Catogenus rufus.
Brontes dubius.
Antherophagus ochraceus.
Mycetophagus punctatus.
flexuosus.
Orphilus ater.
Nosodendron unicolor.
Psephenus Lecontei.
Ceruchus piceus.
Onthophagus latebrosus.
Aphodius fimetarius.
Bolboceras farctus.
Geotrupes splendidus.
var miarophagus.
Trox punctatus.
Serica sericea.
Lachnosterna marginalis.
Anonmala varians.
marginalis.
Euryomia sepulchralis.
fulgida.
Osmoderma scabra.
Trichius bibens.
affinis.
piger.
Dicerca pugionata.
Chalcophora virginica.
Agrilus politus.
Fornax cylindricollis.
Adelocera avita.
marmorata.
Megapenthes limbalis.
Monocrepidius vespertinus.
lividus.
Ludius abruptus.
Athous cucullatus.
Corymbites divaricatus.
crassus.
Melanactes piceus.
Ptilodactyla elaterina.
Dictyoptera perfaceta.
Calopteron typicum.
Eros modestus.
trilineatus.
Lucidota atra.
Photinus pyralis.
angulatus.
marginellus.
decipiens.
Telephorus luteicollis.
Chauliognathus pensylvanicus.
Elasmocerus terminatus.
Thaneroclerus sanguineus.
Cupes capitata.
Centronopus calcaratus.
Xylopinus saperdoides.
Diaperis hydni.
Uloma impressa.
imberbis.
Boletotherus cornutus.
Platydema americanum.
Allecula nigrans.
Arthromacra aenea.
Anthicus Haldemani.
Mordella 8-punctata.
melæna.
Lytta convolvuli.
Rhynchites æreus.
Attelabus bimaculatus.
Cossonus *sp. indet.*
Ithycerus curculionoides.
Phytobius *sp. indet.*
Anthomanus *sp. indet.*
Sitones lepidus.
Centrinus *sp. indet.*
Cryptorhynchus *sp. indet.*
Leptostylus macula.
Liopus variegatus.
Purpuricenus humeralis.
Oberea tripunctata.
myops.
Eripus suturalis.
Smodicum cucujiforme.
Elaphidion villosum.
Distenia undata.
Typocerus sinuatus.
Leptura rubrica.
scalaris.
attenuata.
lineola.

Leptura cordifera.
canadensis.
bicolor.
luteicornis.
Saperda lateralis.
Coelomera coryli.
Chrysochus auratus.
Chrysomela pulchra.
Metachroma *sp. undesc.*
Paria *sp.*
Chalcophana convexa.
Colaspis flavida.
Pachybrachys carbonaria.
Cryptocephalus guttulatus.
notatus.
Phyllobrotica discoidea.
Disonycha pensylvanica.
Oedyonychus thoracica.
Galeruca *sp. indet.*
Tinodactyla *sp. indet.*
Dacne heros.
fasciata.
Triplax unicolor.
Scymnus *sp. indet.*

NECROPHILUS SUBTERRANEUS.—I mention this insect in the present paper merely to record its occurrence in our own country. In Europe, specimens are found, not very commonly however, under stones, in the soil or in the shell of dead Helices. Two specimens of this species from our own country have come under my observation, one, in the collection of Mr. Ulke of Washington, was found in the mountainous region of Eastern Tennessee, by Mr. Fuchs, a gentleman to whom science is indebted for many interesting discoveries, another of which will be described in the present paper. For the other specimen I am indebted to Johnson Petit, Esq., of Grimsby, C. W. I have no account of its habits.

ANOPHTHALMUS Sturm,

A. pusio, pale brownish-testaceus; head oval, slightly longer than broad, longitudinal impression faint, surface very finely alutaceous; thorax trapezoidal, slightly broader than long, feebly emarginate anteriorly, sides moderately rounded anteriorly, slightly sinuate posteriorly, base feebly bisinuate, and emarginate at middle, surface smooth, shining, with median longitudinal line and a broad impression within each hind angle, angles rectangular; elytra oval, sides moderately rounded, humeri distinct, obtuse, surface feebly striate and sparsely covered with suberect very short pubescence. Length .15 inch.

This species may be readily distinguished from any of our others by the form of thorax as well as by the pubescence covering the elytra and under surface of the body. The thorax is slightly broader than long, trapezoidal, narrower behind. The surface is less convex than any of the described species of our country, not only that of the thorax, but also of the elytra. The humeral angles of the elytra are well defined, and the bases of the elytra nearly transverse and not obliquely produced as in *Tellkampfii*. The head is relatively broader than in the

glabrous species, and the thorax scarcely broader than the head. In this species the mentum tooth becomes very broad and obtuse, approaching in this respect *Aphænops*, in which the mentum has no tooth. The upper surface of the body is provided with setæ, arising from punctures, those on the head being short; the thorax has one on each side about its middle, the elytra have three each, arranged in a row, one near the base, another median, and a third near the apex.

Science is indebted to E. D. Cope for this interesting addition to our fauna (being our smallest species) collected in Erhart's cave, Montgomery County, Virginia.

A. pubescens. pale testaceous, shining, head oval, attenuate anteriorly, finely alutaceous, and with two longitudinal, faintly impressed lines convex internally. Thorax moderately convex, glabrous, one-third broader than long, trapezoidal, narrower behind, sides broadly rounded, sinuate posteriorly, angles acute and prominent, a longitudinal median line and two basal impressions, anteriorly feebly emarginate, base slightly produced and emarginate at middle. Elytra oval, moderately convex, with striæ evanescent at the sides and apex, base broadly rounded, humeri distinct, obtuse, surface clothed with rather dense sub-erect pubescence, third stria with three setigerous punctures. Beneath finely and more sparsely pubescent. Length .23 inch.

Easily known by its pubescence, form of thorax, and very acute hind angles. The form of thorax is very nearly that of *Trechus rubens*. The pubescence covering the surface of the body is exceedingly fine in this and the preceding species, requiring a good lens for its detection.

Collected in Cave City cave, by Mr. Chas. Sonne. A single specimen in the cabinet of Dr. LeConte.

Some of the European Anophthalmi are said to be provided with eyes. Among the specimens I have been able to examine, none of ours have that reticulation and peculiar clearness of the side of the head thought to be an evidence of the presence of an organ of vision. The species in which the eyes (?) occur are not found in caves but under stones on the surface of the ground, and generally in dense damp forests.

In our collections, four species of *Anophthalmus* are found. For the convenience of students I append a table.

Glabrous species. Humeral angles of thorax obliquely rounded.
- Thorax much longer than broad, angles rectangular..... ...**Telkampfii.**
- Thorax slightly longer than broad, angles acute.....**Menetriesii.**

Pubescent species. Humeral angles obtuse.
- Thorax convex, angles acute, prominent.....**pubescens.**
- Thorax flattened, angles rectangular.....**pusio.**

A. MENETRIESII Motsch.= *angulatus* Lec.—The glabrous an pubescent species differ also from each other in the greater prolongation of the base of the elytra in the former, as well as by their greater elongation of form.

ANILLUS Duval.

A. fortis, testaceous, shining, sparsely covered with short pubescence, head very finely alutaceous and with a shallow longitudinal impression each side. Thorax trapezoidal, moderately convex, shining, and with a single setigerous puncture on each side, narrower behind, sides rounded, anteriorly feebly emarginate, base squarely truncate, angles rectangular; a slight median and well-defined transverse line, convex anteriorly, in front of basal margin. Elytra oval, moderately convex, surface very finely alutaceous, and with rows of rather coarse punctures, evanescent toward the apex, and on the sides; sides broadly rounded, humeri distinct, obtuse. Legs testaceous, finely pubescent. Length .08 inch.

In addition to the very fine pubescence sparsely scattered over nearly the whole body, the elytra have also long setæ arising from larger punctures, apparently placed in a manner similar to that seen in the species of *Aphænops* of Europe. As compared with *debilis*, this species is of larger size, more robust form, the thorax broader and less narrowed behind and more convex. The pubescence and sculpture of elytra are also important points of difference.

For my specimen of this species, I am indebted to Mr. Ulke. The specimens were collected by Mr. Fuchs in the mountainous regions of Eastern Tennessee.

ATINUS, n. gen.

I suggest this name for a genus of Pselaphidæ founded on the species described by Dr. Brendel in the *Proc. Ent. Soc. Phil.*, under the name of *Ctenistes monilicornis*. It differs from our other Pselaphidæ by the excessively short palpi. The labial palpi appear to be two-jointed, cylindrical, the last joint nearly twice longer than the first. The maxillary palpi are four-jointed, the first two short and cylindrical, the second being much narrower than the first at the junction, the last two are globular, the terminal joint being very much the larger and with a few setæ on its surface. Antennæ are about half the length of the insect, stout. Joint 1 cylindrical, equalling 2 and 3; 2—3 cylindrical, 4—8 globular, gradually shortening; 9—11 slightly broader and more cylindrical than the preceding, the last joint equalling the two preceeding in length.

Whatever may be the affinities of this insect, it certainly is not a *Ctenistes*, while it appears to replace in our own fauna the *Chennium* or *Centrotoma* of the old world. There are no semblances of appendages such as are seen on the outer edges of the palpi of genera near *Ctenistes* and *Centrotoma*, nor is there any stout seta such as is found on the last joint of the palpus of *Tyrus*. In the present genus the palpi are so short as scarcely to exceed the mentum in length, and are consequently very difficult to define without dissection, a matter of no great ease in a Pselaphide. It is to be desired that sufficient specimens may be found to warrant the sacrifice of some of them.

Atinus monilicornis.

Ctenistes monilicornis, Brendel, Proc. Ent. Soc. Phil. 1866, p. 190.

Collected by Mr. Fuchs in the mountainous region of East Tennessee.

FUSTIGER FUCHSII, Brendel (loc. cit.)—Dr. Brendel seems willing to accord two *ocelli* to this insect, each containing *three* facets. Several specimens in my cabinet, and that of Dr. LeConte have failed to show any such structure even under the power of a quarter-inch objective. Dr. Brendel has without doubt been deceived by reflected light from prominent points of sculpture.

New species of COLEOPTERA from the Pacific District of the United States.

BY GEO. H. HORN, M. D.

OMUS Esch.

O. submetallicus, aeneous black, shining, elongate. Head rather coarsely alutaceous, very sparsely punctured between the eyes. Thorax trapezoidal slightly broader than long, sides moderately rounded, narrower behind, margin not acute; anterior margin truncate, posterior sinuate, angles obtuse, surface coarsely alutaceous. Elytra elongate oval, broader behind the middle, margin very acute and slightly reflexed toward the humeri, surface coarsely but not densely punctured with a few large punctures irregularly placed along the middle of each elytron. Tibiæ and epipleuræ brownish-ferruginous. Length .58, ♂.

California. A single specimen in the Cabinet of Mr. H. Ulke.

A very singular species, differing from all our others by its more elongate and cylindrical form as well as by its color. The elytra are not regularly oval as in our other species. The sides in front of the widest portion being nearly straight and gradually convergent. In form of thorax it more nearly resembles *Audouinii* with the margin much less acute. The elytral margin on the other hand is more acute than in any other of our species and very distinctly reflexed towards the humeri. This is now the fifth species of the genus and should be placed between *Audouinii* and *lævis*.

PACHYTELES Perty.

P. testaceus, dark testaceous, both above and beneath. Head elongate-oval, surface very finely alutaceous and with a few large punctures at the sides in front of the eyes and within the insertion of the antennæ, middle of front between labrum smoother. Labrum slightly emarginate. Eyes moderately prominent. Thorax trapezoidal, broader than long, narrower posteriorly, truncate before and behind, angles nearly rectangular, sides moderately rounded anteriorly, sinuate and slightly reflexed; surface moderately convex, nearly smooth and with a longitudinal impressed line. Elytra slightly broader than the thorax, parallel, slightly longer than twice their width, apex broadly rounded, base feebly emarginate, surface faintly striato-punctate, punctures very fine and obsolete on the sides and apex. Beneath smooth, scarcely punctured. Length .16—.20 inch.

Besides the characters above given it may be seen that the thorax is slightly broader than the head and much more smooth than either head or elytra. The margin is very distinct and broadest near the basal angles and somewhat narrower at the middle of the side than at the anterior angles. The whole surface is very sparsely clothed with very short erect pubescence arising from scarcely evident punctures. The

legs are more densely pubescent. The anterior femora are armed near the middle with a tooth more acute in the male than female.

I have in my possession also a specimen considered as being *verticalis* Chaud., from the description and the locality from whence it was derived. Excepting in color *testaceus* appears to differ very slightly from either this or *Gyllenhalii*. As compared with *verticalis* the head is more elongate and less punctured, the thorax rather less convex and the median impressed line rather more evident, the hind angles are also less acute. The elytra are more nearly parallel and much less shining.

This species is rare, a very small series was captured by myself at Fort Grant, Arizona.

PANAGÆUS SALLEI Chaud., must now be considered an inhabitant of our territories, numerous specimens of this and our eastern *fasciatus* Say were collected by me in the region with the *Pachyteles* above described.

TETRAGONODERUS Dej.

T. pallidus, testaceous, subopaque. Head and thorax very finely granulate. Thorax trapezoidal, broader than long, narrower behind, feebly emarginate at apex, truncate at base; sides rounded in front, straight and gradually convergent behind, hind angles obtuse. Elytra faintly striate, interstices flat, very finely alutaceous. Beneath smooth, impunctured. Length .22 inch.

From Southern California (Temescal) and Arizona (rare).

Differs from our other species in color, and almost total absence of any marked sculpture. The form of thorax is similar to *fasciatus*.

ANISODACTYLUS Dej.

Dichirus Mann.

A. strenuus, oblong, moderately convex, dark brown, clothed with erect, short, yellowish hairs. Head coarsely punctured. Thorax very sparsely punctured, convex, shining, slightly wider than long, narrower behind, sides broadly rounded, gradually narrowing, anterior angles rounded, apex feebly emarginate base truncate, angles obtuse. Elytra striate, striæ not punctured, interstices moderately convex irregularly biseriately punctulate. Femora strongly dilated, the anterior very robust. Length .60 inch.

Two specimens from Fort Tejon, California.

This is much larger and more robust than any of our species yet described. As compared with *hirsutus*, it is more convex and robust, with the thorax less densely punctured, less narrowed behind and less emarginate in front. The thighs are also very robust, those of the anerior pair especially so.

EUTHEIA Steph.

E. colon, testaceous, shining, sparsely clothed with suberect yellow hairs, head scarcely punctured, thorax quadrate, moderately convex, sides rounded in front, gradually narrowing behind, hind angles distinct, base truncate, with transverse row of six large punctures. Elytra moderately convex coarsely punctured, pubescent, and with two black spots at the posterior third. Length .04 inch.

One specimen from Fort Grant, Arizona.

The elytra are of a paler color than the rest of the body, and more densely pubescent. This species is abundantly distinct from that described by Mannerheim from Alaska. Another species has been found by Mr. Ulke in the Middle States. It is likewise very rare, and I have had no opportunity of studying specimens or of comparing them with this one.

TRIARTHRON Mærkel.

T. Lecontei, elongate oval, testaceous, shining, very sparsely clothed with very minute erect hairs. Head very finely and sparsely punctured. Thorax transverse, twice as broad as long, convex, sparsely and finely punctured, truncate in front, feebly rounded at base, sides feebly rounded and very faintly margined, basal margin distinct and with a transverse row of coarse punctures. Elytra with striæ of very coarse, closely placed punctures, interstices flat, faintly biseriately punctured and finely rugose. Length .12 inch, ♂.

A single specimen from the high South-eastern Sierras of California.

I have had no opportunity of comparing it with the European species.

Triarthron differs from *Hydnobius* in having the antennal club 3-jointed.

XANTHOPYGUS Kraatz.

X. cacti, black, shining. Head with vertex smooth, sides and near hind angles coarsely punctured, thorax as broad as long, middle of disc smooth, on each side a row of coarse punctures, and with coarse punctures towards the margin; sides feebly, base broadly rounded, hind angles not evident, apex truncate, angles distinct. Elytra bluish-black, coarsely and densely punctured and clothed with black sub-erect hairs; abdomen black, last two segments yellow, finely but sparsely aciculately punctured. Beneath black finely punctured and with the legs irregularly clothed with hairs. Legs black. Length .64 inch.

Fort Grant, Arizona. Under decomposing Cereus; rare.

This genus of Staphylini is now for the first time indicated in our fauna.

The elytra of this species are rather densely hairy. The head and thorax are also provided with a few hairs, arising from the large punctures scattered irregularly over their surfaces. To what foreign species it is allied, I cannot indicate.

SPHÆRIUS Waltl.

S. politus, black, polished, entirely smooth, nearly hemispherical. Thorax broader than long, narrower in front, sides feebly rounded. Beneath smooth, polished; femora paler. Length .03 inch.

Visalia, California. Mr. W. M. Gabb.

This insect is another of the interesting discoveries made by Mr. Gabb and is, with the exception of a few Trichopterygidæ, the smallest insect ever collected in that prolific State. It adds an entirely new form to our fauna, and in accordance with the usual distribution of genera, leads us to expect a species from the eastern region. Its habits are probably similar to the European species, as specimens of *Georyssus* (n. sp.) were abundant in the same small collection in which it occurred, as also other riparial insects—*Psammodius* and *Syncalypta*.

This insect appears to agree perfectly with the genus to which it is refered, but is nearly double the length of the other species.

OTHNIUS Lec.

The species of this genus have already amounted to four in our collections, of which two are as yet undescribed; another has been indicated and a provisional name given it, but as no specimens exist, it is decidedly better to drop the name from our catalogues until specimens are found from which descriptions can be made.

The following table exhibits the relations of the species:

Antennæ and legs brown or black; thorax very densely and coarsely punctured.
  Elytra clouded.....**umbrosus** Lec.
  Elytra uniform in color, dark bronze.....**lugubris** Horn.
Antennæ and legs pale or testaceous; thorax sparsely punctured.
  Short. Elytra banded with yellow.....**fasciatus** Bland.
  Elongate. Elytra indistinctly banded.....**mexicanus** Horn.

O. umbrosus Lec. Class. Col. N. A. 103.

This is the most elongate of our species. The head and thorax rather densely and coarsely punctured. Elytra coarsely punctured, somewhat paler in color than the head and thorax, irregularly clouded with a still paler color, and clothed with whitish hairs irregularly placed. The marginal line of the thorax is not evident at the anterior third of the margin.

O. lugubris, dark black bronze, uniform in color, head very coarsely and densely punctured. Thorax densely and coarsely punctured, subquadrate, slightly narrowed behind and with two indistinct teeth. Elytra elongate, twice as long as wide, sides subparallel, coarsely and densely punctured, and sparsely clothed with whitish hairs. Beneath black, shining, thorax and pectus coarsely but not densely punctured; abdomen finely and not densely punctured, and sparsely clothed with whitish hairs. Legs black, knees and tarsi paler. Length .20 inch.

Distinct from *umbrosus* by its less elongate form and the uniform color of elytra. The obtuse teeth of the margin are more distinct and the punctures of the surface of the thorax are less dense and never confluent.

This species was collected by Mr. Wm. M. Gabb in South-eastern Oregon.

O. fasciatus Bland, Proc. Ent. Soc. 1864, 253.

The collection of the Society contains two specimens of this pretty species. The thorax is æneous, feebly punctured. Elytra elongate oval, and ornamented with yellow in the following manner: a large irregular spot at base enclosing a small black spot on basal margin of elytra, near the middle of each elytron; an irregular band behind the middle, broadest at suture and not reaching the margin; a round subapical spot close to the suture, and the apex also paler. Legs and antennæ yellow. Length .15 inch.

O. mexicanus, elongate, head and thorax æneous, coarsely but not densely punctured. Thorax subquadrate, hind angles distinct. Elytra elongate oval, coarsely but not densely punctured, brownish ornamented with paler bands and sparsely clothed with suberect whitish hairs. Body beneath paler, coarsely and sparsely punctured. Legs and antennæ yellowish. Length .19 inch.

The elytral ornamentation is similar to the preceding species, and is as follows: an oval basal spot enclosing a small black spot near its apex, and at the basal margin of the elytra, and an irregular transverse band behind the middle, very broad at the suture, narrowing rapidly and not extending to the margin.

From Mexico. Collection of Dr. LeConte.

Differs from all our species in its elongate form, and being more attenuate behind. The elytra are also much smoother and scarcely punctured near the sides and apex.

GYASCUTUS Lec.

G. cuneatus, elongate, cuneate, æneous-green, shining, epistome truncate, head intricato-rugose, thorax slightly broader than long, narrowed in front sides nearly straight, truncate in front, trisinuate at base, hind angles acute, not divergent, coarsely, and at the sides confluently punctured. Elytra narrow, convex, gradually narrowing from base, apex bidentate, rather coarsely and irregularly striato-punctate. Beneath finely and densely punctured. Hind tarsus as long as tibia, compressed, first joint equalling the two following. Length .75 inch.

One specimen from Owen's Valley, California. Collected by Dr. H. M. Cronkhite, with many other specimens of *G. obliteratus*. Differs from our other species in its cuneate form, and by its tarsal characters. Its color beneath is paler, the prosternum polished and violet colored.

The antennæ are rather longer than our other species, exceeding in length the head and thorax by nearly one-half.

G. OBLITERATUS Lec.—Numerous specimens of this species were found in Owen's Valley by Dr. Cronkhite and myself on willows. they do not appear to differ specifically from those found by Gen. Pope in Texas.

For convenience, I add a table of our species of the genus.

Hind tarsi with first joint equalling joints 3 and 4 together.
  Epistome broadly emarginate.
    Elytra obliquely grooved..... .....**planicosta** Lec.
    Elytra striato-punctate, rugose.....**obliteratus** Lec.
  Epistome truncate.
    Thorax not rounded on the sides.....**cuneatus** Horn.
Hind tarsi with first joint slightly longer than second.
  Epistome deeply emarginate..... **sphenicus** Lec.
  Epistome broadly emarginate.....**caelatus** Lec.

The first three species have the hind tarsi not only long but also compressed, while the last two have robust, rather flattened tarsi. *G. cuneatus* appears to combine the form of the second group with the peculiar tarsal characters of the first with the form of epistome peculiar to itself.

CYMATODERA Gray.

C. californica, elongate, dark castaneous, shining. Head finely and rather densely punctured, thorax cylindrical, twice longer than broad, slightly narrower behind, slightly constricted in front and behind the middle, surface feebly punctured and very sparsely clothed with yellowish hairs. Elytra elongate, subparallel, three times longer than broad at base, base truncate, humeri distinct, obtuse, apex sinuate, with suture toothed, surface with striæ of coarse punctures, becoming obsolete towards the apex, sparsely clothed with very short suberect hairs, and with an indistinct pale transverse narrow fascia at middle. Surface beneath and legs ferruginous. Length .76 inch.

For this insect, as well as others that have been and others that will hereafter be described, I am indebted to my friend Mr. Wm. M. Gabb, by whom this insect was collected in the southern Coast Range of California.

This is the largest species of the genus in our fauna. Its thorax is more nearly cylindrical and much less narrowed behind than any other of our species, and the sides of elytra more nearly parallel. The pale fascia is nearly straight, not undulate, and continuous. The apices of the elytra are sinuate and prolonged at the suture.

AULICUS Spin.

A. nero Spin. Clerit. I, p. 331, pl. 58, fig. 1.

I quote this species merely to note its addition to our fauna, specimens having been collected by Mr. Gabb in the southern Coast Range of California.

ENOPLIUM Latr.

E. humerale, black, opaque, head black, finely and densely punctured; thorax black, broadly margined with yellow, slightly broader than long, shining, rather finely and densely punctured, anteriorly truncate, sides and base rounded, the latter slightly margined at middle, hind angles scarcely evident; elytra rather depressed, obovate, truncate at base, finely granulated, and with an elongated triangular humeral spot, yellow; beneath black, scarcely punctured, legs black, hairy; antennæ ten-jointed, tarsal claws slightly dilated at base. Length .24 inch.

One mutilated specimen from New Mexico.

Similar in form to our 4-*punctatum*. The thorax is black with rather a broad margin of yellow on each side. The yellow humeral spot is triangular and includes all that portion of the elytra outside of a line drawn from near the scutellum to a point slightly behind the middle of the lateral margin. The inner margin of the spots is not straight but sinuous.

HYDNOCERA Newm.

H. robusta, black, faintly bronzed, robust, head coarsely and densely punctured, thorax as long as broad, narrower behind, constricted in front, sides rounded, densely and coarsely punctured, and with the elytra and head sparsely clothed with rather long whitish hairs. Elytra shorter than abdomen, very convex, narrowing behind, very densely and coarsely punctured, and with two large yellow spots on each, the first basal, quadrate, and touching the suture, the second cordate and behind the middle. Legs yellowish, hind pair darker, nearly black except at base. Body beneath æneous-black, finely punctured and sparsely clothed with white hairs. Length .25 inch.

From Owen's Valley, California. One specimen.

Easily distinguishable from any of our robust species by the characters above given.

ACREPIS Lec.

A. 4-signata, dark æneous, shining, sparsely clothed with cinereous hairs; head and thorax each globose, thorax narrower behind, truncate and slightly margined, moderately densely punctured; elytra bluish-green, subcylindrical, parallel, broader than the thorax, roughly punctured, each elytron with two reddish spots, the first round and humeral, the second crescentic, subapical. Length .30 inch.

Collected near San Francisco, Cal. Cabinet of Mr. H. Ulke.

The occurrence of this species enables us to pronounce on the validity of the genus. It appears to be abundantly distinct from all the others genera of *Psoini*. In addition to the characters given by its author, the following may serve to render the description fuller:—

Head free. Antennæ ten-jointed, longer than head and thorax, first joint thick, cylindrical, second short, rounded, as broad as first, joints 3—7 short, equal, narrower than the second, last three joints broader, flattened, forming a loose club, of which the first two joints are broadly oval, the last more elongate, flattened and emarginate in front near the tip. Anterior coxæ not con-

tiguous. Tarsi longer than the tibiæ, first joint very small, very indistinct, apparently four-jointed.

CONONOTUS Lec.

C. macer, elongate, testaceous, densely covered with greyish pubescence. Head coarsely punctured, thorax obconical, convex, one-half broader in front than behind, sides feebly rounded in front, surface coarsely punctured, more densely in the middle and towards the base. Elytra elongate oval, convex, with striæ of coarse punctures, becoming obsolete towards the apex. Length .14—.16 inch.

Not rare in Owen's Valley, California. Under stones.

This species differ from *sericans* in the form of the thorax and the sculpture of the elytra. In the latter species the thorax is much broader in front, being therefore nearly as broad as long, and twice as broad in front as at base. The thorax is also flattened above, very evenly punctured and much less densely pubescent. From *punctatus* it differs in size, and the proportions of thorax; in this species the thorax is more robust, shorter and more convex, less broad (relatively to the base) in front, and with the sides rather more strongly rounded. The surface is also less densely pubescent, and with the hairs more erect.

They may be distinguished by the following table:

Elytra confusely punctured.
  Thorax very broad in front, depressed above, .13—.15 inch....**sericans** Lec.
Elytra with striæ of large punctures.
  Surface densely clothed with pubescence, .14—.16 inch.....**macer** Horn.
  Surface sparsely clothed with pubescence, .06 inch.....**punctatus** Lec.

MYCTERUS Clairv.

M. flavipennis, black, opaque, elytra orange-yellow; head and thorax black, opaque, very densely and rather coarsely punctured, thorax broader behind, not longer than broad, sides behind the middle nearly straight, anteriorly rounded. Elytra oval, coarsely and moderately densely punctured, and sparsely clothed with short recumbent silken pubescence. Beneath black, densely and coarsely punctured, abdomen more finely and less densely punctured, and sparsely covered with a whitish, silken pubescence. Legs, antennæ and palpi nearly black, Length .25 inch.

Collected by Wm. M. Gabb in Oregon. A single ♀ specimen.

Head entirely black, parts of mouth (except palpi) paler; antennæ dark, nearly black; thorax opaque-black; elytra orange-yellow; body beneath black; legs dark almost black.

Our species, of which this is the third, appear scarcely to differ in form and hardly in size, and it is consequently only on difference of color or characters in the antennæ of ♂, that specific distinctions must be founded. The form of antenna of the ♂ is without doubt the character of greatest value in separating the species. It is not possible to assign a place by means of it to *flavipennis*, one ♀ only being known. Our three species thus differ:

Elytra black. Antennæ and part of epistome yellow.
Third joint of antennæ ♂, broadly triangular, succeeding joints strongly transverse, almost pectinate. Legs all yellow..... **scaber** Hald.
Third joint of antennæ ♂, nearly cylindrical, slightly compressed, succeeding joints longer than broad. Hind legs, or at least femora black..... **concolor** Lec.
Elytra yellow. Antennæ, whole of palpi, and front, dark.... **flavipennis** Horn.

Our species of *Mycterus* are found each within a very distinct faunal region; *scaber* being eastern, *concolor* to that central region of the extreme west, bounded on the west by the Sierra Nevada range, while *flavipennis* is essentially a west coast insect. The characters given in the preceding table will enable them to be recognized when found.

M. CONCOLOR Lec. occurs abundantly at Keyesville, Cal., and may be found on the flowers of the *Aesculus* (Buckeye).

MECYNOTARSUS Ferté.

M. delicatulus, testaceous, moderately elongate, clothed with whitish silken pubescence. Thorax broader than long, narrower behind, sides broadly rounded, posterior angles scarcely distinct, horn elongate, margin very coarsely dentate, crest distant from margin, narrow and serrate in front, and with a longitudinal fine ridge. Elytra oval, humeri broadly rounded, suture and common central spot dark brown or black. Length .10 inch (horn included).

Two specimens from Fort Yuma, collected by Capt. Jno. E. Hill.

The horn is about two-thirds the length of the thorax, its margin very coarsely dentate. The crest occupies the middle third of the horn, and is itself finely serrate, and encloses a fine longitudinal ridge. Between the crest and the margin of the horn, in front, are some shining granular elevations.

Mecynotarsus differs from *Notoxus* in having the hind tarsi longer the tibiæ, and the penultimate joint not bilobed. The pubescence is finer, more dense and recumbent than in *Notoxus*. Our species appears to agree with the European in having the humeri not distinct, but broadly rounded. It is entirely testaceous in color except the sutural margin, and an oval spot at the middle of the suture, which are nearly black.

RHINOPLATIA, n. g.

Mentum subquadrate, anterior angles rounded, apex truncate, and with two grooves and distinct median ridge slightly bifurcate in front, gular peduncle very prominent, rounded in front, fitting the basal emargination of mentum, ligula trapezoidal, coriaceous, emarginate in front. Last joint of palpi narrowly triangular, maxillary palpi long. Mandibles elongate, arcuate at tip and acute. Labrum elongate, quad-

rate, angles rectangular. Eyes distant from prothorax, slightly oval and oblique. Antennæ inserted between the eyes and anterior margin of front, slender, filiform, eleven-jointed, joints equal, second joint one-half the length of the others. Head not narrowed behind the eyes, vertical in front, prolonged in a transversely compressed muzzle. Prothorax subcylindrical, sides slightly rounded anteriorly. Elytra elongate oval. Legs slender, tibiæ bispinose, tarsi pubescent beneath, first joint longer, penultimate sub-bilobed. Five abdominal segments in both sexes, the terminal conical in male, broader in female.

This genus of Oedemeridæ supplies in our fauna the place of *Chitona* in the European. Differing from *Chitona* in the entire mandibles, the form of mentum, form and situation of the eyes. I regret not being able to give more extended comparisons, having no specimens at my disposal of the European species.

R. ruficollis, æneous-black, thorax rufous. Head glossy, sparsely and finely punctured and sparsely clothed with cinereous pubescence. Thorax one-half longer in ♀, or in ♂ twice as long as broad, subcylindrical, convex, sides feebly rounded; shining, very sparsely punctured and very sparsely pubescent. Elytra elongate oval, humeri obtuse, more than twice as long as broad, rather coarsely and densely punctured and more densely clothed with recumbent cinereous pubescence. Abdomen and legs black, clothed with cinereous pubescence. Length .24—.36 inch.

Owen's Valley, California, on flowers.

The thorax is very variable in form in this species, generally much longer in the males and more robust in the females. In the majority of specimens it seems broader at base than at apex, and has the sides feebly sinuate behind.

PROSTENUS Latr.

P. californicus, elongate, shining, cupreous or violaceous metallic; head coarsely punctured, thorax one-third broader than long, moderately convex, coarsely punctured, sides strongly rounded in front, rather suddenly narrowed at the posterior third, apex feebly emarginate, base broadly rounded, hind angles distinct. Elytra elongate-oval, truncate at base, humeri obtuse, sides moderately rounded, gradually narrowing at posterior third, with striæ of rather coarse punctures, rather distantly placed, and an intermediate series of finer, very closely placed, punctures. Beneath metallic-blue, coarsely punctured. Length .40 inch.

Two much injured specimens from Martinez, California.

The occurrence of this genus so high up in California, gives rise to some doubts as to whether they may not have been imported. They were sent to me as collected, the bottle containing very little else of value, and nothing else of a foreign type. I have therefore described the species, and await the time when I shall be able to compare it with others already known.

POREOSPASTA, n. g.

Characters of *Meloe* except, elytra not imbricate, contiguous along anterior third of margin; scutellum distinct, transverse, truncate; claws unequally cleft, lower portion of each claw very short, scarcely half as long as upper. Antennæ gradually clavate, outer joints rounded, last joint much longer and acute at tip.

Another of the genera intermediate between *Meloe* and *Henous*.

P. polita, black, smooth, shining, head very distantly punctured and with a yellow spot; thorax broader than long, hexagonal, truncate at apex and base, sides subangulate, disc flat, sides usually orange-yellow; elytra smooth, nearly as long as abdomen, contiguous along anterior third; spurs of hind tibiæ dissimilar, equal in size, inner acute, outer cylindrical, compressed, obliquely truncate and concave at tip. Length .60 inch.

The outline of elytra with abdomen is similar to that of *Henous*.

Several injured specimens from the Southern Coast Range of California, collected by Mr. Wm. M. Gabb.

The addition of several new genera since the publication of the Synopsis by Dr. LeConte, renders it advisable to remodel the table in such a manner that the new genera may be introduced in natural sequence.

Elytra imbricated; claws cleft.....**Meloe.**
Elytra divergent from scutellum; claws toothed.....**Megetra.**
Elytral margins contiguous at anterior third.
  Claws equally cleft.....**Nomaspis.**
  Claws with lower portion much shorter.....**Poreospasta.**
Elytra contiguous along entire margin.
  Claws cleft; elytra subconnate.....**Henous.**
  Claws toothed; elytra connate and inflated.....**Cysteodemus.**

MEGETRA Lec.

M. opaca, black, opaque, thorax pentagonal, broader than long, sides obtusely angulate; elytra opaque, intricately rugose. Spurs of hind tibiæ long, slender, acute, the inner one longer. Length .50—.60 inch.

Differ from our other species in its smaller size and by the peculiar blackness and opacity of the whole surface. The head has few punctures about the occiput. The elytra are relatively larger and broader than in our other species, and vary somewhat in sculpture from a rather coarse punctuation to the intricately rugose surface seen in the elytra of the other species. The tibial spurs are much more slender and acute and the tooth of the claws longer and less divergent.

Found running on the ground in March and April at Temacula, California, and one specimen from Fort Yuma.

NOMASPIS Lec.

N. sublævis, black, sub-opaque, epistome coarsely and densely punctured, front with a few, but very distant coarse punctures, and with a yellow rhomboidal spot; thorax broader than long, sides and anterior angles broadly rounded, gradually narrowed behind, disc very finely rugose and with a few scattered punctures, and a feeble median impressed line. Elytra nearly as long as abdomen, contiguous at anterior third, not imbricate, posteriorly strongly diverging, surface sub-opaque, indistinctly rugose and obsoletely finely punctured; spurs of hind tibiæ unequal, inner spur slender, short, acute, outer spur broad, thick, and very obliquely truncate. Length .38 inch.

Abundantly distinct from *parvula* Lec., by its smoother surface and the character of the spurs of the hind tibiæ, in the latter species they are both slender and equal.

One specimen from Fort Tejon, California.

LANGURIA Latr.

L. convexicollis, black, shining, thorax rufous, head black, brownish between the eyes, sparsely and finely punctured; thorax quadrate, very convex, sides broadly rounded in front, slightly convergent behind, anteriorly feebly emarginate, posteriorly truncate, angles rectangular. Base finely margined, and edged with black, and with a short oblique impression on each side between the middle and the angles. Elytra elongate, sides gradually converging, finely striato-punctate, with the interstices finely wrinkled. Legs black. Length .42 inch.

Owen's Valley, California. One specimen.

The thorax of this species is more convex and with sides more broadly rounded than in any of our species with a quadrate thorax; the thorax is also very finely and sparsely punctured, the middle of the anterior margin and the whole of the posterior margin edged with black. The head, except between the eyes, is also black.

Synopsis of the SCOLYTIDÆ of America North of Mexico.

BY C. ZIMMERMANN, M. D.,

WITH NOTES AND AN APPENDIX BY J. L. LECONTE, M. D.

[Among the MSS. of my deceased friend, Dr. Zimmermann, I find several partially completed memoirs, which contain not only systematic ideas of much value, but descriptions of many new species belonging to our fauna. His widow having kindly submitted the whole of the MSS. to me for examination, it is my intention from time to time to select such groups as have not yet received attention from American students, and to present extracts from the MSS. which will secure for future reference at least a portion of the labor of the author; it is a subject of regret to me, that the different memoirs which he prepared were not furnished for publication without delay, for I find in them improvements in classification, unknown at the time of writing, though the most important have been since developed by other observers.

On the present occasion, I give the result of his investigation of the family of Rhynchophora, known as SCOLYTIDÆ but in the MSS. called HYLURGIDÆ, for reasons which are detailed below.

The Scolytidae are distinguished from the other families of Rhynchophora by the 3rd tarsal joint not being received in the 2nd, the antennæ strongly clubbed and geniculate, and by the tibiæ being serrate on the outer margin.*

For the purpose of rendering the present contribution more complete I have added descriptions and references to species in my own collection, not mentioned in the MS. memoir before me; and where the views of other systematists differ from those of our author in regard to the limits of genera, I have called attention to the fact.

The family HYLURGIDÆ being thus defined by Dr. Zimmermann is divided by him into the following tribes:

* Dr. Zimmermann has in a pencil note marked for investigation the relations between the present family and the *Apatidæ*, (Bostrichidæ of most authors); although there is much resemblance in form, and to a certain extent in habits between the two types, the latter fails in what I have regarded (*Am. Journ. Sc.* 1867, xliv,) as the defining character of the Rhynchophora, viz. the enclosure of the posterior extremity of the prosternum by the side pieces of the prothorax. The resemblance between the two families in question is similar to that between Brenthidæ and Colydiidæ, or Rhyssodidæ; or that between Anthribidæ and certain Cerambycidæ. To take a more familiar example, it is like the repetition of forms observed in comparing Marsupials with placental Mammals.

" I.—BOSTRYCHI: tarsi filiform, evidently 5-jointed; beak obsolete; containing *Platypus*, *Crypturgus*, *Xyloterus*, *Bostrichus*.

II.—ECCOPTOGASTERES: 3rd joint of tarsi bilobed; beak very short and thick; ventral segments of abdomen excavated; containing *Eccoptogaster*.

III.—HYLURGI: 3rd joint of tarsi bilobed; beak very short and thick; abdomen cylindrical; containing *Phlœotribus*, *Hylesinus*, *Dendroctonus*, *Hylurgus*."—LEC.]

Tribe I.—BOSTRYCHI.

The beak is scarcely developed, but the great resemblance of these beetles in the method of life, and the structure of the body, (both in the larva and the perfect insect), with the genuine *Hylurgi*, demonstrates their true position in the system. They are distinguished from allied groups by the filiform tarsi, the 3rd joint of which is not dilated or bilobed.

Club of antennæ without trace of articulation; eyes round.

1. Prothorax truncate in front; elytra depressed; 1st joint of tarsi as long as the others united.*.....**Platypus** Herbst, V. 128.

Club of antennæ articulated, eyes transverse, emarginate.

2. Prothorax with a hood-like extension over the head; elytra not depressed; 1st joint of tarsi short; the subgenera are:
   - *a.* The separation between the three joints of the antennal club transverse and visible both on the inner and outer surface of the club. **Crypturgus** Er.
   - *b.* The separation between the joints of the antennal club concentric, and visible only on the anterior surface, being covered on the other side by the first joint.....**Xyleborus** Er.
   - *c.* The three joints of antennal club separated from each other as in *Cryturgus*, but only visible on the anterior surface, being concealed on the other as in *Xyleborus*.....**Bostrychus** Fabr. Syst. 59.

CRYPTURGUS Er.

All the species belonging to this genus have the tibiæ compressed but slender, and scarcely dilated towards the tip; according to differences in the form of the prothorax, the front femora, and other parts of the body they may be arranged in three divisions.

A.—Prothorax longer than wide; antennal club fringed at the sides with long hairs; front femora toothed at tip; outer surface of the anterior tibiæ, as in *Platypus*, with teeth like transverse ridges.†

* No new species are described in the part of the memoir relating to *Platypus*, which is therefore omitted.—LEC.]

† This division corresponds with the genus *Corthylus* Er., which differs from *Crypturgus* by the funiculus of the antennæ consisting of but *one* joint, instead of *two*. The plan of arrangement pursued by the author does not take cognizance of the number of joints of the funiculus, and therefore definitions of the the two genera naturally fall together.—LEC.]

C. pulicarius Zimm.—Long. ½ lin. Brown or ferruginous, antennæ and feet yellow; head thickly punctured, with a slight impression upon the front, anterior margin thickly fringed with long yellow hair; prothorax somewhat longer than wide, roughly tuberculate in front, thickly and finely punctured behind; elytra strongly punctured, but not in rows, impressed along the suture behind the middle, the tip rounded. [Dr. Zimmermann refers to this species *T. pusillus* Harris Trans. Hartford Nat. Hist. Soc. I, 82, but it appears to me to belong rather to *C. minutissimus*. In any event the name must be changed as it was previously used for a European species, now belonging to the genus *Crypturgus*. —Lec.]

C. punctatissimus Zimm.—Long. 1¼ lin. Short thick, compressed, shining black, antennæ and feet ferruginous; front glabrous; prothorax roughly tuberculate in front, shining behind, with fine sparse punctures; elytra punctured strongly, but not in rows, behind rounded, without furrows or teeth.—South Carolina. [This species is the type of Erichson's genus *Corthylus*, and is usually regarded as *Bostrichus compressicornis* Fabr., but probably without sufficient reason, the locality of that insect having been given as South America.—Lec.]

C.—Prothorax above nearly circular; anterior femora slender.

C. dissimilis Zimm.—Long. 1 lin. Stout, elevated, black, antennæ and feet yellow; front clothed with fine silky hair; prothorax not longer than wide, strongly convex, thickly punctured, finely pubescent, before the middle marked with erect acute spines; elytra cylindrical, punctate-striate, finely pubescent with gray hair, rounded at the tip.—North Carolina. [I have specimens of this species from the Southern States and Lake Superior; the intervals between the elytral rows of punctures are finely and sparsely punctured.—Lec.]

XYLEBORUS Eichhoff.

In the species of this group the tibiæ are strongly compressed and dilated; the body is cylindrical, obliquely truncate behind or flattened, or marked near the suture with two or more small teeth or tubercles. According to differences in the form of the body the following divisions may be established.

A.—Middle and hind tibiæ rounded on the outer margin, finely serrate; prothorax strongly convex.

X. tachygraphus Zimm.—Long. 1½ lin. Brown, antennæ and feet ferruginous yellow; prothorax not longer than wide, roughly tuberculate, more coarsely in front than behind, thinly pubescent; elytra short cylindrical, behind obtusely rounded, punctate-striate, the intervals also punctured, with fine rows of hairs, and behind also with small elevated teeth.—North Carolina. [This species is also found in Pennsylvania.—Lec.]

X. pyri.=*Scolytus pyri* Peck, Mass. Agr. Journal, 1817.—Long. 1½ lin. Of the same size and form as *X. tachygraphus*, but of a shining black color, with the antennæ, tibiæ and tarsi ferruginous yellow; prothorax covered in front with sharp tubercles arranged in transverse rows, behind nearly smooth; the whole surface is thinly clothed with fine white hairs; elytra punctate-striate, obliquely flattened behind, the intervals finely punctured and pubescent, the 7th acutely elevated towards the tip.—Massachusetts. [Also found in Pennsyl-

vania; the elevation of the 7th interval forms the acute margin of the apical oblique declivity of the elytra, and also exists in the preceding species; it is however somewhat serrate in that, but quite entire in the present.—LEC.]

X. [**celsus** Eichh. Berl. Ent. Zeitschr. 1867, 400.] — Long. 2 lin. Ferruginous, clothed with yellow hair; entirely of the form of the European *X. monographus*, but larger, and distinguished by the elytra being obliquely declivous behind, perfectly flat, smooth, with two larger acute pointed tubercles each side near the suture, and near the edge of the declivity with many smaller acute elevations.—South Carolina. [This species is also found under oak bark in the Northern States. It differs from the two preceding species by its much more elongate form, the prothorax being about one-half longer than wide, with the sides parallel behind the middle and the elytra more than one-half longer than the thorax.—LEC.]

X. [**fuscatus** Eichh. Berl. Ent. Zeits. 1867, 400.]—Long. 1—1¼ lin. Ferruginous brown, or yellow, thinly clothed with gray hair, with the same form and sculpture as *X. monographus*, but somewhat smaller, and distinguished by the oblique declivity of the elytra being marked by only a single large acute tubercle, while the suture itself is also distinctly elevated. This and the allied species *X. monographus* and *celsus* are found under oak bark.—Atlantic States. [I observe in the typical specimens, besides the large acute tubercle mentioned, three or four very small denticles in the upper part of the declivity of the elytra. A nearly allied species having two smaller tubercles each side near the tip of the elytra was found by me under pine bark in Georgia, and is described in the appendix to this paper.—LEC.]

X. xylographus.=*Bostrichus xylogr.* Say, Journ. Acad. Nat. Sc. v, 256.—Long. 1¼ lin. Ferruginous, with yellow hair, of the form and sculpture of *X. monographus*, but smaller, and differing by the oblique declivity of the elytra being rounded, and marked with rows of very small denticles; the suture is not elevated as in *X. conformis*.—Atlantic States. *X. ferrugineus* Fabr. from Cuba, is a very similar and closely allied species, with which this must not be confounded.

X. pubescens Zimm.—Long. 1 lin. Ferruginous, elytra brown, antennæ and feet yellow; of the form of the preceding, but narrower; the prothorax is longer than wide, roughly tuberculate in front, smooth behind, clothed with very fine white hairs; elytra finely punctate-striate, the intervals each with a row of erect hairs; posterior declivity rounded, and marked with small denticles on the slightly elevated 1st and 3rd intervals.—Southern States. [A close examination shows two smaller denticles towards the tip on the 5th interval. This species is closely allied to *X. xylographus*, but differs by the punctures of the elytra being larger, and the hairs longer, the small punctures of the hind part of the thorax are also more evident, and the denticles of the posterior declivity of the elytra are fewer, being scarcely more than two on each of the alternate intervals.—LEC.]

B.—Middle and hind tibiæ as in division A; prothorax at least in the males, impressed or deeply excavated in front.

X. planicollis Zimm.—Long. 1 lin. Ferruginous; front smooth and flat; prothorax with a shallow impression, almost as wide as long, very finely and thickly punctured, and clothed on its anterior half with fine silky hair; elytra

short cylindrical, obliquely declivous behind, without tubercles or denticles, finely punctate-striate, intervals with erect hairs, thickly placed in rows.—Pennsylvania.

X. retusicollis Zimm.—Long. 1 lin. Ferruginous yellow; front smooth, with a deep longitudinal impression; prothorax longer than wide, a little broader than the elytra, punctured in front, thinly pubescent, and very deeply excavated; the front margin rising into an acute point; behind nearly glabrous and smooth. Elytra short, punctured without order, thinly pubescent, obliquely declivous behind, and somewhat impressed along the suture.—Maryland. Found under oak-bark.

C.—Middle and hind tibiæ triangular, acutely toothed on the outer edge, as in the genuine *Bostrychi*.

X. [**cælatus** Eichhoff, Berlin Entomologische Zeitschrift, 1867, p. 402.]—Long. 1¼ lin. Brown, ferruginous, and sometimes blackish, antennæ and feet ferruginous; very similar to the genuine *Bostrychi*, cylindrical, thinly pubescent; prothorax in front roughly tuberculate, thickly punctured behind, except a narrow smooth longitudinal line; elytra coarsely punctate-striate, the sutural stria deeper, marked with transverse punctures, intervals with smaller distant punctures; obliquely declivous behind, on account of the slightly elevated and feebly toothed side margin the declivity is somewhat concave; the suture is elevated, and each side of it are seen three elevated teeth, which stand near the side margin, but do not form parts of it; the marginal teeth are smaller, and often scarcely visible.—Atlantic States. Very abundant on pines.

BOSTRYCHUS Fabr.

The name *Bostrichus* (more properly *Bostrychus*) was first applied by Geoffroy to *Apate capucina*. Fabricius applied it to all the insects belonging to the tribe here under consideration, probably because the meaning of the name appeared to him more applicable to them than to *Apate*. Latreille adopted the nomenclature of Geoffroy, and therefore proposed for the Bostrychi the name *Tomicus*, which has since been commonly adopted. More recently Erichson has divided this genus into many subgenera, of which those above defined (*Crypturgus*, *Xyleborus* and the present) can be regarded as well defined groups.

The body in the species of the present subgenus is short cylindrical; the prothorax is longer than wide, convex, roughly tuberculate in front; the elytra are obliquely suddenly declivous behind, and excavated, with the elevated margin toothed, while in the two preceding subgenera the posterior declivity of the elytra is formed in a different manner. The females differ from the males in the form of the prothorax, which in the former is somewhat longer and narrower in front. The species live mostly under the bark of coniferous trees; they appear sometimes in countless multitudes, and do immense mischief by killing the trees in the forests of pine and fir; as was the case with *B. pini* in Caro-

lina in 1847—49, and with *B. stenographus* and *typographus* in Germany frequently since 1665.

B. [avulsus Eichh. Berl. Ent. Zeitschr. 1867, 402.]—Long. 1¼ lin. Of the same form color and sculpture as *B. pini*, but much smaller, and easily distinguished by the posterior excavation of the elytra, the side margin of which is armed with but a few (three) small teeth; it is also less hairy, and the hinder part of the suture appears altogether without hair.—Carolina.

B. pini Say, Journ. Ac. Nat. Sc. Phila. v, 257.—Long. 1½—1¾ lin. Brown or ferruginous; antennæ yellow; form as in *B. exesus*, but much smaller, and comparatively longer and narrower; the rows of punctures of the elytra are finer, and the punctures not transverse, with the exception of those of the first stria; the first five intervals are entirely smooth in front; the posterior excavation acutely margined with five lateral teeth, of which the uppermost is the smallest, and the middle one the largest, the suture is somewhat elevated and distinctly hairy.—North America. [This species is not that described by Say, but an allied one, which I have named *cacographus*.—Lec.]

B. exesus Say, Journ. Ac. Nat. Sc. v, 255.—Long. 2—2½ lin. Blackish, brown, or ferruginous, antennæ yellow; upper surface at the sides thickly punctured and fringed with long yellow hair; head and prothorax roughly tuberculate, the latter finely punctured and shining behind; elytra punctate-striate, the punctures large and transverse; the upper intervals also marked with a few punctures; posterior excavation deep, strongly margined, and armed with six teeth, of which the 2nd and 3rd are the largest; the narrow part of the margin between the 6th tooth, and the suture has the appearance of a 7th tooth.—North America. This species is very similar to the European *B. stenographus* Creutzer (=*typographus* Fabr.), but differs by the much more finely punctured hind part of the prothorax and by the posterior excavation of the elytra, which is more rugosely punctured, and hairy.

Tribe III.—Hylurgi.

The third joint of the tarsi is more or less dilated and bilobed, in which respect the insects of this tribe differ from those of the preceding; the cylindrical convex abdomen separates them from *Eccoptogasteres.* *

The genera may be separated as follows:

* Basal margin of the elytra acutely elevated and serrate:

1. Club of antennæ composed of lamellæ..... ..**Phlœotribus** Latr.
2. Club of antennæ composed of closely united joints, knob shaped; the subgenera are as follows:
   - *a.* Club of antennæ elongate oval, or spindle shaped, pointed at tip. **Hylesinus** Fabr.
   - *b.* Club of antennæ short and obtuse, sometimes thick and almost globose, sometimes compressed, and concave.....**Dendroctonus** Erich.

** Basal margin of elytra not acutely elevated:

3. Club of antennæ short and thick, knob shaped, composed of closely united joints..... .....**Hylurgus** Latr.

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* None of the 2nd tribe are described in the memoir of Dr. Zimmermann; the species of my collection will be made known in the appendix.—Lec.]

PHLŒOTRIBUS Latr.

The antennæ are inserted upon the front, before the eyes; the club consists of elongated lamelliform joints, almost like that of a *Melolontha*, otherwise the body is formed exactly as in *Hylesinus*.

P. frontalis.=*Scolytus front.* Oliv. 78, 13, Tab. 2, f. 20. [*P. setulosus* Eichh. Berl. Ent. Zeitschr. 1868, p. 149; *P. dubius* Eichh. ibid. 150.]—Long. ¾—1 lin. Brown, antennæ and feet ferruginous; of the form of the European *P. oleæ*, but the joints of the antennal club are much shorter, the elytra deeply grooved, and the intervals are transversely serrate; the whole body is clothed with short stiff hairs. In the male the front is impressed, and marked each side below the base of the antennæ with a small tooth.—Atlantic States. Found in the bark of old stumps of trees, in the swamps of Carolina, in March. [Closely allied but different by the finer punctuation of the prothorax is *Tomicus liminaris* Harris, (Ins. Inj. Veg. ed Inda. 88,) which occasions according to Miss Morris, the disease in peach trees called yellows. The lamellate joints of the club of the antennæ are much longer and thinner than in *P. frontalis*.—Lec.]

HYLESINUS Fabr.

The elongated pointed antennal club and the short thick oval body easily distinguish this from the following genus.

H. aculeatus Say, Journ. Ac. Nat. Sc. Phila. III, 322.—Long. 1—1¼ lin. Of the same form as the European *H. fraxini* but smaller; blackish-brown, thickly clothed with very short ashy squamiform hairs; antennæ and feet ferruginous; a large spot on the middle of the prothorax and the side margins are blackish brown: upon the elytra the 5th interval from the base to the middle is blackish-brown, the color is then divided into two branches, and prolonged obliquely to the suture; the humeri are ferruginous; the rows of small acute elevations on the intervals of the elytra have suggested the name of this species.—Northern States. [In well preserved specimens besides the two oblique bands behind the middle there is a third one very near the tip, and the sides of the elytra are also dark colored.—Lec.]

DENDROCTONUS Erichson.

The species of this genus differ from those of *Phlœotribus* and *Hylesinus* by the short obtuse antennal club. They may be divided into three groups:

A.—Antennal club thick; beak not carinate.

D. [bifurcus.=*Carphoborus bif.* Eichh. Berl. Ent. Zeitschr. 1868, p. 147.]—Long. ¾ lin. Black, elytra brown, the whole body covered with fine ashy scales like hairs, without lustre; antennæ and feet ferruginous yellow; beak very short, front convex; prothorax convex, shorter than wide, apical margin rounded, very finely granulately punctured, with a faint smooth dorsal line; elytra cylindrical, moderately slender, strongly punctate-striate, the 3rd interval strongly elevated towards the tip.—Carolina. [Also found in Georgia.—Lec.]

B.—Antennal club thick; beak carinate. (No American species.)

C.—Antennal club short with outer joints compressed, and concave.

D. terebrans.=*Scolytus terebrans* Oliv. 78, 6; tab. 1, f. 6.—Long. 2½—3½ lin. The color varies, from ferruginous yellow, though all shades of brown, to black, but the club of the antennæ and the tarsi are always ferruginous, and the whole body is clothed with yellow hairs: front roughly granulated; beak emarginate at tip in the middle, and marked with two tubercles; prothorax shorter than wide, narrowed in front, apical margin emarginate, thickly punctured on the disk, sides roughly granulate; elytra short cylindrical, rounded behind, striate, striæ and intervals punctured and granulated; tibiæ broad with large marginal teeth.—Atlantic States.

D. frontalis.=*Bostrichus frontalis* Fabr. Syst. El. II, 389.—Long. 1½ lin. Brown, head broad, punctured deeply channelled, and marked with two frontal tubercles; prothorax broader than long, almost cylindrical, finely punctured, slightly constricted in front, apical margin feebly emarginate; elytra emarginate, behind obtusely rounded, strongly striate, intervals thickly and finely granulate-punctured.—Carolina.

HYLURGUS Latr.

These insects differ from those of the allied genus *Dendroctonus* by the more slender body, by the basal margin of the elytra being neither acutely elevated nor serrate, and by the more distinctly developed beak. The color is black, and only in freshly hatched individuals brown or ferruginous; but the antennæ, tarsi, extremity of the tibiæ and the front margin of the prothorax are generally ferruginous or brown. The species are distinguished chiefly by the form of the prothorax and the sculpture of the elytra.

A.—Beak distinctly carinatod.

H. scabripennis Zimm.—Long. 2—2¼ lin. As long as the European *H. ater* but broader; upper surface glabrous; prothorax a little longer than wide, narrower in front, shining, tolerably sparsely punctured, the punctures thicker and finer in front than behind; elytra very deeply striate, the striæ are less evidently punctured, but the intervals are very deeply rugose.—Atlantic States. [This species is perhaps *H. carbonarius* Fitch, Noxious Insects of New York, 4th Report, No. 249, and is certainly *H. porculus* Er. Wiegmann's Archiv. 1836, i, 49; the rostral carina is very indistinct in several of the specimens in my collection.—Lec.]

H. cavernosus Zimm.—Long. 2—2¼ lin. Very similar to the preceding, and of the same size, form and color, but the thorax is longer, more deeply punctured, and marked with a distinct smooth dorsal line; elytra punctate-striate, the punctures very deep and distinct, the intervals narrow, less deeply rugose. Atlantic States.

B.—Beak not carinated.

H. tenuis. [=*Hylastes tenuis* Eichh. Berl. Ent. Zeitschr. 1868, 147.]—Long. 1—1¼ lin. Slender, dull black, tolerably thickly clothed with short yellow hairs; prothorax longer than wide, thickly punctured, with a smooth slightly elevated dorsal line; elytra with broad flat striæ thickly set with transverse punctures, intervals very narrow and elevated.—Atlantic States.

APPENDIX.

BY JOHN L. LE CONTE, M. D.

For some years past there has been a growing tendency, especially in the Western States, where agricultural interests dominate, to the study of economic entomology. Unfortunately the efforts of industrious and meritorious observers are, in some instances, thwarted, or rendered of but little value, because the want of systematic knowledge regarding the characters and consequently the proper nomenclature of the noxious objects has not yet been supplied by those who devote themselves specially to the study of the differences in structure of these minute insects.

With a view to remedy in some degree this want, as far as regards the SCOLYTIDÆ, among whom may be ranked some of the most formidable enemies of arboriculture, I have thought that descriptions of the species in my collection, which are not contained in the foregoing memoir, might not be unacceptable in the present condition of agricultural science.

The students familiar with the most recent works on entomology published abroad, will at once perceive that the classification of our author is much more elementary in its nature than those now generally adopted. Disregarding the number of small joints of the antennæ composing the funiculus, between the club and the scape or elongated first joint, his system depends to a great extent on the form and structure of the club, the portion of the organ adapted for special sensibility.

The value of the number of these joints, varying from 1 to 7, often very small, frequently very difficult to observe, seems to me to have been greatly exaggerated by some modern systematists; while admitting their usefulness in defining groups of species within the genera, I am not disposed to introduce them into the generic formulæ, except as accessory to more important differences in form and structure.

Tribe I.—PLATYPINI.

The admirable monograph of Dr. Chapuis upon this tribe, so distinct from the other two as almost to warrant its being viewed as a subfamily, obviates the necessity of any extended remarks upon the few species belonging to our fauna. The following references to the work will enable the student to identify the species, all of which belong to the genus *Platypus*, without trouble.

1. **P. flavicornis** Chapuis, 154.=*Bostrichus flav.* Fabr. &c.
2. **P. compositus** Say. Chapuis, 163.
3. **P. tremiferus** Chapuis, 174.
4. **P. perfossus** Chapuis, 176.
5. **P. rugosus** Chapuis, 176.
6. **P. Blanchardi** Chapuis, 185.
7. **P. punctulatus** Chapuis, 199.
8. **P. disciporus** Chapuis, 219.
9. **P. quadridentatus** Lec. in Chapuis, 338.=*Scolytus 4-dent.* Oliv.

I may add to the brief description of this last named species which I wrote to Dr. Chapuis, that it approaches to, and is perhaps identical with his *P. Blanchardi;* by an unfortunate clerical or typographical error the two acute tubercles or spines of the abdomen are stated to be on the 3d instead of the 4th ventral segment. The terminal process of the elytra is truncate, with rounded angles in one specimen, and on one side of a second, which is before me, while on the other side of the latter the two cusps mentioned in the description of *P. Blanchardi* may be seen. I infer, therefore, that they disappear with age.

Dr. Zimmermann observes of these insects, that they "are found "mostly in pine logs; they remain commonly about the foot of the "tree, where they make their dwellings; their presence is easily known "by the large heaps of worm-dust, (wurmmehl,) which they, by moving "backwards, push out of their galleries. In South Carolina, where "they occur abundantly, they also fly to the light in houses, on dark "evenings, from March to October."

Tribe II.—Tomicini.

The occurrence in our fauna of several genera not represented in the Zimmermann collection, renders necessary a tabular statement of their affinities, which may be thus expressed:

A. **Head** not completely covered by the prothorax, partly visible from above; prothorax not tuberculate in front.
  Club large, flat, not annulated; funiculus 2-jointed.....**Crypturgus.**
  Club smaller, oval, annulated; funiculus 3-jointed.....**Aphanarthrum.**

B. **Head completely** overhung by the prothorax, which is very convex and tuberculate in front.
  a. Club of antennæ large, much compressed, transversely annulated on both surfaces; funiculus 1—5-jointed.....**Cryphalus.**
  b. Club of antennæ large, rounded, entirely corneous on one side, circularly annulate on the other, or solid.
    Eyes divided, club solid.....**Xyloterus.**
    Eyes emarginate, club annulated.....**Xyleborus.**
  c. Club of antennæ entirely corneous on one side, transversely annulated on the other, the sutures being undulated.
    Elytra deeply excavated at tip, with the margin of the excavation strongly toothed.....**Tomicus.**

d. Club of antennæ pubescent, with the exception of an elongated space extending from the base to the middle; sutures loop-shaped, parallel with the smooth space ..... **Micracis.**

With the exception of *Cryphalus* (including *Corthylus* and *Corthylomimus*), which is polymorphic, these genera are readily distinguished by a form and sculpture peculiar to each.

CRYPTURGUS Er.

C. atomus.—Slender, cylindrical, shining black, antennæ and legs brown, slightly hairy on the head and at the sides of the thorax, and with rows of hairs upon the elytra; prothorax longer than wide, scarcely narrowed in front, slightly rounded on the sides, more rounded at the base and tip, uniformly sparsely but strongly punctured; elytra with rows of large punctures, the sutural one impressed towards the base; intervals with scarcely perceptible rows of very small punctures. Long. 1 mm.

New York, Mr. Ulke. The smallest of our Scolytidæ. The club of the antennæ is tolerably large, strongly compressed, oval, obliquely narrowed on the outer half, corneous, shining, and but slightly pubescent except on the oblique edges; the funiculus consists of but two small joints, the 2nd being much smaller than the first. The posterior declivity of the elytra is convex, without impressions.

APHANARTHRUM Wollaston.

To this genus heretofore known only from the Madera and Canary Islands, I would refer *Hylastes pumilus* Mann., from Alaska. It is scarcely over 1.5 mm. long, slender, cylindrical, dark brown, shining, very thinly clothed with a very short pubescence, forming lines upon the elytra; the prothorax is longer than wide, much narrowed in front of the middle, rounded on the sides, strongly rounded at tip, very feebly rounded at base, moderately convex, strongly and tolerably thickly punctured; elytra with striæ of very large punctures, of which the 1st and 2nd are somewhat impressed, intervals with scarcely perceptible rows of very small punctures.

This insect has nearly the form of the preceding, but under a powerful magnifier the club of the antennæ is seen to be oval, not very much compressed, with the basal half corneous and shining, the outer half conical, annulated and pubescent; the funiculus is composed of three distinct joints, the 1st being the largest, and the 3rd the broadest, oblique and narrower at the inner side. The tarsi are very slightly dilated, the 3rd joint very feebly emarginate, thus establishing a relationship to the next tribe.

The head is however short as in *Crypturgus* and somewhat prominent, though not at all rostrated as in *Hylurgini*.

This species has been made by Eichhoff, (*Berl. Ent. Zeitschs.* 1868, p. 147), the type of a new genus *Dolurgus;* the funiculus is described as 4-jointed, but after repeated examination, I am unable to perceive more than three joints the proportions of which I have endeavored to describe above.

CRYPHALUS Er.

I have combined under this name all those species which have the club of the antennæ large, compressed, and transversely annulated on both surfaces. It consequently corresponds to Dr. Zimmermann's genus *Crypturgus* which name cannot be retained for it as the typical European species, unknown to our author, is of a quite distinct type.

With the enlarged definition of *Cryphalus* adopted by me, it will contain species of varied form, and differing in the number of joints of the funiculus of the antennæ: the funiculus is however always short, and the joints, after the first, closely connected both with each other and with the base of the club. The species are numerous and may be grouped as follows:

A.—Funiculus 1-jointed (base of club not articulated).

This group corresponds with *Corthylus* Er., and may be divided into two subgroups: I, *Corthylomimus* Ferrari, corresponding with the first division of Dr. Zimmermann's *Crypturgus*, having the club of the antennæ fringed, and the outer surface of the front tibiæ transversely corrugated. II, *Corthylus* proper, with the club still larger, not fringed, and the front tibiæ armed at the outer edge with a few small teeth.

To the first subgroup belong the following species:

* Posterior declivity of elytra flattened, feebly margined behind:

1. **C. fasciatus.** (Ante, p. 143.)
2. **C. scutellaris** Lec. Report R. R. Expl. to Pacific, xi. Insects, 59. California.

** Posterior declivity of elytra concave, acutely margined behind:

3. **C. cavus.**—Black, moderately shining, elytra brown, darker towards the tips, antennæ yellowish, feet brown; head convex, strongly not densely punctured: prothorax finely roughened near the tip, nearly smooth behind, about one-third longer than wide, parallel on the sides, obtusely rounded in front; elytra very finely punctulate and rugose, posterior declivity deeply excavated and hairy, with its margin strongly elevated for more than one-half the extent, ending in an acute cusp, above which, continuing the outline of the declivity and nearer the suture are three other small denticulations; the suture along the declivity is elevated. Long. 3·5 mm.

One specimen of this very distinct species was given me by Dr. G. H. Horn, as collected in the coast region of California, south of San Francisco.

*** Posterior declivity of elytra with subsutural tubercles:

4. **C. dentiger.**—Slender cylindrical, not very shining, nearly glabrous, dark brown, posterior half of prothorax, antennæ and feet brownish-yellow: head flat, opake, finely punctured; prothorax nearly one-half longer than wide, parallel on the sides, obtusely rounded in front, finely roughened in front of the middle, nearly smooth behind; elytra very indistinctly and sparsely punctulate, posterior declivity slightly concave, elevated margin acute below, then rising into a small acute cusp, then becoming thick and retuse for a short distance, then armed near the suture with another small acute cusp or small spine; the suture is not elevated, and near it on each side, about the 2nd third of the declivity is a small rounded subacute tubercle. Long. 2 mm.

One specimen from middle California given me by Dr. Horn. This species is of the same size and form as *C. mali*, but differs in the posterior declivity of the elytra, as above described, being concave and broadly retuse at its lateral margin.

5. **C. mali.** (Ante, p. 143.)

To the 2nd subgroup, or *Corthylus* proper, belongs only

6. **C. punctatissimus** Zimm. (Ante, p. 144.)

B.—Funiculus of antennæ 2-jointed, body stout, head large, prominent, and deflexed.

But one species of this group is known to me:

7. **C. dissimilis** Zimm. (Ante, p. 144.)

This differs remarkably from the others in form, and resembles somewhat the figure of *Hypothonemus* in DuVal, *Gen. Col. Eur.* iv, pl. 33, fig. 161, but is stouter.

C.—Funiculus of antennæ 4 or 5-jointed, (except in No. 16,) outer joints closely connected with each other, forming a pedicel to the club.

Several subgroups may be recognised, and the species tabulated for convenient reference as follows:

* Club of antennæ feebly annulated, more shining; elytra shining, scarcely punctured:
- Posterior declivity of elytra strongly retuse ..... 8. **retusus.**
- Posterior declivity of elytra feebly retuse ..... 9. **sulcatus.**
- Posterior declivity of elytra not retuse:
  - Thorax moderately rough in front ..... 10. **materiarius.**
  - Thorax very rough in front, (very small) ..... 11. **asperulus.**

** Club of antennæ distinctly annulated, less shining, sutures transverse nearly straight:
- *a.* Elytra finely punctulate and pubescent:
  - Pubescence of elytra short and fine ..... 12. **minutissimus.**
  - Pubescence of elytra longer and coarser ..... 13. **pubipennis.**
  - Pubescence of elytra sparse and body more slender .. 14. **pilosus.**
- *b.* Elytra with rows of quadrate punctures, posterior declivity not sulcate.
  - Elytra with rows of short stiff bristles ..... 15. **hispidulus.**
  - Elytra with rows of short very fine hairs ..... 16. **striatus.**

c. Elytra with more or less distinct rows of punctures, posterior declivity broadly sulcate near the suture:

Thorax finely punctulate behind, with a large patch of hair each side in front of the middle .....17. **comatus.**

Thorax coarsely punctured behind, without patches of hair.—TRYPOPHLŒUS Fairmaire.

Subsutural groove of declivity broad and deep:

Elytra coarsely punctured in rows .....18. **pullus.**

Elytra coarsely punctured, but not in rows.....19. **pulicarius.**

Elytra more finely punctured in rows:

Prothorax regularly rounded in front.....20. **atratulus.**

Prothorax slightly constricted near the tip.21. **nitidulus.**

Subsutural groove of declivity very faint:

Elytra more finely and confusedly punctured. 22. **puberulus.**

8. **C. retusus.**—Cylindrical, slender, blackish-brown, base of elytra paler, antennæ and feet yellowish; head prominent, convex, subcarinated, shining, sparsely punctured; prothorax nearly one-half longer than wide, sides slightly converging from the base and feebly rounded, tip strongly rounded, surface rough and sparsely hairy before the middle, granules tolerably coarse near the tip, behind the middle sparsely punctulate; elytra very finely rugose and distantly punctulate in rows, and with a few long hairs behind the middle, posterior declivity with a deep depression along the suture, limited each side by a longitudinal obtuse elevation, bearing on its highest portion a few very fine denticulations; suture not elevated. Long. 3·5 mm.

Collected in the coast region of California and Oregon by Dr. Horn. This species has the same form and sculpture as *C. materiarius*, but is larger and readily distinguished by the different sculpture of the posterior declivity of the elytra.

9. **C. sulcatus.**—Form, size and sculpture precisely the same as in *C. retusus*, except that the front is divergently aciculate, and the occiput is sparsely punctured; the elytra are similarly punctulate in rows, but the general surface is more distinctly and densely rugose; the retuse elevation of the posterior declivity of the elytra is but slightly prominent, and not denticulate; the hairs behind the middle of the elytra are less numerous. Long. 3·5 mm.

One specimen from the coast region of middle California, given me by Dr. Horn. The color is paler than that of the three specimens of *C. retusus* now before me, being yellowish-brown, with the base of the thorax, and the sides and tip of the elytra darker. Probably more mature specimens would be darker; it is perhaps the female of the preceding, but having failed to find any sexual characters in *C. materiarius*, I am not warranted at present in so regarding it.

11. **C. asperulus.**—Slender, cylindrical, brownish-black, shining, nearly glabrous, antennæ and feet yellow; head flat, feebly punctulate; prothorax one-half longer than wide, feebly narrowed and rounded on the sides from the base, strongly rounded at tip, very rough and slightly pubescent before the middle, but almost entirely smooth behind; elytra scarcely punctulate, posterior declivity with a few hairs, almost uniformly convex, with a very feeble subsutural furrow. Long. 1·5 mm.

One specimen from Virginia, given me by Mr. E. T. Cresson. With the exception of *C. hispidulus*, *puberulus* and *Crypturgus atomus*, this is the smallest native Scolytide known to me. The elytra under a high magnifying power show some very faint rows of small punctures.

13. **C. pubipennis.**=*Tomicus pubip.* Lec. R. R. Expl. to Pacific, xi, Ins. 59. California.

14. **C. pilosulus.**—Elongate, cylindrical, yellow ferruginous, shining, front hairy; prothorax longer than wide, finely asperate in front, tolerably densely punctured behind, uniformly clothed with fine pubescence; elytra tolerably densely and finely punctured, and clothed with fine erect hairs, without any appearance of striæ, obliquely declivous and slightly flattened behind. Long. 2 mm.

I found one specimen of this species in middle California; others were collected by Dr. Horn in the southwestern part of the State.

15. **C. hispidulus.**—Moderately elongate, black, scape and first joint of funiculus of antennæ, tibiæ and tarsi ferruginous; head prominent convex, finely reticulate; prothorax not longer than wide, convex, before the middle rough with acute reclinate tubercles, rugosely punctured behind, clothed with short stiff hairs; elytra with approximate rows of quadrate punctures, intervals narrow, with rows of close set short stiff erect gray bristles; posterior declivity rounded, not at all flattened. Long. 1—1·5 mm.

District of Columbia, Georgia, Louisiana; this species, though evidently related to *C. dissimilis*, has the outer portion of the funiculus, or rather the pedicel of the club of the antennæ, slender and divided by very fine transverse sutures, the base of the club is shining and smooth.

16. **C. striatus.**—Elongate cylindrical, dark brown, antennæ and feet yellow; head prominent, convex, punctured, slightly pubescent, with a smooth transverse frontal elevation; prothorax longer than wide, convex, finely roughened in front, with a few larger tubercles, which are somewhat acute, tolerably densely and coarsely punctured behind, sparsely clothed with short hairs; elytra with approximate rows of large quadrate punctures, intervals each with a series of very fine punctures bearing short yellowish hairs; tip obliquely declivous, very slightly flattened. Long. 2 mm.

This species is widely distributed. I have several specimens collected at Cape San Lucas, Lower California, by Mr. John Xántus, others were found in Middle California by Dr. Horn, and I have seen two in the collection of the American Entomological Society which came from Illinois. The club of the antennæ is very distinctly annulated, the outer part of the funiculus is divided by one transverse suture, visible only under a compound microscope; it is therefore only 3-jointed; the first joint is larger than the other two united.

20. **C. atratulus.**—Elongate cylindrical, black, antennæ and feet very dark brown; front clothed with long hair; prothorax longer than wide, sides nearly straight and parallel, disc rough with elevated tubercles in front, strongly but

not densely punctured behind, with a broad, smooth dorsal line; elytra with rows of moderately fine close set punctures, here and there somewhat irregular, intervals broad flat, the alternate ones with a few distant punctures; tip obliquely declivous, broadly and deeply sulcate along the suture, and with a few erect hairs. Long. 2 mm.

Two specimens, Cabo de los Reyes, California, Mr. George Davidson. Related to *C. pullus*, but with the elytra punctured as in *C. nitidulus*, from which it differs chiefly by the form of the thorax, which is more parallel on the sides, and not at all constricted, but regularly rounded near the tip.

21. **C. nitidulus.**= *Bostrichus nitid.* Mannh. Bull. Mosc. 1843, 298; 1846, 359.

Sitka. This species resembles *C. pullus* Zimm., but differs by the punctures of the rows of the elytra being much finer and more closely placed, and the intervals therefore wider and more even; the prothorax is also distinctly rounded on the sides, and slightly constricted near the tips.

22. **C. puberulus.**—Cylindrical, moderately slender, black, thinly clothed with short erect gray hairs; head slightly convex, punctulate; prothorax a little longer than wide, slightly narrowed in front, feebly rounded on the sides, broadly rounded at base, and more strongly at tip, disc rough, with reclinate tubercles in front of the middle, strongly but finely punctured at the sides and behind; elytra about one-half longer than the prothorax, strongly but finely punctured, but not in rows, posterior declivity not at all flattened, slightly convex, with a well marked sutural stria extending from the tip one-third the length of the elytra, tip of suture slightly acute, (but not acuminate, as in *Micracis.*) Long. less than 1·5 mm.

One specimen from District of Columbia given me by Mr. Ulke. This is among our smallest species, and somewhat resembles *C. minutissimus* Zimm. in form, but is smaller and much less finely punctured, and is narrower. It is easily distinguished by the absence of the fringe of long hairs on the head, and by the well marked, though narrow sutural stria extending from behind the middle to the tip of the elytra; the acuteness of the sutural angle induces me to believe that this is perhaps *Tomicus pusillus*, Fitch, Noxious Ins. New York, ii, No. 245.

The funiculus of the antennæ in this species is 5-jointed, the outer joints 2—5 being closely connected, forming a pedicel to the club, as in the group *Trypophlœus* Fairmaire, DuVal, Col. Europe, iv. pl 33, fig. 160; in the proportions of the body and in sculpture our species also resembles the figure cited. A similar structure of the funiculus is seen in *C. nitidulus*, *atratulus*, *pullus* and *pulicarius*. *C. comatus*, so anomalous by the two tufts of hair on the prothorax, seems to belong rather to the typical *Cryphalus;* at least, so far as the condition

of the specimen permits an examination, the funiculus appears to be 4-jointed.

XYLOTERUS Er.

In this genus the club of the antennæ is large, pubescent, oval, solid and not at all annulated, with a somewhat smooth elongate spot extending from the base to the middle; the funiculus is 4-jointed, and the eyes are so deeply emarginate as to become completely divided.

No species of this genus is contained in the collection of Dr. Zimmermann, and the name was applied by him to some species not separated by Erichson from *Tomicus*, but which now form the genus *Xyleborus* Eichh.; I have taken the liberty of substituting the latter name in his MSS.

Mr. A. Puton* observes that the European species of this genus do not make their galleries between the inner bark and the wood, as is the case with nearly all the insects of this family, but burrow deeply into the wood itself, thus greatly injuring the value of the trees which they attack. Our species, without doubt, will be found to have similar habits.

1. **X. retusus.**—Cylindrical, rather stout, blackish brown, shining; head (♂) deeply concave, sparsely finely punctured, clothed with erect hairs; prothorax much broader than long, rather quadrate in form, being as broadly rounded at tip as at base, convex, very strongly declivous and broadly impressed near the tip; asperate with transverse granulations, and clothed with long erect hair in front, finely, not densely punctured behind; elytra with distant rows of rather fine and not deeply impressed punctures, each with a testaceous vitta abbreviated before and behind. Long. 4·5 mm.

One specimen from Canada given me by Dr. Horn. Resembles the next, but is much larger, easily distinguished by the form of the thorax, which is more abruptly declivous in front, and broadly retuse.

2. **X. bivittatus** Mannh. Bull. Mosc. 1853, 236.=*Apate biv.* Kirby, Fauna Bor. Am. iv, 192, tab. 8, fig. 5: (♂) *Bostrichus cavifrons* Mannh. Bull. Mosc. 1843, 297; ibid, 1852, 359:=*Xyloterus cav.* Mannh. ibid, 1852, 385.

Maine to Alaska. In the male the head is concave, and the thorax finely transversely asperate before the middle; in the female, the head is convex, and the thorax much more roughly asperate. This species varies greatly in color, the black elytral vittæ sometimes occupy nearly the whole surface, and sometimes are almost wanting.

3. **X. scabricollis.**

I have received from Mr. Ulke a remarkable male, having the head deeply concave, as usual, but the thorax is as rough in front as in the

* *Ann. Soc. Ent. France*, 1867, p. 634.

♀ of *X. bivittatus*, and covered behind with anastomosing curved lines, leaving between them flattened granules; the elytra are shining, and the punctures of the rows are larger and more strongly impressed; the color is uniform reddish brown, with the antennæ and feet paler. Long. 3·5 mm. Washington, D. C.

4. **X. politus** Lec. Entom. Writings of Thos. Say, ii, 319.=*Bostrichus politus* Say, Journ. Acad. Nat, Sc. Phila. v. 256; ed. Lec. ii, 318.

Middle and Southern States. Narrower than the other species, more hairy, and easily known by the punctures of the elytral rows being larger and more distant; the club of the antennæ is broader and less oval. I have seen no specimens with concave head.

XYLEBORUS Eichhoff.

These species have the eyes slightly emarginate; the outer (or posterior) face of the antennal club is corneous and shining, the inner face equally so, except at the end, where there is an oval pubescent circularly annulated space; the outline viewed from the outer face appears truncate, and sometimes almost obtusely pointed at the side.

In all the species known to me, the first joint of the funiculus of the antennæ is longer and thicker, equal in length to the others united, which, varying in number from three to four, are closely joined, forming a conical mass, the separations of which are visible only with a very high magnifying power. They may be grouped as follows:

A.—Body stout cylindrical, thorax not longer than wide, funiculus of antennæ 4-jointed.

1. **X. tachygraphus.**=*Xyleborus tachygr.* Zimm. (Ante, p. 144.)

2. **X. pyri.**=*Scolytus pyri* Harris. (Ante, p. 144.)

3. **X. obesus.**—Short and stout, cylindrical, blackish-brown, thinly clothed with long soft erect pale hairs, antennæ reddish-brown; head convex, coarsely but not densely punctured; prothorax rather broader than long, strongly roughened with subacute tubercles in front, nearly smooth behind; elytra with rows of large punctures, not very closely set, intervals flat marked with small distant punctures from which proceed the long hairs; tip obliquely declivous, not tuberculate, but with the striæ somewhat impressed, and the side and tip acutely margined, as in the two preceding species. Long. 3 mm.

Virginia, Massachusetts and Canada. Differs from the two preceding by its much stouter form and by the absence of the small acute tubercles of the declivous tip of the elytra.

B.—Body usually slender cylindrical, posterior declivity of elytra obliquely and strongly flattened, with rows of tubercles or teeth; funiculus of antennæ 5-jointed—XYLEBORUS Eichhoff.

a.—Tibiæ finely serrate.

4. **X. celsus** Eichh. Berl. Ent. Zeitschr. 1867, 400. (Ante, p. 145.)

5. **X. biographus.**—Cylindrical, not very slender, chestnut-brown, antennæ and feet paler, shining, thinly clothed with very long hairs; head sparsely punctured, prothorax (♂) longer than wide, broadly and deeply excavated before the middle, and covered with flat granules, producing an imbricated appearance, anterior margin obtusely angulated; the surface at the sides is sparsely punctured, and near the middle of the base is almost smooth; elytra less than twice as long as the prothorax, with rows of large feebly impressed punctures, posterior declivity flat, impunctured, with three acute tubercles each side equally distant from the suture and the margin of the declivity, which is marked with a second row of three or four smaller teeth, and outside of these again are two or three scarcely perceptible denticles. Long. 3 mm.

One male from Illinois is before me. This species seems to be the analogue of the European *X. monographus*, the male of which has the thorax similarly impressed and retuse. It is also related to *X. retusicollis* Zimm., but differs by its larger size, less prominent tubercles of the apical declivity of the elytra, as well as by minor differences in sculpture.

6. **X. retusicollis** Zimm. (Ante, p. 146.)
7. **X. fuscatus** Eichh. Berl. Ent. Zeitschr. 1867, 400. (Ante, p. 145.)
8. **X. impressus** Eichh. Berl. Ent. Zeitschr. 1867, 400.—Georgia.
9. **X. xylographus.**=*Bostrichus xylogr.* Say; *X. pini* Eichh. Berl. Ent. Zeitschr. 1867, 401. (Ante, p. 145.)
10. **X. pubescens** Zimm. (Ante, p. 145.)
11. **X. planicollis** Zimm. (Ante, p. 145.)

b.—Tibiæ coarsely serrate.

12. **X. cælatus.**=*Tomicus cælatus* Eichh. Berl. Ent. Zeitschr. 1867, 402. (Ante, p. 146.)

The circularly annulate portion of the club of the antennæ is larger than in the other species, (except *X. sparsus* and *plagiatus*,) and the smooth basal part correspondingly smaller, showing therefore the same tendency towards *Tomicus* mentioned below.

c.—Tibiæ with only a few small teeth, anterior pair narrower than the others.

13. **X. sparsus.**—Elongate cylindrical, blackish-brown, shining, sparsely clothed with very long erect hairs; antennæ and feet dark ferruginous; head densely pilose, with long yellow hair, prothorax a little longer than wide, coarsely asperate in front, coarsely and sparsely punctured behind, with an elongated, smooth dorsal space; anterior margin fringed with hairs which are half as long as the thorax; elytra with rows of distant coarse punctures, intervals with more distant but equally coarse punctures, so that at first sight the punctuation appears confused; tip obliquely declivous, impunctured, except in the subsutural furrow, which is well marked, face of the declivity each side with two large acute tubercles, and a third smaller one at the upper edge of the slope, margin of the slope with a few (three or four) small denticles; extreme tip slightly produced into an acute point. Long. 2 mm.

One specimen from Point Keweenaw, Lake Superior. The tibiæ in

this species are less dilated and less distinctly serrate than in those above mentioned.

14. **X. plagiatus.**—Less slender, ferruginous brown, shining, thinly clothed with long erect hairs; antennæ and legs paler; head convex, punctured, with a triangular, opake, pubescent, frontal spot; prothorax scarcely longer than wide, sides parallel behind, then semicircularly rounded with the apex; base very distinctly rounded towards the sides, surface strongly roughened before the middle, finely but deeply punctured behind, with a smooth oval space each side just behind the middle; elytra strongly but not densely punctured, punctures not arranged in rows; posterior declivity strongly toothed (♂), or almost unarmed (♀) scarcely punctured, suture elevated. Long. 2 mm.

Male with the posterior declivity of the elytra deeply concave, with the margin semicircularly elevated from near the tip to near the suture, armed at its upper limit with a robust horn, slightly hooked at the tip, then with two or three denticles, and ending below in a rather prominent tooth.

Female with the posterior declivity somewhat retuse each side, and deeply sulcate near the suture, with a very small denticle near the suture, and a larger subacute tubercle near the tip.

Maryland, Mr. H. Ulke. I infer that these two forms are the sexes of the same species, on account of the identity in sculpture of the thorax, and because the sexes of the European *Tomicus bidens* as figured by Ratzeburg, differ in a somewhat similar manner.

The smooth basal portion of the antennal club is smaller in this than in the other species, and the sutures of the apical portion are less curved, being, in fact, nearly straight; in these respects it tends towards one of the groups of *Tomicus* (*pini*, *interruptus*, &c.), but differs by the elevated margin of the posterior declivity not extending to the tip, and by the sparse confused puncturing of the elytra; the tibiæ are less dilated than usual, and armed with a few not very prominent teeth, very nearly as in the preceding species, to which it is evidently allied.

C.—Body moderately slender, cylindrical, tip of elytra obliquely declivous, scarcely flattened, without tubercles; funiculus of antennæ 5-jointed—DRYOCŒTES Eichhoff.

15. **X. septentrionis.**=*Bostrichus sept.* Mannh. Bull. Mosc. 1843, 298; *Bostrichus semicastaneus* Mannh., ibid, 1852, 358.

Alaska, Lake Superior, Hudson Bay Territory, Canada, New York. With a large series of specimens before me, and types of both of the descriptions of Mannerheim, I perceive no differences which permit them to be distinguished as species. The specimens of *semicastaneus* have no appearance of a smooth dorsal prothoracic line; the single Alaskan *septentrionis* has it feebly apparent; in other specimens from Lake Superior, New York and Virginia it is quite obvious.

16. **X. affaber.**=*Bostrichus affaber* Mannh. Bull. Mosc. 1852, 359.

Alaska and Lake Superior. Differs from the preceding by its smaller size, and by the prothorax being slightly asperated in front.

17. **X. granicollis.**—Ferruginous, elongate cylindrical, sparsely clothed with erect hairs; head with a few granules and punctures; prothorax longer than wide, densely granulate on the whole surface, scarcely more strongly in front than behind, smooth dorsal line narrow, scarcely visible; elytra with rows of large quadrate punctures, intervals narrow, with single rows of small punctures; sutural stria well impressed, tip obliquely declivous, not flattened, but slightly retuse from the depth of the subsutural furrow. Long. 2 mm.

One specimen found in the mountains of Sullivan county, Pennsylvania. Much resembles in its sculpture *Crypturgus striatulus* Lec., but differs totally in the form and structure of the antennal club.

TOMICUS Latr.

This genus in its most restricted sense corresponds with the subgenus *Bostrychus* of Dr. Zimmermann, and is easily recognized by the antennal club being corneous on the posterior face, and divided on the other side by sutures which are angulated or sinuate, the principal convexity of the suture being directed forwards; the funiculus is always composed of five distinct joints, and the tibiæ are strongly toothed. The declivous portion of the elytra is deeply excavated, the excavation is margined behind, the margin extends to the suture a little in front of the sutural angle, and is strongly toothed at the sides; the punctures are arranged in distant rows, the intervals broad and flat, sometimes marked with a few punctures, sometimes smooth.

According to the form of the sutures of the antennal club, our species represent three divisions:

A.—Sutures of the club angulated, the point of the angle directed forwards.

1. **T. calligraphus** Germ. Ins. Nov. 461.=*Bostrichus exesus* Say; ? *Tomicus præmorsus* Eichhoff. Berl. Ent. Zeitschr. 1867, 401. (Ante, p. 147 = *B. exesus.*)

A larger form, 7 mm. long, occurs in New Mexico.

2. **T. cacographus.**—Cylindrical, dark-brown, or ferruginous, sparsely clothed with long yellow hairs; similar in sculpture to the preceding, but a little more slender in form; the disc of the prothorax behind the middle is feebly punctured, the punctures of the elytral striæ are transverse, and those of the intervals are well marked; the posterior excavation is armed each side with but five teeth, of which the most anterior one is very small, the 3d large, 2d still larger, 4th and 5th moderate in size, the posterior elevated margin is not longer than in *T. calligraphus*, not dentate, but perfect in outline, as in *T. pini.* Long. 3·5 mm.

Southern and Western States. Varies in color like the other species. I have two large specimens, more than 4 mm. long, one from Arizona and one from Illinois which do not seem to differ appreciably from the smaller eastern specimens of this species.

3. **T. plastographus.**—Also of the same form and sculpture as *T. calligraphus;* the middle part of the disc of the prothorax behind is less punctured, with a narrow smooth space; the striæ of the elytra are composed of transverse punctures, and the intervals as far as the 5th are nearly free from punctures; the subsutural interval is, however, somewhat rugose towards the declivity, as in that species; the declivity is less deeply excavated, and armed each side with but four teeth, the anterior one being very small, the 2d and 3d large, somewhat connected together, and the 4th moderate in size, the posterior elevated margin is as long as in *T. pini,* extending one-third the circumference of the excavation. Long. 4—5 mm.

California, one specimen. This species so resembles in the armature of the posterior excavation of the elytra *T. pini*, that I confounded it with that species. On close comparison, however, the differences are quite apparent, consisting not only in the transverse and coarser punctures of the elytral striæ, but in the sutures of the antennal club, which are strongly angulated at the middle, and again in a backward direction near the inner side.

B.—Antennal club with the first suture nearly straight, 2d bisinuate; posterior margin of the declivity of the elytra much longer.

4. **T. pini.**=*Bostrichus pini* Say; *Tomicus præfractus* Eichhoff, Berl. Ent. Zeitschr. 1867, 401. (Ante, p. 147.)

Atlantic States, Canada, Oregon. In this species the punctures of the rows of the elytra are not transverse, and the intervals are nearly free from punctures; the posterior declivity is deeply excavated, acutely margined below for rather more than one-third of its circumference, and armed each side with four teeth, of which the 1st is small, the 3d usually longer than the 2d, but more or less connected with it, the 4th shorter than the 3d, and acute. The thorax is deeply, but rather finely punctured behind towards the middle, with a narrow, ill defined, smooth dorsal space. Long. 4 mm.

A larger and somewhat stouter form occurs in the Hudson Bay Territory, but I am not disposed to view it as indicating a different species. Four specimens are in my collection, and I have seen several others; they are about 5.5 mm. long., and are more hairy than the ordinary form.

A smaller specimen from Hudson Bay Territory differs from *T. interruptus* by the head being shorter and more coarsely punctured, just as in *T. pini*, but the intervals of the elytra have rows of very distant punctures, not so numerous as in *T. interruptus*, and the striæ are composed of more close set punctures, as in *T. pini*. It is probably a distinct species, but I am unwilling to impose a name upon the single specimen before me.

5. **T. interruptus.**—*Bostrichus interruptus* Mannh. Bull. Mosc. 1852, 357.

Alaska. This species is of the same size and form as the smaller race of *T. pini*, but is more hairy, with the elytral striæ composed of more distant punctures, and the intervals marked with rows of punctures but little smaller than those of the striæ; the posterior declivity is just as in *T. pini;* the punctures of the hind part of the thorax are rather deeper and more distant. The part of the head in front of the eyes is longer and more finely punctured than in *T. pini.* Long. 4·5 mm.

6. **T. tridens.**=*Bostrichus tridens* Mannh. Bull. Mosc. 1852, 357.

Alaska, one specimen. Of the same form and sculpture as *T. interruptus*, but the head in front of the eyes is longer and more finely punctured, and strongly retuse in the middle, with the anterior face of the elevation somewhat impressed. The punctures of the striæ of the elytra are still more distant, and those of the intervals nearly as large as those of the striæ, though less numerous; the posterior excavation is precisely as in *T. interruptus.*

7. **T. avulsus** Eichhoff, Berl. Ent. Zeitschr. 1867, 402. (Ante, p. 147.)

Southern States. Easily distinguished by its small size and by the less deeply excavated and less strongly toothed posterior declivity of the elytra.

C.—Sutures of the antennal club strongly curved, but not angulated.

8. **T. concinnus.**=*Bostrichus concinnus* Mannh. Bull. Mosc. 1852, 358.

Alaska, three specimens. A very distinct species, having the apical declivity of the elytra less deeply excavated, with the posterior margin acute, but only slightly elevated, and armed with but three teeth each side, of which the 3d is the longest. The elytra are punctured in a confused manner, without distinct traces of striæ.

MICRACIS Lec.

The body in this genus is elongate, cylindrical, with the posterior declivity of the elytra convex, and the suture prolonged into an acute point. The club of the antennæ is oval, compressed, finely pubescent, with an elongated basal smooth spot, (the representative of the basal joint as in *Scolytus*), extending for more than half its length; the other sutures form loops parallel with this smooth space; the funiculus is 5-jointed, the 1st joint as long as the others united; the 2—5 are closely connected, gradually becoming shorter and broader, forming a conical mass. The scape of the antennæ is broadly dilated and fringed towards the extremity with very long hairs, almost as in some of the genera allied to *Platypus.*

1. **M. suturalis.**—Slender, cylindrical, blackish-brown, antennæ yellow, scape broadly triangular, flattened, fringed towards the tip with very long yellow hairs; head concave; prothorax one-half longer than wide, sides parallel behind the middle, rounded in front, base feebly rounded; surface dull with fine reticulations, and scattered granules gradually becoming larger and acute in front of the middle, where color becomes reddish brown. Elytra with close rows of fine punctures, connected by feeble transverse rugosities, pubescence fine and short; posterior declivity convex, sutural angle prolonged into a short acute point. Long. 2·5 mm.

Illinois; four specimens sent me by Dr. Henry Shimer, as found on the prickly ash, into the wood of which it bores. This species differs from the next by its more slender form, finer pubescence, and less coarse elytral punctures.

2. **M. aculeatus.**—Slender, cylindrical, dark-brown, not shining, elytra and front part of thorax paler, antennæ yellow, scape triangular, fringed with long yellow coarse hairs, head flat, thinly fringed with long hairs; prothorax a little longer than wide, gradually narrowed and rounded on the sides from the base, which is feebly rounded, surface coarsely granulate, the granules becoming more acute in front of the middle; elytra with transverse punctures densely arranged in rows, and almost connected by intervening rugosities, intervals narrow, with the hairs arranged in lines, appearing like short bristles, posterior declivity slightly convex, not at all excavated or toothed, sutural angle prolonged into a short acute point. Long. 2·5 mm.

Southern States. Resembles in form the European *T. micrographus*, but differs generically by the structure of the antennal club. The scape of the antennæ is less broadly dilated than in the preceding species.

SCOLYTUS Geoffroy.

The species in my collection may be grouped as follows:

Venter deeply excavated and armed with long spines.....1. **quadrispinosus.**
Venter flat or slightly concave:
  Elytral striæ well marked:
    Punctures of intervals very small, without hair:
      Venter coarsely punctured.....2. **fagi.**
      Venter finely punctured.....3. **californicus.**
    Punctures of intervals bearing short hairs.....4. **caryæ.**
  Elytral striæ composed of more distant punctures:
    Elytra thinly clothed with very long hair.....5. **muticus.**
    Elytra glabrous, or nearly so:
      2d ventral segment not tuberculate.....6. **sulcatus.**
      2d ventral segment with a small apical tubercle.....7. **ventralis.**

1. **S. quadrispinosus** Say, Journ. Acad. Nat. Sc. iii, 323.

Southern and Western States; rare. The specimen in my collection is altogether black, with the exception of the antennæ, which are rufous.

2. **S. fagi** Walsh, Practical Entomologist, ii, 58.—Black shining, head (♂) flattened, slightly concave, covered with erect yellow hair, rugosely punctured, prothorax oblong, narrowed in front, broadly rounded on the sides, punctures distant, finer upon the disc than at the sides, glabrous, except towards the front angles, where there are a few scattered hairs; elytra with distinct striæ formed of approximate subquadrate punctures, intervals broad, flat, marked with a row of fine distant punctures, tip rugosely punctured; venter strongly retuse in front, segments coarsely punctured except at the hind margins, which are smooth and slightly elevated; antennæ ferruginous, feet brown. Long. 5·5 mm.

One specimen from Illinois. Larger than our other species, and easily distinguished by the characters above given. The last ventral segment is feebly longitudinally impressed at the middle, and fringed behind with long hairs. Mr. Walsh mentions that this species lives upon the beech tree.

3. **S. californicus.**—Black shining, head (♂) slightly convex, finely and densely rugosely punctured, with very short erect hair; prothorax oblong, more strongly narrowed in front, very slightly rounded on the sides, moderately punctured, more finely on the disc than at the sides; elytra brown, with distinctly marked striæ, composed of close-set punctures, intervals broad, flat, each with a row of fine distant punctures, tip rugosely punctured; venter obtusely prominent at base, declivous part scarcely concave, segments finely punctured, third and fourth with a very small rounded tubercle at the middle of the hind margin; antennæ and feet brown. Long. 4·5 mm.

One specimen from California kindly sent me by Mr. Andrew Murray. The last ventral segment has a broad, shallow, somewhat transverse depression. Judging from the series of the next species before me, specimens with black elytra may be expected.

4. **S. caryæ** Riley, Prairie Farmer, Febr. 1867; Walsh, Pract. Entom. ii, 53.—Black shining, elytra sometimes yellowish-brown; head longitudinally aciculate, clothed with long hair, front feebly impressed transversely; prothorax a little longer than wide, narrowed in front, slightly rounded on the sides, not densely punctured, punctures at the middle very fine, at the sides tolerably coarse, and bearing a few short hairs; elytra with striæ composed of approximate small punctures bearing short gray hairs; tip rugosely punctured, and pubescent; venter with the declivity slightly concave, densely punctured behind, but more sparsely towards the base; the anterior margin of the declivity is acute, but not retuse; antennæ and feet yellowish-brown. Long. 4—5 mm.

New York, Nebraska: three specimens, which show no sexual difference. Said by Messrs. Walsh and Riley to affect hickory trees.

5. **S. muticus** Say, Journ. Acad. Nat. Sc. iii, 323.

One specimen, Pennsylvania. Easily recognized by the long hairs proceeding from the elytral punctures; the striæ are composed of large punctures, separated by a greater distance than their diameter, and the

intervals are marked with rows of equally distant punctures of little smaller size. The front in the male is flattened, and fringed with very long hair; the venter is coarsely punctured, concave towards the base, with the anterior margin of the declivity prominent and subacute; the hind margins of the third and fourth segments are smooth and obtusely elevated; the last segment has a longitudinal impression, and is very hairy behind.

6. **S. sulcatus.**—Blackish, elytra, antennæ and feet yellowish brown, head longitudinally aciculate, flattened, slightly hairy; prothorax not longer than wide, strongly narrowed in front, very feebly rounded on the sides, finely, not densely punctured, more distinctly at the sides; elytra with the punctures of the rows and intervals almost equal in size and distance, with a few short yellow hairs towards the side and tip, the tip, as usual, rugosely punctured; venter not densely punctured, anterior part of declivity prominent, subacute, posterior margin of the segments smooth and somewhat elevated. Long. 3·75 mm.

One female, New York. The color of the elytra is probably variable. Seems to resemble the European *S. rugulosus.*

7. **S. ventralis.**—Black, shining, head longitudinally aciculate and punctured, slightly convex and thinly clothed with short hair; prothorax oblong, a little longer than wide, slightly narrowed in front, feebly rounded on the sides, moderately punctured, more finely on the disc than at the sides; elytra with approximate rows of punctures, those of the striæ and intervals being equal in size and distance, and bearing very short grayish hairs; tip rugosely punctured; venter somewhat concave, strongly, but not densely punctured, second segment with a conspicuous tubercle at the middle of the hind margin; last segment more acutely margined than usual, antennæ ferruginous, feet dark-brown. Long. 4—4·5 mm.

Two specimens collected in Washington Territory, given to me by Mr. George Gibbs.

Tribe IV.—Hylurgini.

The introduction of the genera *Chramesus*, *Chesinus* and *Polygraphus* into our fauna requires a modification of the definition of this tribe.

The distinctions are to be found less in the degree of the dilatation of the third tarsal joint than in the obsolescence of the fourth joint, whereby the tarsi become in the tribe *Hylurgini* tetramerous, as in the normal Rhynchophora; besides this difference in the tarsi, the head is also larger and more prominent than in the *Tomicini*, and inserted in the axis of the prothorax, instead of at an angle, as it is in the tribe last named. The sculpture of the thorax is always uniform, a character rarely observed in the *Tomicini*, and the base of the elytra is frequently elevated, acute and serrate; finally the prolongation of the

head in front of the eyes is much more evident than in any of the *Tomicini.*

I would modify the table of our author as follows:

A. Club of antennæ solid, large, much compressed, uniformly pubescent; tarsi with third joint not dilated, scarcely emarginate:
  Funiculus very short, 1-jointed.....**Chramesus.**
  Funiculus longer, 5-jointed.....**Polygraphus.**
B. Club of antennæ lamellate.....**Phlœotribus.**
C. Club of antennæ annulated:
  a. Ventral segments subequal:
    Club of antennæ oval, elongate or fusiform:
      Front tibiæ serrate.....**Hylesinus.**
      Front tibiæ coarsely toothed.....**Cnesinus.**
    Club oval, smaller, subacute:
      Tarsi with joints 1—3 equal.....**Hylurgus.**
      Tarsi with first joint shorter.....**Carphoborus.**
    Club short, broad, compressed and concave.....**Dendroctonus.**
  b. First and fifth ventral segments elongate, sutures very deeply impressed:
    Club small, oval, basal half glabrous.....**Hylastes.**

CHRAMESUS Lec. n. g.

Body oval, convex, covered with erect short bristles; head large, prominent, concave in the male, slightly convex in the female: eyes transverse, feebly emarginate, finely granulated; antennæ with the scape long and slender, nearly as long as the head, and very gradually enlarged towards the tip; funiculus of but one distinct joint, which is conical, not longer than wide; the remaining joints are obsolete, and visible only as a corneous ridge on the upper edge of the base of the club, which is very much compressed, uniformly pubescent, without trace of articulation on either face, as long as the head, less than half as wide as its length, oval subsecuriform, lower outline nearly straight, upper one curved, obtusely rounded at tip. Prothorax one-half wider than long, much narrowed in front, rounded on the sides, and less so at the tip. Elytra about twice as long as the thorax, convex, obtusely rounded behind, basal margin acute and subserrate, as in *Hylesinus.* Tibiæ dilated gradually, feebly serrate; tarsi with the joints 1—3 very short, 3d scarcely dilated, 4th joint nearly as long as the others united, with large claws.

C. hicoriæ.—Oval, convex, black, not shining, antennæ yellow; body clothed with short stiff ashy hairs, with rows of longer erect bristles upon the intervals of the elytra; head feebly punctured, deeply concave in the male; prothorax broader than long, strongly narrowed in front, coarsely, not densely punctured, feebly bisinuate at base; elytra very obsoletely striate, finely, not densely punctulate. Long. 1·5 mm.

Bred from twigs of hickory, similar to those from which Prof. S. S.

Haldeman obtained *Dysphaga*, near Columbia, Pennsylvania. I have also a specimen from Louisiana.

The head of the female is not concave, but has a well marked, small transverse impression on the front.

POLYGRAPHUS Er.

P. rufipennis.=*Apate* (*Lepisomus*) *rufipennis* Kirby, Fauna Bor. Am. iv, 193, tab. 8, fig. 2; *A.* (*L.*) *nigriceps*, Kirby, ib. 194; *P. saginatus* Mannh. Bull. Mosc. 1853, 237.

Alaska, Canada, Maine, Louisiana. The elytra are marked with inconspicuous rows of punctures; the intervals are flat, with fine, mostly transverse rugosities, and tolerably densely punctulate; the pubescence is short, coarse, depressed, and of a yellowish-gray color. Long. 2—2·5 mm. The eyes are divided as in *Xyloterus*. The front is slightly impressed in the male, and has a small medial tubercle, sometimes divided into two.

HYLESINUS Fabr.

The species of this genus may be grouped as follows:

A. Funiculus of antennæ as long as the club, with seven distinct joints:
  Body densely covered with pale and dark scales:
    Oval, club of antennæ fusiform:
      Thorax muricate at the sides before the middle,.....1. **imperialis.**
      Thorax not muricate.....2. **aculeatus.**
    Elongate, club of antennæ ovate:
      Thorax feebly constricted in front.....3. **sericeus.**
      Thorax strongly constricted in front.....4. **nebulosus.**
    Short and stout, club of antennæ nearly oval.....5. **fasciatus.**
  Body sparsely clothed with short yellow hairs; club of antennæ oval.....6. **opaculus.**
B. Funiculus of antennæ shorter than the club, 6-jointed, joints 2—6 closely united into a conical mass:
  Elytra with deep striæ, intervals rough, the alternate ones acutely tuberculate near the tip, (pubescence short:)
    2 mm.—1st and 3d intervals only slightly elevated.....7. **dentatus.**
    3·5 mm.—1st and 3d intervals strongly elevated and tuberculate behind.....8. **serratus.**
    4 mm.—1st interval feebly elevated, 3d strongly so behind..9. **cristatus.**
  Elytra with rows of large punctures, intervals punctured, 3d retuse near the tip and acutely toothed, (pubescence long).....10. **hystrix.**

A.

In all these species the funiculus of the antennæ is 7-jointed, with the joints 2—7 nearly equal; the club is uniformly finely pubescent, except in *H. fasciatus*, where the basal portion is more shining.

1. **H. imperialis** Eichh. Berl. Ent. Zeitschr. 1868, 149.

Dacota and Arizona. Of the same form and color as *H. aculeatus*,

but differs by the conspicuous muricated points near the apex of the prothorax.

3. **H. sericeus** Mannh. Bull. Mosc. 1852, 385.=*Hylurgus ser.* Mannh. ibid. 1843, 296; 1852, 356.

Alaska and California.

4. **H. nebulosus** Lec. Proc. Acad. Nat. Sci. Phila. 1859, 285.

California and Oregon.

5. **H. fasciatus.**—Elliptical, convex, brownish-black, slightly pubescent, densely covered with black opake scales; head concave, with a narrow polished median line; prothorax twice as wide as long, strongly narrowed in front, broadly rounded on the sides, near the base and tip with bands of pale scales and hairs, the hinder one broadly interrupted at the middle; elytra with a band before the middle, consisting of a large sutural spot and some smaller ones towards the sides, a narrow, nearly complete band behind the middle, composed of pale ashy scales; tip with a few ashy scales; striæ deep, punctured. Long. 1·5 mm.

One specimen, York county, Pennsylvania. The club of the antennæ is one-half longer than wide, regularly oval, less acute than usual, and the basal part is less pubescent and more shining.

6. **H. opaculus.**—Cylindrical, brownish-black, opake, thinly clothed with short stiff yellow hairs; antennæ and feet ferruginous; head convex, thickly punctured; prothorax nearly as long as wide, narrowed in front, sides subsinuate near the tip; densely but not finely punctured, with a very narrow faint dorsal carina; elytra with striæ composed of deep subquadrate punctures, intervals narrow, rough with transverse rugosities. Long. 2·5 mm.

Two specimens, Pennsylvania. The club of the antennæ is subovate, nearly twice as long as wide, and more shining towards the base.

B.

7. **H. dentatus** Say, Journ. Acad. Nat. Sci. Phil. v, 258.

Middle and Northern States, and Oregon; under bark of Juniperus. This species, as observed by Say, strongly resembles in its specific characters *Phlœotribus frontalis*, but is always larger, being usually over 2 mm. long. In one sex the prothorax is much more rounded on the sides and more suddenly narrowed near the tip than in the other.

8. **H. serratus** Lec.

One specimen, New York.

9. **H. cristatus** Lec.

California, Mr. Ulke.

This and the preceding species closely resemble *H. dentatus* and differ chiefly by the larger size and by the greater elevation and stronger serration of the third interval on the posterior declivity of the elytra; *H. serratus* also has the sutural space strongly elevated and toothed, while in *H. cristatus*, although serrate, it is much less elevated.

10. **H. hystrix** Lec. Proc. Acad. Nat. Sci. Phila. 1858, 81.

San Diego, California. This and the three preceding species have the third joint of the tarsi less dilated than in those of division A, and rather emarginate than bilobed. They approach in this character and in the funiculus of the antennæ the genus *Hylurgus*, but differ by the larger club, the finely toothed tibiæ and the form of the body.

CNESINUS Lec. (n. g.)

Elongate cylindrical, head convex, beak very short, eyes oblique, transverse, broadly emarginated, finely granulated; antennæ with the scape as long as the funiculus, much curved, slender at base, moderately thickened towards the tip; first joint of the funiculus thick, as broad as long, remaining joints forming an elongate mass, gradually becoming wider externally, showing under a high magnifying power the appearance of six closely connected joints; club elongate oval, somewhat shining except at tip, feebly pubescent, transversely annulate, the sutures furnished with fringes of long hairs; prothorax longitudinally aciculate; elytra deeply striate, convex at tip, basal edge acute and serrate; front tibiæ dilated, armed externally near the tip, which is prolonged, with large acute teeth; middle and hind tibiæ dilated, feebly serrate; tarsi with the joints 1—3 moderately dilated, 3d emarginate, 4th slender, as long as the two preceding united; 1st joint of front tarsi shorter than the 2d, of the middle and hind tarsi equal to it.

The anterior coxæ are large and prominent, widely separated; the mesosternum is protuberant.

A peculiar genus, differing in appearance from the others of the tribe by the more cylindrical form, the prothorax being parallel on the sides, except near the apex, where they are rounded. The sculpture of the prothorax is also unusual, being composed of dense longitudinal aciculations.

C. strigicollis.—Cylindrical, dark brown, clothed with yellowish hairs, which are more stiff and arranged in rows upon the elytra; front flattened, nearly smooth, with a fringe of yellow hairs: prothorax longer than wide, convex, sides parallel to near the tip, where they are rounded, tip two-thirds as wide as the base: disc uniformly and densely covered with short longitudinal aciculate punctures; elytra with deep punctured striæ, intervals flat, with very fine rugosities; tip obliquely declivous, and broadly sulcate along the suture. Long. nearly 3 mm.

Two specimens, Illinois.

HYLURGUS Latr.

This genus as defined by Dr. Zimmermann is equivalent to *Hylastes* Er., and the species will be referred to under that heading. The one described below, however, corresponds exactly with the European type, having the club small, oval, rather thick, distinctly annulated, pointed at the tip, very thinly pubescent, shining and nearly glabrous at the base; the funiculus is as long as the club, and composed of 6 distinct joints, of which the 2nd to the 5th gradually increase in width, the 1st is larger and thicker than the others. The tibiæ are dilated, and armed with a few distinct teeth near the tip. The tarsi are broken in my specimen, but are described as having the 3rd joint emarginate, not wider than the 2d. The body is long and cylindrical, shining, with a few fine erect hairs on the elytra, which are feebly striate with rows of punctures; the intervals are marked with irregular double series of very small punctures, and single rows of very small tubercles gradually becoming larger towards the tip, which is convex, and broadly sulcate along the 2d interval, which is free from tubercles on the declivous portion.

H. analogus.—Differs from the European *H. ligniperda* by the thorax being strongly but not densely punctured, without any distinct smooth dorsal line. Long. 4 mm.

One specimen, New York; more slender in form than our *Dendroctonus* and easily recognized by its more shining appearance.

CARPHOBORUS Eichhoff.

This genus is quite distinct by the 1st joint of the tarsi being shorter than the 2d; the 3d is not broader, and is moderately emarginate, the 4th is as long as the others united: the tibiæ are dilated and distinctly toothed towards the tip, the front pair are armed with a strong hook at the inner angle as in *Dendroctonus* from which this genus differs by the form of the antennal club, and the shape of the body, which is slender and cylindrical. The club is oval, thick, a little longer than wide, transversely annulated, obtuse at tip, glabrous at base: the funiculus is 5-jointed, the 1st joint larger and thicker, the others forming a conical mass.

C. bifurcus Eichh. Berl. Ent. Zeitschr. 1868, 147. (Ante, p. 148.)

DENDROCTONUS Er.

Following the example of the latest European authors, I would restrict this name to the species having a short broadly rounded club, rather truncate at tip, shining and nearly glabrous over its whole surface, strongly compressed and concave externally; the funiculus is composed of 5 distinct joints, the 1st thick and rounded, the others gradually

becoming wider and forming a conical mass, about as long as the club: the scape is more thickened at tip than in the allied genera, being more than twice as wide as the 1st joint of the funiculus.

The tibiæ are very strongly toothed on the outer margin, the 1st joint of the tarsi is longer than the 2d, and the 3d is broader and bilobed, the front tibiæ are armed with a strong apical hook. The 2d, 3d and 4th ventral sutures are strongly bent backwards at the margin, as in some Curculionidæ; a character not seen in any of the allied genera.

Our species may be tabulated as follows:

A. Prothorax narrowed in front:
  Intervals of elytra rough for their whole extent, hairs moderate:
    Thorax very densely coarsely punctured.....1. **terebrans.**
    Thorax less densely punctured.....2. **obesus.**
  Intervals of elytra rough in front, only punctured behind, hairs long:
    Thorax unequally punctured.....3. **rufipennis.**
    Thorax more sparsely punctured, intervals of elytra less rough.4. **punctatus.**
    Thorax strongly punctured, intervals of elytra scarcely granulated, even in front.....5. **simplex.**
B. Prothorax scarcely narrowed in front, head very large:
  Intervals of the elytra slightly rough, pubescence short.....6. **frontalis.**

1. **D. terebrans** Lec. Gen. Col. vii, 361.=*D. valens* Lec. Pac. R. R. Explorations, xi, Ins. 59. (Ante, p. 149.)

The synonym belongs to a larger form of this species, found in California and Oregon.

2. **D. obesus.**=*Hylurgus obesus* Mannh. Bull. Mosc. 1843, 296; ibid. 1852, 356: *D. similis* Lec. Pac. R. R. Explor. xi, Ins. 59.

Alaska and Oregon. A smaller form, only 4 mm. long, occurs at Lake Superior and in Canada.

3. **D. rufipennis.**=*Hylurgus rufipennis* Kirby, Faun. Bor. Am. iv, 195, fide Mannh. Bull. Mosc. 1853, 238.

Alaska: the punctures of the thorax are not very dense, and of two sizes intermixed.

4. **D. punctatus.**—Of the same form as *D. terebrans.* The erect hairs are much longer, the punctures of the prothorax much less dense, and the elytra are roughened only near the base, the intervals being finely and sparsely punctured behind, without elevated granules. Long. 6 mm.

One specimen, northern New York.

5. **D. simplex.**—Of the same form as the smaller race of *D. obesus,* but with the thorax more coarsely punctured, the elytra less roughened in front, more obliquely declivous and somewhat flattened behind, with the intervals on the declivity absolutely free from tubercles, and marked only with ranges of piliferous punctures; the sutural stria is much deeper. Long. 4 mm.

Two specimens from Canada are in my collection.

6. **D. frontalis** Zimm. (Ante, p. 149.)

HYLASTES Er.

In this genus the nearest approach is made to the Cossonide type of Rhynchophora. The front part of the head is more distinctly prolonged into a short stout beak, which is obliquely excavated on the side, for the reception of the scape of the antennæ. The funiculus consists of 7 distinct joints, of which the 1st is but little larger than the 2d; from the 2d to the 7th they are gradually a little wider; the club is small, oval, not compressed, distinctly annulate; the basal half is shining and nearly glabrous; the prosternum is deeply excavated for the reception of the head; the tibiæ are broadly dilated and serrate; the joints of the tarsi 1—3 are equal in length, the 3d emarginate, or bilobed, the 4th equal to the two preceding united, not much thickened at the tip. The 1st and 5th ventral segments are conspicuously longer than the intermediate ones, and the sutures are straight, and very deeply impressed.

The chief character relied on by Dr. Zimmermann for the distinction of his genus *Hylurgus*, which corresponds with this, is generally true but not very obvious; but the scutellum is always on a level with the base of the elytra, and the base of the thorax is not bisinuate, as in *Dendroctonus*.

Hylastes pumilus Er., does not belong to the genus nor tribe, and is referred to *Aphanarthrum* on page 152.

The species before me may be grouped in the following manner, after the two divisions established by Erichson.

A.—Mesosternum truncate in front, third tarsal joint emarginate, not dilated; tibiæ coarsely toothed:

a.—Beak more or less carinated:

1. **H. porculus** Er. (Ante, p. 149 = *H. scabripennis*.)
2. **H. cavernosus** Zimm. (Ante, p. 149.)
3. **H. nigrinus** Mannh. Bull. Mosc. 1852, 356, (*Hylurgus*); ibid. 385.

Alaska, Oregon and California. Very similar to *H. cavernosus*, but the sides of the thorax are almost parallel for three-quarters of their length, then rounded to the tip; the punctuation is more dense and the elytra more rugose and more pure black.

4. **H. gracilis**.—Elongate, blackish-brown, elytra and club of antennæ somewhat paler, thinly clothed with very short yellowish pubescence; head densely but not coarsely punctured; beak finely and distinctly carinate, broadly transversely impressed near the tip; prothorax coarsely punctured, with a somewhat indistinct smooth dorsal line; it is longer than wide, and nearly straight on the sides, the apex is broadly rounded, the base very feebly rounded; elytra not wider than the thorax, with striæ composed of large quadrate punctures, intervals narrow, rugose and sparsely punctulate, convex towards the tip and suture; tibiæ coarsely serrate. Long. nearly 4 mm.

Two specimens. Taho Valley, California, Dr. J. G. Cooper. Much more slender than the preceding species.

5. **H. macer.**—Elongate, black, thinly clothed with very short inconspicuous yellow hairs; head densely and finely punctured, front with a feeble transverse curved impression at the base of the beak, which is finely carinate; prothorax nearly one-half longer than wide, oval, with the base slightly rounded, deeply and coarsely punctured, punctures becoming smaller and more dense at the sides, dorsal line very narrow, slightly elevated; elytra with rows of quadrate punctures, intervals wider than the striæ, thickly punctured and somewhat rugose; antennæ dark brown. Long. nearly 6 mm.

California, Dr. Horn; Nebraska, Mr. Ulke. Allied to *H. porosus*, but the mesosternum is not conical and protuberant, but truncate as in *H. nigrinus;* the thorax is longer than in either of the species named, and is almost regularly oval, except at the base, which is very broadly rounded.

6. **H. porosus.**—Elongate, black, slightly shining, thinly clothed with short erect yellowish hairs, arranged in rows upon the elytra; head densely punctured, beak carinate, deeply transversely impressed at the base; prothorax longer than wide, narrowed in front, feebly rounded on the sides, apex rounded, base nearly truncate, disc tolerably thickly covered with large punctures and a few small punctures intermixed, dorsal line narrow but conspicuous, extending from the base nearly to the tip; elytra not wider than the thorax, with striæ composed of large quadrate punctures, intervals strongly rugose and finely punctured, the sutural and third slightly elevated behind, and marked each with a row of very small tubercles; tibiæ serrate, with a few larger teeth near the tip. Long. 4·5 mm.

California, two specimens; one sent me by Mr. Andrew Murray, the other collected at Cabo de los Reyes, by Mr. George Davidson. This species has nearly the form of *H. nigrinus*, but differs from it as well as from all the others of this division by the deep transverse frontal impression at the base of the beak; the mesosternum is slightly protuberant, though much less so than in the species of division B; the 3d tarsal joint is however not dilated as in those species, and the front tibiæ have a few large teeth near the tip.

b.—Beak not carinated.

7. **H. tenuis** Zimm. (Ante, p. 149.)

B.—Mesosternum obtusely protuberant; third tarsal joint dilated, bilobed; front tibiæ rather finely toothed.

a. Front not impressed:

8. **H. granulatus.**—Oblong cylindrical, brownish-black, finely and thinly pubescent, with short yellow hairs, and with rows of short bristles upon the elytra; head convex, densely punctured, beak very distinctly carinate, carina

ending between the front of the eyes; beak strongly impressed transversely at tip; prothorax not longer than wide, gradually narrowed from the base for about three-fifths of its length, then more rapidly to the tip; feebly impressed on the sides near the apex, densely and confluently rugose, producing a coarsely granulated surface; base more distinctly bisinuate than usual; elytra with rows of quadrate punctures, intervals wide, slightly convex, strongly rugous and marked each with a row of small granules, bearing stiff yellow hairs; basal margin acute, subserrate; antennæ and feet nearly black, front tibiæ finely serrate. Long. 5 mm.

Two specimens, Oregon, Mr. George Gibbs. This species and *H. pinifex* are more robust than the others, resembling in form *Dendroctonus*.

b.—Front transversely impressed.

9. **H. pinifex** Fitch, Noxious Ins. N. York. 4th report, p. 43, No. 248.

Lake Superior, Canada, Ohio. Also stout in form, like a *Dendroctonus*. The front has a curved transverse impression at the base of the beak, which is marked with a short carina, and a transverse apical impression; the thorax is densely covered with punctures of two sizes, and is finely carinated; it is distinctly narrowed in front, with the sides feebly rounded almost to the apex, which is slightly tubulate; the elytra are deeply striate, the striæ marked with quadrate punctures, the intervals broad, convex behind and towards the suture, deeply rugose, each with a row of small tubercles especially obvious behind, bearing short yellow bristles; the basal margin is acute and subserrate; the pubescence is short and fine, becoming nearly squamiform behind, the front tibiæ are distinctly, though not coarsely serrate. Long. 5 mm.

10. **H. rugipennis** Mannh. Bull. Mosc. 1853, 238.=*Hylurgus rug.* Mann. ib. 1843, 297.

Alaska, Oregon and California. Resembles *H. pinifex*, but is narrower, the frontal impression is deeper, and somewhat smooth at the bottom; the prothorax is more densely and more uniformly punctured, the striæ of the elytra are less deep, the intervals are more finely punctured and rugous, but marked in the same way with rows of tubercles; the basal margin is acute and subserrate; the front tibiæ are moderately toothed near the tip. Long. 4—4·5 mm.

11. **H. subcostulatus** Mannh. Bull. Moc. 1853, 239.

The original locality was Alaska, but I refer to this species specimens from Oregon and from Taho Valley, California.

The body is cylindrical, densely clothed with scale-like yellowish-brown hairs, sometimes forming a crust and concealing the sculpture;

the head is densely and finely punctured, with a transverse impression just in front of the eyes, and another near the tip of the beak, which is feebly carinate; prothorax not longer than wide, strongly narrowed in front, broadly impressed on the sides near the tip; punctuation fine and very dense, with scattered, very large punctures intermixed; elytra with deep striæ of large quadrate punctures, intervals convex, rugose and tuberculate, the suture and alternate ones more elevated and serrate; front tibiæ with a few moderate teeth near the tip. Long. 4 mm.

The following species are unknown to me:

Cryphalus striatulus Mannerheim, Bull. Mosc. 1853, 235.—Alaska.

Bostrichus terminalis Mannerheim, Bull. Mosc. 1843, 298.—California.

Tomicus grandicollis Eichhoff, Berl. Ent. Zeitschr. 1867, 402.

Tomicus decretus Eichhoff, Berl. Ent. Zeitschr. 1867, 402. (Seems allied to *Xyleborus cælatus*.)

Apate (*Lepisomus*) *brevicornis* Kirby, Fauna Bor. Amer. iv, 194.—Hudson Bay Territory.

Apate rufitarsis Kirby, Fauna Bor. Amer. iv, 193.—Hudson Bay Territory.

Phlœophthorus granicollis Eichhoff, Berl. Ent. Zeitschr. 1868, 149.—Carolina, Tennessee.

Hylesinus? globosus Eichhoff, Berl. Ent. Zeitschr. 1868, 149.—Amer. bor.

Hylesinus pruinosus Eichhoff, Berl. Ent. Zeitschr. 1868, 149. (Seems not to differ from *H. aculeatus* Say, in any essential character.)

Dendroctonus? granifer Eichhoff, Berl. Ent. Zeitschr. 1868, 147.—Texas.

Dendroctonus? Haagii Eichhoff, Berl. Ent. Zeitschr. 1868, 148.—Amer. bor.

Hylastes cristatus Mannerheim, Bull. Mosc. 1853, 239.—Alaska.

Hylastes salebrosus Eichhoff, Berl. Entom. Zeitschr. 1868, 146.—Carolina.

Hylastes rufipes Eichhoff, Berlin Entom. Zeitschr. 1868, 147.—Carolina.

LIST OF SPECIES.

DESCRIPTIONS OF AMERICAN LEPIDOPTERA.—NO. 4.

BY AUG. R. GROTE AND COLEMAN T. ROBINSON.

Family LYCAENIDAE.

THECLA, Fabr.

It will be of interest, in reference to our previous descriptions under this genus, if we examine the writings of those Authors who have professed to determine an United States species of Thecla as *Thecla falacer*. This name is first used by Godart for an American species described by him as new to science. Godart's type is contained in Dr. Boisduval's Collection in Paris, where we have seen it. It is a specimen of Thecla calanus *Westw.* (*Rusticus armatus Calanus* Hübner). The *Thecla falacer* of Boisduval and Leconte embraces two distinct species. The text is mainly founded on this typical specimen of Godart's *T. falacer*, and therefore refers to Thecla calanus. The Plate (29) represents the species recently described as Thecla inorata, *G. & R.* In order to admit the species figured on this Plate as representing a form of *Thecla falacer*, Godart, the text is occasionally modified so as to include both; this is apparent in the observation on the fulvous marks of the secondaries above near anal angle, which is a distinguishing character of T. calanus, the true *Thecla falacer* of Godart. The *Thecla falacer* of Dr. Harris is founded very apparently on that of Boisduval and Leconte. It very evidently includes Thecla calanus from the mention by this Author of the "orange-colored spot" of the secondaries above. It appears to have included also Thecla inorata, *G. & R.*, and perhaps Thecla acadica, *Edwards*. The *Thecla falacer* of Mr. Scudder's valuable "List of the Butterflies of New England" is that of Dr. Harris, but certainly included Thecla acadica, *Edwards*, a species not distinguished by the Author. In our first paper on this genus, (Descriptions of American Lepidoptera, No. 2, *haj. scrip.* August, 1867,) *Thecla falacer* is used for Thecla inorata, *G. & R.*, the species represented on Boisduval and Leconte's Plate 29. Thecla calanus (Hübn. sp.) is shown to be distinct from this latter species, while the true *Thecla falacer* of Godart is not yet recognized, and Boisduval's Plate 29 is assumed to represent Godart's species. Subsequently, (Descriptions No. 3,) we recognize the true *Thecla falacer* of Godart as identical with T. calanus, and as posterior in point of publication, and describe the species represented on Boisduval and Leconte's Plate 29 as Thecla inorata. Finally, in a "Supplement to a

List of the Butterflies of New England," Mr. Scudder accepts the separation of Thecla acadica from the *Thecla falacer* of the original "List." Retaining still a *Thecla falacer* (probably without having as yet seen our description of T. inorata) it seems tolerably certain that the species now intended is either T. calanus or T. inorata. From what we know of its geographical distribution, the name of Thecla inorata may be added to the number of the species of this genus found in the New England States.

Family SPHINGIDAE.

Tribe MACROGLOSSINI.

SESIA, Fabr.

Sesia axillaris, n. s.

♂ ♀.—Size rather large, form stout. Black. Head and thoracic region above, obscure yellowish olivaceous; this color extends over the basal segments of the abdomen. Antennae and legs black. Labial palpi beneath, and under thoracic surface, pale yellowish-white. At the sides, behind the eyes, are linear blackish shades. Eyes narrowly edged above with white scales. Above, the palpi are black. Abdomen black, except at base as above noted; the two preanal segments are yellowish, this color extending over the sides, but not obtaining centrally beneath. Anal tuft black; in one specimen mixed centrally with olivaceous hair.

Wings largely vitreous; primaries with a very oblique yet rounded external margin. Anterior wings with an obscure brown costal edging and brown at base, where they show a few olivaceous scales. The discal cell is free. A terminal, very broad brown band, tapering to internal angle, and very strongly dentate on the interspaces within. The apical and two succeeding nervular interspaces are shaded with red scales within, from the apex downwardly and inwardly obliquely, in such a manner that the border on the apical interspace is almost wholly red, while on the two succeeding interspaces the red scales merely touch the toothed inner edge of the border. Secondaries largely vitreous. An even, narrow, brown terminal border, regularly and shortly dentate on the middle of the interspaces. Base of the wing and internal margin fuscous or blackish. The fuscous basal scales extend along costa very narrowly towards the apices. Five nervules are clearly exposed on the pellucid field of the wing. Beneath as above; the external borders tinged with reddish.

Expanse, 52 mil. *Length of body*, 26 mil.

Habitat.—Texas, (Belfrage.) Four specimens.

The largest species of the typical group of Sesia, and to which it belongs. At once distinguished from S. diffinis by the greatly broader band on the external margin of primaries, which is dentate on the interspaces. The form is stouter and the head wider across the vertex than in S. diffinis.

The discovery of this species aids our conception of the structural character of the genus, and leads us to consider Haemorrhagia (of which S. thysbe, *Fabr.* is typical) as a group of subgeneric value. Through Sesia buffaloensis (*Haemorrhagia buff.* G. & R.) and Sesia gracilis (*Haem. grac.* G. & R.), S. thysbe *Fabr.* leads up to S. axillaris, while through Sesia fuscicaudis *Walk.* and S. floridensis (*Haem. florid.* G. & R.) in which latter the structural peculiarities of S. thysbe are exaggerated; this species leads naturally to the scaled species of Aellopos. Peculiarities of coloration characterize the two divisions of the genus. Thus in Sesia the colors are usually yellow and black, the body squammation is more erect and bee-like, the form is more compact. In Haemorrhagia the colors are claret-red and olive, the body squammation is more hairy and flattened or oppressed, and the form tends to become elongate and flattened. In S. thysbe, S. fuscicaudis and S. floridensis, the produced palpi, flattened body, elongated abdomen, and obliquely margined primaries, are characters which contrast strongly with S. diffinis, but in S. gracilis these characters are wanting, while in its coloration and style of ornamentation and in its appressed body squammation it belongs to Haemorrhagia, where we at first referred it. On the other hand, S. axillaris, in the long and oblique, though still rounded external margin of the primaries, together with their wide and dentate external border, approaches Haemorrhagia, which latter we can, therefore, no longer consider sufficiently distinct from Sesia to be retained as a genus.

As Sesia thysbe, *a* uniformis *nob.*, we would record the *Sesia ruficaudis* of Mr. Walker. This is not Kirby's species, to judge from the description of that author. This is a form of S. thysbe, occurring in both sexes, in which the external border of the primaries is not dentate inwardly on the interspaces. We formerly regarded this as the usual female form of S. thysbe, but with more material we correct this opinion. In S. thysbe both ♂ and ♀ have the external marginal border of the primaries dentate on the interspaces within.

EUPROSERPINUS G. & R.

Euproserpinus phaeton, *G & R.*

Euproserpinus phaeton, G. & R. Syn. Cat. N. Am. Sphing. p. 30. (1865).

Wings entire. Head and thorax above of a peculiar greyish brown,

concolorous with anterior wings. Abdomen darker, blackish. The preanal segments pale yellowish. Anal tuft black, divided. Anal segment with black tufted scales. Beneath, the palpi are white, and the under thoracic surface is white mixed with slaty grey. Legs finely scaled, slight, obscurely colored. Anterior tibiae with an external row of short black spinules; anterior tarsi also spinose.

Primaries dark at base, where there are a few paler scales. A double black transverse line. The middle of the wing is concolorous with the thorax above. A discal black abbreviated line. Below the third median nervule this line is continued to internal margin. A faint sinuate line before the extremity of the middle field of the wing; this paler middle of the wing is limited by a deeper and diffuse blackish line coincident with the first and faint transverse line. Outside of this deeper line the terminal portion of the wing is obscurely darker than centrally; fringes tinged like the paler ground color of the wing. Secondaries black at base, with a very broad, pale yellowish white median band, and a deep black even terminal band. Fringes yellowish white. Beneath, the primaries are whitish, the veins darker, terminal space darkly shaded. Secondaries yellowish white, except a terminal black band.

Expanse, 32 mil. *Length of body*, 14 mil.

Habitat.—California.

We redescribe here this peculiar little species, one of the smallest of the family, from material received through the kindness of Dr. Boisduval. The genus is allied to the European Macroglossum, and the comparatively minute form is our nearest approach to the European M. stellatarum. We have elsewhere wrongly compared it with Proserpinus. There is a great disproportion between the wide triangulate primaries and the reduced secondaries.

The present description should supercede that given by us as noted above, and which was made from a colored drawing of the species, and is necessarily inaccurate in detail.

Family AEGERIIDAE.

AEGERIA, Fabr.

Aegeria pictipes, n. s. (Plate 2. fig. 64 ♂).

♂ ♀.—Bluish black. Form rather slender. Eyes encircled with yellowish white scales, and similar scales at the base of the head above arranged longitudinally. Antennae long, concolorous, bluish black.

Labial palpi beneath, yellowish white, above these are blackish. Thorax, above, bluish black, with yellowish borders to the tegulae within. Underneath, cyaneous, with a yellowish white spot at the side beneath and before insertion of the wings. Abdomen long, bluish black above, with the hind margin of the second basal segment showing a very narrow, distinct, yellowish white band, which does not obtain inferiorly below the stigmatal line; anal tuft concolorous. Beneath, cyaneous black, with a broader band on the fourth segment not obtaining above. Legs bluish black; the anterior femora narrowly lined with yellowish white on their outer edge, these scales extend outwardly at the base of the tibiae which elsewhere are bluish black; anterior tarsi with powdery yellowish white scales. Middle tibiae and tarsi interrupted with yellowish white scales. Hind tibiae neatly interrupted with yellowish white scales at the base of the tibial spurs, and again once prominently on the otherwise bluish black tarsi; the tibiae show some powdery white scales inwardly from the apex of the joint to the first pair of spurs.

Wings translucent or vitreous, almost entirely deprived of scales, the tegument with a yellowish stain. The blackish scales are limited on the primaries to the extreme base of the wing, a narrow costal border, the usual transverse bar at the extremity of the discal cell and the narrow edging of the external and internal margins. The secondaries are wholly pellucid, and show merely a very narrow terminal border continued to the base of the wing. Fringes short and blackish. Beneath, as above, but the costal scales from the base outwards are wholly or shaded with yellowish white to the discal bar, which, with the apical portion of the border, is black, and shows a narrow outer edging of yellowish white scales.

Expanse, 15—16 mil. *Length of body*, 21—22 mil.

Habitat.—Atlantic District, (Penna.).

The more purely vitreous wings and the spotted or narrowly banded legs give this species a peculiarly strong hymenopteriform appearance, and distinguishes it from any of our described North American species of the genus.

ZENODOXUS, n. g.

Antennae moderate, tapering to the tips, linear, lengthily biciliate, inserted approximate to the small eyes. Head small. Labial palpi slight, divaricate, porrect, held free from the "front" as in Aegeria. Thorax heavy, globose, widening posteriorly. Abdomen short and

wide, somewhat flattened; anal tuft short, broad and squarely cut. *Both* wings closely scaled. Primaries very narrow at base, suddenly swelled terminally. Secondaries (in the unexpanded specimen) folded upon themselves and covered by the narrow primaries to which they are closely applied. Legs as in Aegeria; hind tibiae with two pair of fine and rather long spurs.

This genus differs from Aegeria in the proportionally smaller head and heavier thorax, the linear heavily ciliated antennæ and flattened abdomen, while the closely scaled secondaries present a character seemingly unique in the Aegeriidae.

Zenodoxus maculipes, n. s.

Bronze color or silky brown. Palpi beneath pale, silky. Prothorax with a narrow ring of obscure yellowish raised scales. Thorax aeneous brown, with sparse yellowish or ochreous scales before the insertion of the wings laterally. Abdomen aeneous brown, the segments above reflecting a paler, somewhat ochreous hue in certain lights owing to an admixture of pale scales. Legs concolorous with the body, shaded with pale scales. The hind tibiae are interrupted with pale yellow between the spurs; this character is more obvious beneath, and it is in allusion to it that the specific name is conferred. Wings, above, shining reddish brown, concolorous and immaculate, with darker silky fringes. The primaries appear longitudinally more thinly scaled, and show a sprinkling of pale scales and a darker clouded mark on costa at about the middle; all very inconspicuous, the wings presenting an unicolorous appearance. The secondaries also show a dark dot at the middle of costa. Costal edges pale ochreous, and the under surface is paler than upper, and shows an admixture of pale scales.

Expanse, ♂ 18, ♀ 20 mil. *Length of body*, ♂ 8, ♀ 10 mil.

Habitat.—Texas. (Belfrage).

Two specimens offer no perceptible difference except that of size, hence their sexual distinctiveness is not assured. The most prominent character of the ornamentation of this uniformly dark species is the pale yellow band on the hind tibiae between the tibial spurs.

The species which, to our knowledge, most nearly resembles our Texan insect is represented in our collection by two specimens labelled "Sesia tineiformis," with the locality "Syracuse," (Sicily,) and as coming from "P. C. Zeller." The tapering ciliated antennae and scaled secondaries quickly distinguish our genus.

Family ZYGAENIDAE.

Subfamily CASTNIINAE.

Tribe EUDRIINI.

EUSCIRRHOPTERUS, Grote.

Euscirrhopterus gloveri, n. s.

♀.—Size of ♀ E. poeyi. Antennae simple. Thorax and head above clothed with mixed brownish scales, beneath, with under surface of abdomen, whitish. Abdomen above yellowish. Legs within clothed with long whitish, shading to griseous, scales; tarsi outwardly black subannulate with white.

Primaries with the costal region covered with mixed brownish and pale scales to just before the apex. The center of the wing is white, the white scales extending upward and intruding on the costal region before the apex. On this white ground of the wing, on the discal cell, lie the ordinary spots which are distinct, subequal, of the normal shape, brownish, distinctly darker ringed, and with dark centers. Superiorly they are merged in the dark scales of costal region which obtain between them. Terminally the wing is brown outside of the white center, which is edged unevenly. The brown color extends as a darker subterminal shade from the costa at apex, widening as it proceeds to internal margin, which it broadly margins to the base of the wing; centrally the border along internal margin is intruded upon by the white central space which here forms an irregular shallow sinus. The terminal space is paler. A dark interrupted terminal line, obsolete on the nervules and narrowly edged within by pale scales.

The secondaries are bright yellow, without discal spot, and with a broad, even dark brown border, interrupted before the angle by yellow scales. Fringes whitish, paler than on primaries. A dark and broken terminal line.

Beneath, both wings are bright yellow, with narrow brownish costal edgings and broad terminal borders tapering to internal and anal angles, and not continued along internal margins. These borders are paler shaded terminally, throwing the regularly interrupted dark terminal lines into relief. On the secondaries the border is interrupted by pale scales just before anal angle. Two dark discal spots on primaries, the outer larger and diffuse. A single spot on secondaries reduced in size and situate on the discal cross vein.

Expanse, 42 mil. *Length of body*, 20 mil.

Habitat.—Texas, (Prof. Townend Glover).

Differs from the female of the Cuban E. poeyi, *Grote*, as follows: The white central space of the primaries is broader, more irregularly

defined; the oblique and even dark subterminal line is absent; the reniform spot is very much smaller and differently shaped, being normal, whereas in E. poeyi it is elongated and completely divides the white field of the wing; the orbicular spot is absent in E. poeyi, in which species also the secondaries and both wings beneath are of a paler yellow, the primaries with a single discal mark, and the secondaries without a discal dot on either surface. The discovery of the male of this fine species will be attended with interest in view of the great structural disparity between the sexes of E. poeyi.

In dedicating this species to Prof. Glover we pay a very willing tribute to the scientific zeal and industry of the gentleman.

Subfamily ZYGAENINAE.

CYDOSIA, Westw.

Cydosia aurivitta, n. s.

♂ ♀.—Entirely cyaneous black, lustrous, beneath less shining and more of a dead black. The male abdomen has the anal segment ringed with bright fulvous scales. Anterior wings with a golden yellow stripe on costa at base; a subbasal stripe running transversely downward from m. nervule to internal margin, sometimes resolved into two spots by its obsolescence on internal nervure. On the disc a subquadrate spot and a gently sinuate even transverse band before the margin. All these markings are very broad, evident and concolorous, being of a deep gold color. Elsewhere the insect is entirely immaculate, generally cyaneous, sometimes greenish black.

Expanse, 22—24 mil. *Length of body*, 7—8 mil.

Habitat.—Texas, (Belfrage). Imago flies in May and June.

Though at first sight differing very greatly from its ally taken in the same locality, C. nobilitella, *Westw.*, it is in reality near it, wanting merely all the numerous determinate white maculations on the body and wings which characterize its congener. The present genus we regard as related to Apistosia *Hübner*, and forming one of a low group of Zygaenid genera with simple antennae and elongate wings, which latter, when at rest, the imago folds after the manner of Lithosia. This group is so laden with Lithosian analogies as to render its critical study difficult. C. nobilitella and Oeta compta mimic the Lithosian genus Utetheisa. Deiopeia aurea *Fitch*, is probably a species of Cydosia. On the other hand, Apistosia *Hübn.*, (A. humeralis *Grote*, and A. judas *Hübn.*,) is a West Indian and South American genus

mimicking the European genus Gnophria. Their metallic colors aid our conception of their true position.*

Family BOMBYCIDAE.

Subfamily LITHOSIINAE.

CISTHENE. Walk.

Cisthene unifascia, n. s. (Plate 2, fig. 61 ♀.)

♂ ♀.—Head, prothorax and tegulae, above, pale ochre yellow. Beneath, the legs are pale yellow; anterior and middle tibiae maculate with lead color. Primaries rather narrower than in C. subjecta, apices appearing more rounded, hind margin more oblique. A median pale ochre yellow band running from costa to internal margin, and continued to the base of the wing. This band varies in width, appears to be narrower in the male, and is slightly constricted on the disc. It seems to be the result of the fusion of the spots on costal and internal margins at this place in C. subjecta. Beneath, as above, the band showing a warmer tinge. Hind wings and abdomen rose color, former touched at apices with a leaden hue.

Expanse, 14—16 mil. *Length of body,* 5—6 mil.

Habitat.—Florida and Texas.

Notwithstanding the variability of our Northern C. subjecta, the present may be a distinct species. It merits a name in any event from the constancy of its ornamentation.

Subfamily COCHLIDIINAE.

MONOLEUCA, n. g.

Allied to Euclea, *Hübn.*† Primaries broad and short, three-quarters as broad as long. The costa is convexedly rounded, rising from the base of the wing. In Euclea the wing is more elongated, narrower, and the costa is depressed basally, rounding to the apex. Antennae

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* In studying the Family characters of a lepidopterous genus, attention should be directed to the characters offered by the body parts in contradistinction to those exhibited by the "limbs" and "wings," these latter a true extension of the body crust and not homologous with the wings of Birds. The relation between the wings of Vertebrates with the so-called "wings" of Articulates is merely, and that in part, functional. On these points the attention of the student is hereby earnestly drawn to a work now being published by Dr. A. S. Packard, Jr., of Salem, Mass., entitled: A Guide to the Study of Insects. In this work the organization of Articulates is elaborately discussed and illustrated, and its conscientious perusal cannot fail to benefit the student by imparting just and conservative views on its interesting subject.

† *Packard,* Synopsis United States Bombycidae, Proc. Ent. Soc. Phil., p. 336, 1864.

of the male shorter, stouter and more lengthily pectinate compared with Euclea; the pectinations are also more extended, being continued for two-thirds of the antenna from the base. Antennae of the female simple and slender. Labial palpi prominent, exceeding the front, divaricate and visible from above. "Front" broader than in Euclea, and smoothly scaled. Eyes small and convex. Legs smoothly scaled; tarsi with short scales, not heavily fringed as in Euclea. Abdomen of the male slight and with a moderate anal tuft; in either sex smoothly scaled and not exceeding the internal margin of the secondaries in length.

Type: *Limacodes semifascia*, Walker, C. B. M. Lep. Het. p. 1151. (1855).

This genus is easily distinguished from our North American Cochliid genera with pectinated antennae by its smooth and close squamation, full rounded wings and slight body parts.

Monoleuca semifascia. (Plate 2, fig. 63 ♂.)

Entirely purplish brown, paler beneath. Above, the primaries and thoracic parts are darkest and more intensely colored. On the primaries above there is a single prominent silvery white abbreviated band running from the disc to the internal margin at the middle of the wing. This band is distinctly limited, outwardly irregularly and roundedly dentate, and inwardly sinuate. Its width is subject to individual variation. The female is larger and of a brighter brown, with the silvery white band of the primaries above more attenuate.

Expanse, ♂ 22, ♀ 24 mil. *Length of body*, ♂ 9, ♀ 10 mil.

Habitat.—West Virginia; Texas.

Our single species is as yet rare in Collections.

LIMACODES, Latr.

Limacodes (lithacodes) rectilinea, n. s. (Plate 2, fig. 62 ♂).

Ochreous. Basal half of the primaries evenly and entirely ochreous brown. A median, nearly straight and even transverse dark wood-brown line, edged within by a whitish shade. This is the prominent inner margin of the usual inverse Y-shaped mark. A corresponding line runs from the costa before the apex outwardly, joining the external margin a little below the middle. The ochreous ground color of the wings appears beyond this line over the apex, and forms an inconspicuous spot at internal angle. The space included between the lines is paler than the rest of the wing, appearing as if washed with whitish, which latter shade seems to spread outwardly from the median line. Secondaries very dark wood brown, immaculate. Fringes ochreous.

Beneath ochreous brown, a little clearer colored along the costae. Head, thorax and appendages ochreous brown; abdomen a little darker.

Var. *a*.—A specimen has the lines of the primaries above obsolete; the white shading is prominently expressed and leaves as usual the apex and a smaller space at the internal angle free.

Expanse, 22 mil. *Length of body*, 11 mil.

Habitat.—South Carolina (Zimmermann), *Mus. Berol.*

Larger than L. fasciola, *H-S.*, and at once distinguishable by the paler color and straighter median line of the fore wings above. The palpi are prominent, as in L. fasciola, and the wings similarly shaped. L. rectilinea appears to us intermediate between L. biguttatus, *Pack.*, or rather L. y-inversa, *Pack.*, and L. fasciola, and to evidence the position of the latter as belonging to this genus.

ADONETA, Clemens.

Adoneta pygmaea, n. s.

♂.—Antennae pale, long and stout, basally shortly and thickly pectinate. Front and inside of legs blackish. Thorax above and head behind blackish or dull brownish, mixed with pale scales. Wings rounded. Primaries dull brownish, or wholly suffused with blackish. An oblique rounded short linear white mark on internal margin at basal third, and one before the apices, clear of the margins, both preceded by pale scales. The wing is blackish centrally longitudinally along median vein in those specimens in which the ground color remains brownish. In the dark specimens the apical edge is brown. A very faint subterminal series of blackish points; no terminal line. Hind wings and abdomen paler, the former without markings. Beneath, both wings are pale, uniformly colored, immaculate, much as secondaries above.

Expanse, ♂ 14—15 mil. *Length of body*, 5 mil.

Habitat.—Texas, (Belfrage).

A very small species with rounded wings, hardly more than half the size of A. spinuloides, from which it differs by the rounded external margin of primaries, which is not depressed below apices, and by the absence of the dark fringes. The ornamentation is similar, since we have the two curved white abbreviated lines, but the one on internal margin is even, and appears more oblique in A. pygmaea. This species may have the wings and thorax dull brown, or entirely suffused with blackish, leaving the white marks evident. Three male specimens examined; the female is unknown to us yet.

HEURETES, n. g.

The head is small; eyes globose; labial palpi closely scaled, divaricate, passing beyond the wide "front." Antennae very short, setaceous, thickly scaled and flexuous at apices. Primaries with the costa slightly rounded, a little depressed before the acuminate apices. External margin long and oblique; internal angle rounded, as is also the margin. Discal cell large; nervules straight, short and equidistant. Thorax wide and short, compact and globose, but small and square in front. Abdomen (♀) as wide as the thorax, and a little longer than internal margin of the secondaries. Legs rather stout, closely scaled, with intermixed longer hair.

A little genus of peculiarly tortriciform appearance, as seen by the shape of the primaries with their acuminated apices, before which the costa is depressed, as in Tortrix. The large discal cell and equidistant straight nervules are tortriciform characters. From all our United States genera distinct by the very short antennae, with their very peculiar apical conformation. It comes nearer to Dr. Packard's genus Tortricidia.

Heuretes picticornis, n. s.

♀.—Thorax and primaries ferruginous brown, the latter with a purplish shade determinate along external margin. No markings; the nervules indicated. Secondaries pale, contrasting forcibly with primaries. Fringes concolorous with the wings, rather long and heavy. Beneath, the costal edge at base, front and anterior legs within are brighter colored, orange ferruginous. Wings beneath pale, immaculate, nervules indicated. Abdomen concolorous with the pale secondaries. The brighter colored anterior tibiae are obsoletely shaded with blackish outwardly, as are the tarsi. Middle and hind pair of legs pale, hind tarsi shaded with ferruginous.

Antennae pale testaceous, bent at the tips, before which is a blackish shade, which gives them the peculiar appearance of being indented, or of presenting a more unusual structure than, under the glass, they are seen to possess.

Expanse, ♀ 16 mil. *Length of body*, 6 mil.

Habitat.—St. Thomas, W. I. *Mus. Berol.*

The outwardly whitish ovoid cocoonet accompanies the single specimen we have of this species. It is, as usual, of thin, compact texture, and is flattened beneath, where, from the impression left on the cocoonet, it must have rested on the rib of a leaf *above*. A large opening at one end shows where the insect escaped, and from its clean cut,

suggests that the cocoonet was furnished with a "lid," which has now become lost.

Subfamily PSYCHIINAE.

PSYCHE, Ochsen.

Psyche confederata, n. s. (Plate 3, figs. 66 and 67 ♂.)

♂.—Entirely deep smoky black. Antennae plumose. Wings ample, closely scaled, rounded and full. Neuration of primaries: costal nervure simple, slight, joining the costa before the apex; s. c. nervure throwing off first and second s. c. nervules from its upper side on to the costal margin; third s. c. nervule at the upper extremity of the discal cell furcate, throwing off the fourth s. c. nervule from its lower side on to the apex; fifth simple, thrown off from a short transverse stem on to the external margin; discal cell equilateral, longitudinally cordate, not closed by a true vein, but by a veinlike fold depressedly medially angulated; a slight crease in the membrane divides the cell into two equal parts, running from the point of angulation of the fold closing the cell to the base of the wing; median nervure four branched, first median thrown off upon external margin from a point opposite the fifth s. c. nervule; internal nervure sending off an angulated nervule from its upper side, at about its center, to internal angle, the nervure itself joins the margin before the angle, and is straight.

The ♂ cocoonet with agglutinated fragments of conifereous plants, and with the extruded skin of the chrysalis after the escape of the male moth, accompanied a number of specimens of this species received from the South.

Expanse, ♂ 19 mil. *Length of body*, 7 mil.

Habitat.—Texas, (Belfrage). The male imago flies in May and June.

As yet the only species described from our Territory, and probably the one figured by Prof. Glover from Florida, and alluded to by Dr. Packard in the Synopsis of U. S. Bombycidae. Of the European species of this genus in our Collection it resembles P. concolor (Staud. Cat.) in its close squamation, but is one-half smaller and of a deeper black.

Subfamily PTILODONTINAE.

ICTHYURA, Hübner.

Icthyura ornata, n. s.

♀.—Allied to Icth. inclusa, *Hübn.*, and Icth. inversa, *Pack.*, as well as to the European Icth. reclusa. Head, body and appendages obscure grey. The usual deep brown thoracic stripe, extending over

the head between the antennae. Primaries with the apices produced; costa unusually depressed; external margin rounded. Anterior wings warm cinereous, evenly and sparsely irrorate with black scales; markings very distinct. A narrow basal yellowish white transverse line toothed on median nervure. An outwardly oblique, similarly colored line runs from costa near the base to internal margin near the angle, from whence it ascends again to the costa at apical third, thus forming the usual "V" as in its allies. The lines forming this V-shaped mark are shaded inwardly with obscure olivaceous fuscous, thus darkening the middle of the wing; a dark shaded spot at extremity of discal cell. The outer line is prominently white on costa, opposite the disc it is irregular and subobsolete. A short intermediate line is emitted straightly downwards from the inner line at median nervure. The outer line is followed superiorly by a series of five very bright red interspaceal shades, succeeded by four obscure fuscous shaded marks. An interrupted black subterminal line, outside of which the terminal space is shaded with reddish superiorly. Secondaries brownish grey; a faint median line more apparent beneath. Under surface of primaries obscure brownish; a faint subterminal shade line marked with whitish on costa, and there succeeded by a reddish shade, while a similar pale reddish shade is continued inferiorly along external margin.

Expanse, 29 mil. *Length of body*, 14 mil.

Habitat.—California. (2 ♀ spec. in Mus. Berol.)

Readily distinguished from I. inclusa, by its smaller size, grey color and the greater extent of the reddish interspaceal marks which follow the outer line of the primaries in both species.

Subfamily CERATOCAMPINAE.

Tribe HEMILEUCINI.

HEMILEUCA, Walker.

Hemileuca grotei. (Plate 2, fig.* 60 ♀.)

Hemileuca grotei, Hopffer, *MS.*

♀.—Head black; collar pale yellowish white; thorax and abdomen black, mixed with longer yellowish hairs; metathorax with a few longer red hairs which appear to line the tegulae inwardly. Legs black, femora outwardly clothed with red hair. Wings dull black, opaque. Primaries with a short, broad, semi-transparent, lunulate spot at extremity af discal cell. Above and beyond this, nearer to the costa, is a larger and broader whitish semilunate spot. Inferiorly are

* H. Tieffenbach fecit.

two whitish coalesced spots, obsoletely separated by the 4th m. nervule. The exterior portion of the wing is frosted with pale scales. Secondaries black, with a narrow white exterior well defined band running over the nervules. Under surface resembling upper.

♂ resembles ♀. Anal abdominal hairs red. Primaries rusty black, closely scaled. A well defined broad discal mark, beyond which, and nearer to costa, a similar but larger lunated spot. Two coalesced spots obsoletely separated by the 4th m. nervule. Terminally the wing is frosted with pale scales. Secondaries black, with a single narrow subobsolete subterminal whitish band, forming a spot opposite the discal cell. Underneath as above; the band on secondaries broader and more distinct than on the upper surface.

Expanse, ♂ 45 mil., ♀ 51 mil. *Length of body*, ♂ 20 mil., ♀ 26 mil.

Habitat.—Texas, *Friedrich.* (♂ ♀ in Mus. Berol.)

This more slender species is at once distinguished from H. maia, by the densely scaled wings, the short broad discal lunate spot of primaries not surrounded by deeper black scales, and by the entire absence of an analogous spot on the secondaries in either sex. The narrow well defined bands are whiter than in H. maia. The elongate spot over the 4th m. nervule on the primaries does not reach the internal margin, while in H. maia, the band at this place attains the margin and spreads along it. In H. grotei this band is represented merely by a superior and inferior maculation. Under the glass the discal spot on the upper surface of ♀ primaries is seen to be deprived of scales.

The Berlin Museum possesses a number of specimens of Hem. maia, taken in Texas by the same Collector, and which do not differ from our Northern individuals of this species, except in their somewhat greater expanse.

HYPERCHIRIA, Hübner.

Hyperchiria zelleri, n. s. (Plate 2, fig.* 65 ♀.)

♀.—Size large, form stout. Head and palpi rich dark brown; antennae testaceous, a little slenderer than in allied species. Thoracic region, above, dark brown; lateraly, at the insertion of the primaries, are arranged short whitish hair-like scales which form a spreading tuft. Abdomen, above, bright ochreous brown; beneath with under thoracic surface and legs, of a rich brown, a little paler than upper thoracic surface and head.

Wings full and large. Primaries arcuate along the costa; apices

* H. Tieffenbach fecit.

pointed but not produced; external margin evenly outwardly rounded. Basal third covered with rough or wooly dark brown scales; this portion of the primary wing is outwardly defined by a darker shade. These dark brown rough squamae extend along the costal region to the apex, and intrude obliquely downwardly twice over the middle of the wing: firstly, obliquely and broadly from the costa over the discal cross-vein to the first m. nervule; this band is thrice regularly scalloped outwardly between the nervules and includes a white discal dot on the cross-vein, situate just below the inception of the disco-cellular nervule; secondly, more narrowly and nearer the apices, the scales forming an even band extending downward to first median nervule at a point where the usual transverse line crosses the nervule. This transverse line is narrow and distinct, whitish, and is rounded at costa, not oblique and even, and joins the costal edge at a point considerably removed from the apex. The ground color of the median space is a frosted purplish brown, over which the dark costal scales downwardly intrude as above described. The dark scales extend again broadly and more diffusedly downwards from the apex, bordering the transverse line externally and irregularly, widening over the median nervules to internal margin, and leaving the irregular terminal space of the wing of a pale frosted purplish brown, over which the nervules are marked with ochreous.

Secondaries full and rounded. At base thickly clothed with long and very bright ochreous scales. A large black discal ocellus consisting of a broad blackish annulus surrounding a paler center, which contains a black pupil (the discal spot) containing a few white scales. Outside this ocelloid spot are two broad sub-equal *even* blackish bands, the outer the broader, and which traverse the wing from costa to internal margin. The pale dull ground color of the wing separates these bands and obtains beyond the outer band, while the even narrow terminal space is concolorous with that on primaries, being purplish brown, frosted with pale scales, the nervules marked with ochreous.

Beneath of a clear pale purplish brown. On the primaries the discal mark is seen and a blackish shade band indicates the narrow transverse line of the upper surface. Secondaries concolorous with primaries; there is a distinct white discal spot on the cross-vein and a faint oblique dark shade band. The ground color of the wings has something of a dead pink tinge beneath; this is especially noticeable on the secondaries below the median nervure. The exerted veins on both wings beneath are covered with ochreous brown scales.

Length of primary wing, (from base to apical angle), 73 mil. *Length of body*, 44 mil. *Width of primary*, (from apex to internal angle), 50 mil. *Length of primary*, (from base to internal angle), 44 mil.

This fine addition to our United States fauna differs from an allied tropical species determined as "*egeus*, Cramer sp." in the Berlin Museum, in the shape of the primaries which in that species are produced at apices, the external margin receding suddenly below them. It is also a rather larger, broader winged and slighter bodied species. The narrow whitish transverse line of the primaries is *inwardly rounded superiorly to costa*. Hyp. zelleri is also distinguished by the outer rounded band of the secondaries above being *even* along its external edge, whereas in "*egeus*" it is prominently scalloped; this latter character will also separate it from a more Southern form recently figured by Dr. Felder, who showed us his drawing while we were in Vienna.

Dedicated to Prof. P C. Zeller of Meseritz, the widely known and respected Entomologist, whose writings on our subject need no mention of our earnest appreciation to enhance the value of his scientific labors. This dedication commemorates pleasant days we recently enjoyed with the Professor at his home, during which our science was discussed with one of its fathers whose personal kindness and consideration to us merits our thankful recognition.

Family NOCTUIDAE.

MICROCOELIA, Guenèe.

Microcoelia diphteroides, Guenèe. (Plate 3, fig. 69 ♀.)
Microcoelia diphteroides, Guen., Noct. 1, p. 34, Pl. 3, fig. 7, (1852).
Micr. dipht., Walk., C. B. M., Lep. Het., Noct. Pt. ix, p. 31, (1856).
Micr. dipht., Grote, Proc. Ent. Soc. Phil., p. 78, Plate 2, fig. 2, (June, 1864.)

Habitat.—Atlantic District! Imago flies in June and July.

We have seen M. Guenèe's type of this species in the British Museum Collection. The specimen is old, badly worn. M. diphteroides has been described by Mr. Grote as above cited. The following is a well defined form of this species:

Microc. diphteroides, *a* obliterata *Grote.* (Plate 3, fig. 70 ♀).
Microc. obliterata, Grote, Proc. Ent. Soc. Phil., p. 79, (1864).

This race differs from the type by the entire obsolescence of the black transverse lines of the upper surface of the primaries. The costal marks are present, as also the black patch on the disc between

the ordinary spots. The rounded external portion of the annulus of the claviform spot is black, as also portions of the annuli of the discal spots. Occurs in the same localities as the typical form and is of rather more frequent occurrence. So different does it appear at first sight, that in the Collection of M. Guenèe, individuals of this form were regarded as constituting a distinct species and belonging to a different genus by the distinguished French Entomologist.

ACRONYCTA, Ochsen.

Acronycta morula, n. s. (Plate 3, fig. 75 ♀).

♂ ♀.—Size large. Pale grey shaded with ochreous olivaceous. Head pale grey shaded with olivaceous on the vertex. Labial palpi whitish, the second article largely banded outwardly with black. Under thoracic surface whitish. Legs grey, middle and hind tibiae longitudinally and narrowly streaked with black outwardly. "Collar" pale grey edged with olivaceous behind. Tegulae pale grey. Thoracic disc stained with ferruginous. Lateral dark shaded lines before the insertion of the primaries.

Primaries pale grey, the marks and line accompanied by olivaceous shadings. An elongate narrow black streak along the median nervure extending to the outer line of the transverse anterior and heavily shaded beneath with olivaceous. Transverse anterior geminate, the lines wide apart on costa, olivaceous, the inner marked with black scales at along its middle. Orbicular small, olivaceous. Reniform suffused with ochreous olivaceous, of the normal shape, the annulus indistinct except behind on the disc where it is marked with black scales. Transverse posterior line as in A. lobeliae, excavate interspaceally superiorly where it is widely projected over the nervules; below the third median nervule it is greatly retired inwardly and runs thence more evenly inwardly to internal margin. It is succeeded by diffuse olivaceous shading. Superiorly, along the interspace opposite the disc, a narrow black streak runs from the t. p. line to the external margin. Inferiorly, along the submedian fold, a similar and longer deep black streak runs from the faint olivaceous median shade across the t. p. line to the external margin above internal angle. Fringes cut with olivaceous at the extremity of the nervures.

Secondaries smoky griseous allowing the markings of the under surface to appear. Fringes pale. Beneath pale grey, the primaries shaded with smoky about the disc and with a faint transverse shade strongly marked on costa. A series of anteapical costal black dots and interspaceal dots along external margin. Secondaries clear grey. A

large blackish discal mark and a distinct dentate transverse line much as in A. lobeliae. A basal streak along the discal fold.

Expanse, 44 mil. *Length of body*, 21 mil.

Habitat.—Atlantic District, (New York).

A little smaller than A. lobeliae and paler colored. Easily distinguished by its ochreous olivaceous shadings and by the absence of the black dash on the disc which connects the ordinary spots in A. lobeliae, *Guenèe.*

HADENA, Treitschke.

Hadena distincta, Guenèe. (Plate 3, fig. 72 ♂.)

Achatia vulgaris distincta, Hübner, Samm. Ex. Schm. I Lep. iv, etc.

Hadena distincta, Guenèe, Noct. Vol. ii, p. 91. (1852).

Hadena distincta, Walker, C. B. M. Lep. Het. Pt. xi, p. 583. (1857).

♂ ♀.—Griseous. Antennae simple, those of the male finally serrulate for basal two-thirds of their length. Head white on the front, palpi within and thoracic region beneath white or whitish. The labial palpi are black outwardly and the eyes are margined with the same color behind. A broad black longitudinal line across the front. Above, the head and thorax are shaded with obscure fuscous. The patagia and "collar" behind are very finely edged with black scales, and the latter shows a faint central line. Abdomen with a single tuft on the basal segment above, smoky griseous, the anal hairs tinged with testaceous.

Anterior wings clear grey at base to the transverse anterior line, the grey color extending along internal margin. The transverse lines are geminate. The basal half line is seen traversing the clear grey base of the wing. The transverse anterior is distinctly marked on costa, running backward on the subcostal nervure, its outer component line heavily marked superiorly. The median space, above the submedian fold, is clouded with obscure blackish or fuscous. The ordinary spots are large. The outline of the claviform is attenuate above. A very broad black dash joins the apex of the claviform with the transverse posterior line at the point where the median space is narrowest over the submedian fold. The orbicular is large, clear grey. The narrow black median shade line is visible from the costa downward between the ordinary spots, contiguous to the orbicular. The reniform spot is large, with a central annulus, and stained with ochreous; this ochreous color extends to the transverse posterior line beyond the spot itself. The transverse posterior line is even, very slightly lunulate, is incepted on costa above the reniform, thence runs outwardly along costal region and downwardly over the nervules, and is bent inwardly below the

middle of the wing where it approaches the transverse anterior line. Subterminal space clear grey. The line is only observable as the outer edge of the space; it forms three teeth at the center and is here followed by four black marks at the base of the dentations. The constricted terminal space is obscure olivaceous, and is intruded upon at the apex and internal angle by the ground color of the wing. The fringes are dark, distinctly cut with whitish at the extremity of the nervules. Secondaries smoky whitish at base, with a blackish shade band along external margin. Beneath, the primaries are smoky from the base outwardly with faint traces of a transverse line; the terminal space is white or whitish. Secondaries entirely white or whitish, with a discal dot and a transverse interrupted line reduced to a series of dark nervular points.

Expanse, 38—40 mil. *Length of body*, 16—18 mil.

Habitat.—Atlantic District.

Hadena subjuncta, n. s. (Plate 3, fig. 71 ♂.)

♂ ♀.—Antennae simple, finely and shortly ciliate beneath. Carneous brown. Head with a dark frontal line. Prothoracic pieces with a very distinct and deep brown line. Abdomen crested above at base, with a spreading anal tuft in the male. Anterior wings, above, blackish brown shaded with carneous. A longitudinal deep brown basal ray, shaded inferiorly, extending outwardly and narrowly to the transverse anterior line. Above this ray, the base is tinged with carneous, and the basal line is indicated by a dark geminate costal streak. Transverse anterior line geminate, the outer line the darker, roundedly and evenly interspaceally waved, nearly perpendicular. Ordinary spots very large, distinctly limited. The median space is wide superiorly, but is constricted below the median nervure; a longitudinal deep brown streak runs along the submedian fold and connects the two median lines at their point of greatest contiguity. This streak becomes the lower margin of the claviform spot which abutts from the transverse anterior line, and whose upper margin is seen in a very distinct deep brown line running outwardly and downwardly obliquely from the median nervure. Above the claviform is the large orbicular, pale, with a distinct annulus. The reniform is wide, of the ordinary shape, with an indistinct central shade and the distinct annulus is often obsolete outwardly. Beyond the reniform, the wing is shaded with carneous to the subterminal line, this shade spreading inferiorly. A diffuse and faint blackish median shade runs from the costa downward between the ordinary spots and is discontinued below median nervure. The

transverse posterior line is incepted above the reniform, runs outwardly straightly along the costal region, thence downwardly over the nervules, bending inwardly beneath the reniform spot. It is geminate, faint, the lines enclosing a paler space and interspaceally lunulate. Subterminal line pale, preceded by a dark shade, forming the usual M-shaped mark at the middle, the points of the M attaining the external margin. The dark shading is sometimes tinged with olivaceous before the internal angle as is the inferior shading of the longitudinal streak connecting the median lines. The terminal space is blackish brown and black interspaceal marks precede the terminal line. The fringes are uneven ; the external margin of the wing retires inwardly before internal angle.

Beneath pale. The wings terminally and along costal edges are covered with powdery squamation with intermixed dark scales bringing the nervules into relief. The primaries show three ante-apical white dots and the white subterminal shade line emanates from a fourth and larger dot just before the apex, these latter at times hardly discernable. Faint discal dots; sometimes traces of dark median lines can be seen on both wings. Above the secondaries are smoky blackish, paler towards the base, without discernable discal mark or lines.

Expanse, 35—39 mil. *Length of body*, 15—17 mil.

Habitat—Atlantic District. The imago flies in July and August.

Allied to Hadena distincta and H. xylinoides, but readily distinguished by the details of ornamentation and general color, while quite similarly sized. The antennae are impectinate.

CHOEPHORA, n. g.

Antennae rather short, strongly bipectinate. Maxillae weak. Labial palpi thickly scaled, hardly exceeding the front, apical joint concealed. Caputal and thoracic squamation long and thick, tufted behind the "collar" and the scales are raised on the vertex. Legs moderately long; anterior tibiae with an unequal pair of spurs at the extremity of the joint; hind tibiae with two unequal pair of spurs, one at the middle and one at the extremity of the joint. Abdomen smoothly and closely scaled, exceeding the secondaries.

Wings entire and ample. Costal edge of primaries straight and thickened; apices acuminate. Neuration: Costal nervure simple, straight; first s. c. nervule thrown off on the upper side of the nervure at basal third and adjoining the costa at a point beyond the extremity of the costal nervure; second s. c. nervule thrown off from the upper side of the nervure, its base forming the upper side of an

enclosed elongated sub-costal cell before whose acute outer end the second s. c. nervule is thrown off upon the costa before the apex; from the acute outer end of the subcostal cell issues the third subcostal, or a common stem from which divaricate the third and fifth subcostals; shortly after this divarication the fourth subcostal nervule is emitted from the lower side of the third upon the costa at apex just within which the third subcostal itself joins the margin; from the lower side of the subcostal cell, which is here angulated, and at first opposed to that from whence the second subcostal leaves the upper side of the cell, the sixth s. c. nervule is thrown from a very short stem outwards and downwards upon the external margin; the discal cell is large and not closed by a true nervure but by a fold or thickening of the tegument; first, second and third median nervules nearly equidistant at base, third slightly the more removed, fourth remote; a submedian fold on the wide interspace. Secondaries: costal and subcostal nervures united at base; subcostal dividing into first and second s. c. nervules; discal cell open as on primaries; a distinct median fold; median nervure three branched, first and second median nervules thrown off from one point, third more remote; internal nervure straight.

The genius is related to Orthosia.

Choephora fungorum, n. s. (Plate 3, fig. 74 ♂.)

♂ ♀.—Dull purplish red, concolorous. Head and prothorax concolorous, more purplish than the palpi, under thoracic surface behind the head and legs which are darker and more reddish. Centrally the under thoracic squamation is purplish outwardly, but the long scales are pale at their base. Antennae testaceous; the stem outwardly at base whitish. Tibial spurs dotted with whitish. Abdomen tinged with yellowish.

Primaries dull purplish red, but overlaid with a pale shade; ornamentation simple. The transverse anterior and posterior lines are even, single and narrowly linear; the first slightly undulate superiorly, the latter slightly and evenly projected over the nervules beyond the discal cell, thence running evenly and slightly inwardly to internal margin. The ordinary spots are large and of the normal shape, but their annuli are so faint that they are with difficulty to be detected. Centrally they show a yellowish mark. Between them, and limited on either side by their annuli which are here more apparent, is a subquadrate dark purplish shade spot the most prominent marking of the wing. Subterminal shade faint, most apparent on costa. Fringes long

and purplish, darker than the wing. Secondaries a little paler than primaries at base, outwardly more sprinkled with reddish scales; a linear median shade continuous with the t. p. line of primaries. Fringes long, purplish red, darker than the wing. Beneath, darker than above, both wings largely stained with deep red; faint discal marks and transverse shade lines on both wings. Fringes purple, discolorous with the wings.

Expanse, 43 mil. *Length of body*, 19 mil.

Habitat.—Atlantic District.

Of this species, as yet of infrequent occurrence, we have apparently both sexes; if so, the bright testaceous antennae are equally pectinate in either sex, since no appreciable difference in this respect is offered by the specimens before us.

CUCULLIA, Ochs.

Cucullia convexipennis, n. s. (Plate 3, fig. 76 ♀.)

♂ ♀.—Cinereous, largely shaded with ochraceous and ferruginous. Head with linear raised scales above, between the antennae; these scales shaded with blackish at base so that three narrow black lines may be said to cross the vertex. Collar cinereous, shaded with ochraceous behind the head in front, with a median pale line relieved on either side by a dark shade and with a distinct ferruginous border behind. Tegulae cinereous edged inwardly with dark ferruginous. Abdomen pale dull ochraceous, with six prominent deep ferruginous tufts above on the median line decreasing in size from the base downwardly, the two basal very heavy and close, the rest divided centrally and more or less obviously. In the ♂ the tufts are less prominent and the terminal ones are hardly discernable. Anal tufts shaded with purplish. Legs purplish cinereous, lineated outwardly narrowly with black. Anterior and middle tibiae with the spreading scales centrally and outwardly clear cinereous neatly limited by narrow black lines.

Primaries with the costa basally straight, rounded to the apices which are somewhat depressed. External margin even, convexedly oblique, somewhat rounded, being slightly exerted medially. Anterior wings above largely dull pale ochraceous, shaded centrally, from the base outwardly, with cinereous. There are no traces of the ordinary spots but superiorly on the discal cell are three black dots and two or three more are hardly discernable beyond and above the outer discal point. The costa, over the apical half, is marked with ferruginous and with the inceptions of the outwardly oblique ferruginous shades. Two of these ferruginous shades, arising on costa above the extremity of the

discal cell, enclose a continued and rather prominent pale streak becoming white towards external margin which it joins immediately below the apex. Three pale ante apical dots on the ferruginous costal edge. External margin shaded with ferruginous and with a distinct pale terminal line relieved inwardly evenly by the dark ferruginous external shading and outwardly by the ferruginous base of the fringes. A ferruginous shade on the interspace between first and second m. nervules. Internal margin edged with deep ferruginous and with a narrow ferruginous internal line running to the usual fragment of the transverse posterior line which is distinct and angulated. The space beyond this about internal angle is much shaded with ferruginous and is limited superiorly by a prominent ferruginous outwardly ascending shade streak.

Secondaries darker, almost wholly blackish in the ♀; in the opposite sex they are obscure whitish from the base outwardly, the blackish terminal shade narrowing in both sexes to anal angle. The "veins" marked with dark scales; fringes pale. In shape the posterior wings resemble the primaries in that the external margin is roundedly convex at the middle.

Beneath both wings are blackish; secondaries whitish over the base. The primaries show three pale ante apical costal dots very plainly.

Expanse, ♂ 44, ♀ 49 mil. *Length of body*, ♂ 20, ♀ 22 mil.

Habitat.—Atlantic District. Imago flies in July and August.

Easily distinguished from the described N. A. species of the genus by the convex external margin of the wings, while the primaries above are very distinct in appearance.

DYOPS, Guenèe.

Dyops futilis, n. s. (Plate 3, fig. 73 ♂.)

♂.—Greyish fawn color. Antennae simple; maxillae stout. Labial palpi with the third article much closer scaled than the second, elongate, subspatulate. Body parts concolorous, a little paler beneath. Tarsi darker, subannulated.

Primaries above smoothly scaled, concolorous with the thorax. Transverse lines pure brown. Basal line indicated on costa; a brown spot at the base of the cell. Transverse anterior geminate interrupted. Orbicular spot appearing as a small brown maculation on the cell. Reniform indicated by a brown interrupted annulus. Transverse posterior line geminate, the brown lines wide apart, interrupted, arcuated. Beyond this the wing is thickly irrorate with black on a somewhat paler ground color than the wing elsewhere; the external margin to-

wards the apices shows a darker shade than elsewhere. A very faint series of minute points before the margin. On internal margin before the angle and just beyond the base of the t. p. line are a few aggregated chalybeous scales.

Secondaries paler at the base with a median dark shade band, beyond which the paler color of the wing appears as a coincident band becoming wider, more diffuse and obsolete superiorly. External margin with a wide dark band tapering to internal margin within the angle and leaving the latter pale. Before the angle, on the external margin, is a large ocellate maculation consisting of bluish chalybeous scales, on the margin within which are deep black scales which relieve a few white scales on the nervules, the whole surmounted by an arcuated pale band. Fringes pale, contrasting with the darker fringes of the primaries on which they are concolorous with the wing. Beneath paler than above; both wings show two transverse shaded bands, and the secondaries in addition an obscure discal mark.

Expanse 38 mil. *Length of body* 20 mil.

Habitat.—Florida (Linden).

As yet the only described United States species of the genus, and showing the affinity of the Lepidopterological fauna of the Floridian Peninsula with that of the West Indies. D. futilis is allied to the Cuban D. hatuey, Poey sp. and apparently more closely to D. confligens *Walker*, from "Honduras" and the "West Coast of America". It differs from the description of the latter by the prominent irroration of the primaries without the transverse posterior line of which no mention appears in Mr. Walker's description, as also in the absence of the "three rows of brown spots along the costa" etc., described as characterizing the anterior wing of D. confligens. The secondaries of D. futilis would seem to be similar in ornamentation with those of D. confligens, but as the bluish chalybeous scales of the ocelloid patch do not "include" the superior black portion of the spot but simply extend beneath, and without it a very ready distinction would be offered. The third or terminal article of the labial palpi is subspatulate and contrasted with the third by its being more closely scaled in our species. M. Guenèe gives the palpi as "*a 3e article court*, conique, *confondu avec le précédent.*" It is to be presumed that this conformation applies to the South American species comprising the first group of the genus (according to M. Guenèe), and that D. hatuey, as also D. futilis and probably D. confligens, fall into the second Group proper to Mexico and the West Indian Islands and which exhibits a different palpal structure.

PLUSIA, Ochsen.

Plusia mappa, n. s.

♂.—Head and thorax rosy brown, as are the legs, abdominal tufts above and the abdomen laterally and towards the anus; elsewhere the body squamation is dull smoky testaceous.

Primaries with the costa a little depressed, apices roundedly prominent, external margin full and rounded. Anterior wings purple rosy with transverse shades of olivaceous brown and blackish edging the ordinary lines. Basal line golden, narrow, edged with black inferiorly. Transverse anterior arcuate below median nervure, edged with dark brown shades with a very faint aureate hue. Median space wide, purple rosy, shaded with brown which becomes aureate inferiorly above the submedian fold. Orbicular spot evident, ovate, narrow, outwardly oblique, with a brown center and narrow black annulus relieved by an outer pale rosy ringed shade. Beneath this and below the median nervure is a prominent, bright golden V-shaped mark, very narrowly edged with black; the space included by the limbs is yellowish. Beyond this and below the fourth m. nervule is a moderate, subspherical brilliant golden spot. The blackish median shade arises above this on costa, and is dentate and irregular, most prominent on the discal cell. The reniform spot is faint, situate at the extremity of the discal cell and placed opposedly, as regards the direction of its position, to the orbicular from which it is widely separate. It is distinctly and straightly edged with a black shade outwardly where it is medially indentate, the dentation formed by the very narrow annulus which is here aureate. A single aureate dot at the inner lower angle of the spot on m. nervure. Centrally the reniform is roseate. The costa shows pale shade dots from one of which above the reniform the prominent transverse posterior line emanates; this is pale, distinctly margined on either side with olivaceous blackish or brownish shades, runs narrowly outwardly along costal edge, thence downwardly over the nervules, very minutely dentate on first median, running inwardly at fourth median where it is prominently inwardly dentate opposite the subspherical golden spot of the median space, thence running outwardly again it is more feebly dentate on the submedian fold whence it proceeds straightly and shortly to internal margin. It is followed by the clear roseate coincident subterminal space which forms a rather narrow shade band, being invaded by the dark, broad and diffuse shade preceding the subterminal line. This latter is narrow, subsinuate, twice outwardly acutely but not prominently dentate on the interspaces between the second and fourth median nervules. Here the line is preceded and followed by a very ap-

parent gilded shade, below which the line becomes roseate to internal angle. The terminal space is olivaceous brown beyond the subterminal line and is then more narrowly roseate along the margin. A narrow dark terminal line inconspicuously interrupted on the nervules. Secondaries obscure smoky testaceous, with a faint median shade line and a broad blackish shade band along external margin. Beneath obscure testaceous, powdered with purplish. The primaries are shaded with blackish medially and outside of a subterminal transverse shade line. Secondaries crossed medially by two rivulous dark shade lines, and shaded with dark scales along external margin, apparently obscuring a third subterminal transverse line.

Expanse, 40 mil. *Length of body*, 19 mil.

Habitat.—Canada. *Mr. Bowles*, No. "53".

This beautiful species bears a general resemblance to the European Plusia mya, but the ornamentation of the primaries differs throughout. The metallic markings are argent in the European species (*P. V-argenteum* Esper) and the gilded shadings at the subterminal line are not indicated. The transverse posterior line is *boldly* inflected on fourth median nervure in P. mappa, in which species the t. anterior line is not angulated inferiorly, and the subterminal is more even than in P. mya.

From general recollection this is the species erroneously determined as Plusia mya in the British Museum Collection from a Canadian specimen given as "from Mr. Bush's collection" in the British Museum Lists, p. 895.

P. mappa is, however, more nearly allied to the European P. iota, from which it differs by the much stronger toothing of the transverse posterior line on the fourth median nervule and submedian fold, by its metallic spots, that below the orbicular more acutely V-shaped, and by the presence of three bands on the secondaries beneath. In P. iota the anterior wings are much more evenly colored, whereas in P. mappa the roseate shades are even lighter than in P. mya and contrast strongly with the dark shades of the primaries. Whether the var. of P. iota from Canada in the B. M. Lists refers to this species or not we do not know.

From the European Plusia V-aureum *Guenèe* (Engr. 592—3), P. mappa differs as from P. iota and by its immaculate fringes. Engramelle's figure is not delicate enough to allow of further comparisons being instituted.

EXPLANATION OF PLATES 2 & 3.

Figure 60, ♀ Hemileuca grotei, *Hopffer*.
61, ♀ Cisthene unifascia, *G. & R.*
62, ♂ Limacodes rectilinea, *G. & R.*
63, ♂ Monoleuca semifascia, *G. & R.*
64, ♂ Aegeria pictipes, *G. & R.*
65, ♀ Hyperchiria zelleri, *G. & R.*
66, ♂ Psyche confederata, *G. & R.*
67, ♂ Cocoonet with extruded pupal integument of Psyche confederata.
68, ♀ Cydosia aurivitta, *G. & R.*
69, ♀ Microcoelia diphteroides, *Guenèe.*
70, ♀ Microcoelia dipht. *a* obliterata, *Grote.*
71, ♂ Hadena subjuncta, *G. & R.*
72, ♂ Hadena distincta, *Guenée.*
73, ♂ Dyops futilis, *G. & R.*
74, ♂ Choephora fungorum, *G. & R.*
75, ♀ Acronycta morula, *G. & R.*
76, ♀ Cucullia convexipennis, *G. & R.*


60.


61


62


63


64


65

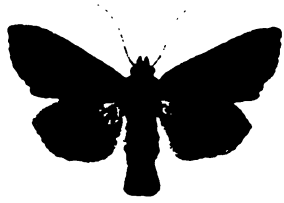
66.

69.

67.

70.

68.



71.

72.

73.

74.

75.

76.

Drawn by D. Wiest. Bowen & Co. lith. Philada.

Notes on a remarkable variety of PAPILIO TURNUS, and descriptions of two species of DIURNAL LEPIDOPTERA.

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

Notes on Papilio Turnus.

I have lately received (Sept. 1, 1868,) from a young friend in this neighborhood a newly taken specimen of *Turnus*, one-half of which is black (*Glaucus*), the other yellow (*Turnus*), the dividing line passing down the middle of the body. By the conspicuous blue spots upon the margin of the yellow side, evidently that side represents the yellow female, not the male, which would remove it from the class of hermaphrodites. In this region both the black and yellow females of *Turnus* are abundant, and are perhaps about equal in number. I have several times seen the black variety mottled over the whole surface, partly yellow, partly black, in irregular patches.

MELITÆA MARCIA, n. sp.

Male. Expands 1.3 to 1.5 inch.

Upper side fulvous: primaries have a broad black band extending along the hind margin and around the apex upon the costa, one-half the length of the latter, and divided by a fulvous sinus beyond the cell that reaches nearly to the costal edge; this marginal band encloses on its inner side, below the middle, one or two fulvous spots which are sometimes lunular but often irregular, and which form part of a series running along the whole margin, occasionally seen with distinctness but generally more or less obsolete; costal edge black; across the outer limb, parallel with the inner edge of the marginal band, a crenated line, sometimes obsolete, but often conspicuous and in such case cutting off a submarginal series of fulvous lunules; a black patch on middle of inner margin.

Secondaries have a broad black hind margin, through which runs a greyish-white crenated line from one angle to the other; a submarginal series of six rounded black spots, minute towards outer angle; above these a line more or less distinct expanded on costal margin into a long triangular patch; base of both wings reticulated with black lines between which some of the spaces are filled in with black, but by no means so densely covered as in *Batesii*; fringes greyish, cut with black at tips of nervules.

Under side of primaries pale fulvous, inclining to yellow on the costa and hind margin; an irregular black patch on middle of costa, another near apex, a third within the inner angle and a fourth on middle of inner margin; a few indistinct lines near base caused by the transparency of the wing; apex yellow and a yellow patch on middle of hind margin; a marginal series of fine crenated brown lines, a second beyond that, distinct only at the apex.

Secondaries purple-grey (or pearly-grey in some specimens) over rather more than the basal third and broadly along hind margin, leaving between a submarginal band limited on either side by a delicate crenated brown line that crosses the entire wing; this band is yellowish, clouded at the costal edge and in the middle by brown; a row of spots or points along the middle of the band, corresponding to the spots of upper surface, obsolete at outer extremity; hind margin bordered by a fine brown crenated line, above which is a second, (which is the outer edge of the submarginal band) the spaces between the two being lunular; at anal angle the purple shade gives place to yellowish; the middle crescents clouded by the brown shade that obscures the band; the basal portion of the wing reticulated with fine brown lines whereof the outer ones being most regular form a second band across the wing; next the base the lines are irregularly placed; towards costa and about the base the purple shade a little replaced with yellowish.

Body above black, covered with fulvous hairs; below white; palpi white; antennæ black above, whitish below; annulated with white; club black above, fulvous below.

Female. 1.7 inch; a shade paler than the male; similarly marked.

Found from New York to Louisiana, and hitherto considered as a variety of *Tharos*, from which it is readily distinguishable by the purple or pearly hue of the under side of secondaries. *Tharos* is one of our many species about which much confusion has existed, several distinct forms being by various authors considered to be included within the limits of this species. In 1864 I separated *M. Phaon*, (*Proc. Ent. Soc. Phila.*,) and Mr. Reakirt has since described *Batesii*. To this may be added *Marcia*, above described.

Boisduval and Leconte in Lep. d' Amer. page 170, regard *Tharos* of Cramer, pl. 169, and *Tharos* of Drury, Vol. 1, pl. 20, as identical and describe and figure what they consider the type. The figure of the male and the description correspond, viz: "the under side (of secondaries) is of an ochrey-yellow with a great number of undulating ferruginous lines, a brown border that reaches neither angle, marked

by a yellow lunular spot." Subsequently they add, " we possess individuals which we regard as varieties, of which the upper wings are black with some fulvous spots and a transverse macular band of same color. Beneath, the inferior wings are entirely without the brown border; the superiors have likewise a part of the border wanting." This I believe to refer to *M. Batesii*, and the figure of the female in the plate seems to represent that species..

In his paper on the Lepidoptera of California in *Ann. Soc. Ent. de France*, 1852, Dr. Boisduval makes a distinction between *Tharos*, of Cramer and that of Drury, which he calls *Pulchella*, and erroneously says is to be found throughout California. Drury's figure represents the upper surface as nearly black, like *Batesii*, but gives the under side of secondaries as having a white crescent and russet markings, and therein differs from *Batesii*. In the text, evidently two or three species are confused, the description of upper side applying either to *Tharos* of Cramer or to *Batesii*, or to *Marcia*. The description of under side of primaries is applicable to either; of secondaries, it says, "very pale clay colors, with a cloud in the middle of the external edge of a reddish-brown, where (in some) is a silver crescent." This relates alone to *Tharos* as described in Boisduval and Leconte and referred to Cramer. Cramer's figure is not reliable and indeed is worthless, but as Boisduval has adopted his name and correctly figured and described one of the forms under it, it would not now be questioned. But the name of *Pulchella* is not specially applicable to any of our species, if Drury's figure and description is to guide us.

I have found *Marcia* common on the Kanawha River, W. Va., in June. *Batesii* is of earlier flight and rather rare in that region.

THECLA ONTARIO, n. sp.

Male. Expands 1.1 inch.

Upper side dark brown, color of *T. Acadica;* on costal margin of primaries a large smooth oval spot; secondaries have a single tail and a very slight projection at extremity of second median nervule, as in *Acadica;* from the base of the tail a faint white line extends along the margin to anal angle; at this angle a few scales of fulvous; between the first and second median nervules an indistinct marginal dark spot above which are a few fulvous scales in crescent form; tail black, tipped with white; fringe of both wings fuscous, next before the tail white, beyond it, black at extremity, white next the margin; secondaries more produced at anal angle and less rounded than *Acadica*.

Under side uniform light brown, color of *T. Calanus* (*falacer* of

Godart and Harris); across the disk of primaries a nearly straight, narrow band of dark brown spots, very narrowly edged without by white; this band is continuous except that the two spots in the second and third median interspaces are slightly lunulate and separated; parallel to the margin is a second band of faint spots, of dark brown, nearly obsolete at each extremity; on the inner edge of the three or four middle and most distinct of these spots are a few white scales, scarcely noticeable without a glass.

Secondaries have a discal row of spots like those of primaries, but separated, forming a nearly straight line (the two middle spots only being outside the line) from the costa to a point just above the black space that surmounts the blue patch, then turning towards abdominal margin in a zigzag course forming the letter W, the last limb of which is the longer and reaches the extreme margin; hind margin edged by a fine whitish line and bordered by a row of spots occupying the interspaces, each of which is edged above with a curved black line on which is a second bluish-white; the four spots next apex almost obsolete, merely showing a darker tinge than the ground color, and on these the black crescents are not distinct and the white line is represented by a few scales only; the fifth spot a shade darker than the preceeding and edged above with a narrow patch of orange-red; the sixth is black with a broad red arch between it and the black line; beyond the tail a large patch of blue scales on a black ground which it does not wholly cover, leaving above the blue a small black spot on which are a few red scales; at the angle a rounded black spot narrowly edged above with white, between which and the black and white lines, which here are not crescent, is a red space.

Body above fuscous, beneath, abdomen ashy-brown, thorax blue-grey; legs white and black; palpi white tipped with black; antennæ annulated black and white; club black tipped with ferruginous.

From a single specimen taken by Mr. E. B. Reed, of London, Canada, at Port Stanley, Ontario, in July, 1868.

This species is allied to *T. humuli*, Harris, (*Hyperici* Bois. and Lec.), but differs in several respects; especially in the color of under surface, in the absence of a fulvous border to the discal lines in each wing, in the conspicious blue patch and red and black submarginal crescents; the tails of *humuli* have twice the length also, the shorter of the two being twice as long as the longest in the present species, while in the latter the second tail is a mere point. A figure of *T. Ontario* will be given in the "Butterflies of North America."

Catalogue of the described TENTHREDINIDÆ and UROCERIDÆ of North America.

BY EDWARD NORTON.

[Continued from Vol. 1, page 280.]

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51. TAXONUS, Meg.

Taxonus, Meg. von Muehlfeld.

Wings with two marginal and four submarginal cells, the second and third each receiving a recurrent nervure; bullæ as in *Allantus*.

Antennæ 9-jointed, generally shorter than to abdomen, filiform, with the end joint obtuse.

Head: nasus more or less emarginate, the corners sometimes produced; labrum bluntly rounded; mandibles short and thick, with or without a simple inner tooth, seldom with more small teeth; fourth joint of palpi longest.

Abdomen long, sometimes flattened, polished.

It is difficult to specify the external distinction between *Taxonus* and *Strongylogaster*.

Tribe 1. Hartig.

Lanceolate cell with oblique cross-line, under wings without middle cells.

1. T. nigrisoma.

Taxonus nigrisoma, Norton, Bost. Proc. ix, 1862, 119. ♀.

Blue-black, the legs dark rufous. Length 0.30. Br. wings 0.60 inch.

♀. Color blue-black; abdomen rather long, flattened, acute; antennæ slender, basal joint enlarged, third longer than fourth, apical joint as long as the preceding; clypeus angulate emarginate; labrum and base of mandibles pale rufous; legs rufous or honey-yellow; base of coxæ and tarsi black; wings faintly clouded, stigma and costa black.

Mass. (Harris Coll.). Dorchester, Mass. (F. G. Sanborn.)

Three specimens. Not conmon.

2. T. unicinctus.

Taxonus unicinctus, Norton, Bost. Proc. ix. 1862, 119. ♀.

Color black, a rufous band on third and fourth segments of abdomen. Length 0.30. Br. wings 0.60 inch.

♀. Black, body long and slender; antennæ: third joint longer than fourth, the flagellum rufous beneath; head polished, lower ocellus in a long basin ending in a blunt projection between antennæ, nasus deeply incurved; third joint of palpi longest, the fifth springing from the fourth at one side of apex; mouth yellowish; tegulæ, coxæ and trochanters white; a spot at the tips of first and second, the third and fourth segments of tergum and the second segment of venter, yellow-red; base of coxæ, the anterior coxæ above, and the posterior tarsi, black; wings hyaline; marginal cross-nervure straight, stigma and costa black.

♂. Flagellum beneath rufous towards the tip; the three basal segments of abdomen rufous, legs paler before than those of female, only the tips of posterior tarsi black; marginal cross-nervure curved; base of stigma and costa pale.

Farmington, Conn. Not common.

This may ultimately prove to belong to *Strongylogaster*.

3. **T. multicolor.**

Strongylogaster multicolor, Norton, Bost. Proc. ix, 1862, 120.

Testaceous; base of antennæ, vertex and thorax black: head, a spot on pleura and the coxæ yellow. Length 0.24. Br. wings 0.42 inch.

♂.—Body slender, not long; antennæ short, compressed, third joint hardly longer than fourth, color testaceous, paler at tip; the two basal joints black; head yellow, with a large black vertical spot, orbits yellow; tegulæ, collar, a wide stripe across pleura, coxæ and base of femora yellow; remainder testaceous; wings hyaline, basal half of stigma waxen; under wings without inner cell, outer cell not closed.

♀.—Antennæ black, slightly serrate toward the tip as in the male, nasus deeply notched. Head and thorax black where it is testaceous in the male, outer orbital line interrupted with black, each segment of tergum with a triangular black spot, widest toward apex and in its middle. Tarsi blackish above.

Maryland, (Uhler.) Taken May 28. Canada, (L. Provancher.) 2 ♂. 1 ♀.

Tribe II.

Lanceolate cell with oblique cross-line; underwing with two inner cells.

4. **T. dubitatus.**

Taxonus dubitatus, Norton, Bost. Proc. ix. 1862, 119. ♀ ♂.

Color yellow-red; head and metathorax black in ♀; part of thorax and tergum black in ♂. Length 0.24—.26. Br. wings 0.48—.55 inch.

♀.—Color yellow-red, body very slender; antennæ slender, black, first joint globose, not much larger than second, third and fourth joints equal; head, polished black; eyes widely separated; each of the ocelli in a distinct, circular, shining basin; clypeus slightly emarginate, labrum retracted, both white; mandibles and palpi yellowish; scutel, metathorax and basal plates, blackish; posterior tibiæ, except at base, and tips of all the tarsi above, blackish; spurs short, obtuse, claws without perceptible inner tooth; wings hyaline, edges of stigma and costa black.

♂.—The male has the apex of flagellum pale beneath; abdomen slender and compressed; upper half of pleura, apical half of abdomen, and the sides of the basal half above, black; coxæ and trochanters whitish; posterior tibiæ like the others, with only the apical joints of the tarsi and the claws black.

Massachusetts, Connecticut, New Jersey, Illinois.

A specimen from Illinois has the mesothorax black. (Coll. Amer. Ent. Soc.)

Three specimens, May 19th, on three different plants of one of our tall ferns, (Osmundi,) when taken, they feign death, folding the antennæ, as well as the legs, upon the breast.

5. **Taxonus amicus**, n. sp.

Black; mouth and trochanters white; tegulæ, collar and abdomen yellow-red. Length 0.24. Br. wings 0.52 inch.

♀. Black, body slender; antennæ moderate, each of the ocelli in a basin, nasus emarginate, aud with labrum white; tegulæ, collar and abdomen pale reddish-yellow, apical segments brownish; pleura and breast clear piceous, base of coxæ and middle of femora the same color; apex of coxæ, trochanters, both ends of femora and base of tibiæ, white, remainder of tibiæ and of all the tarsi piceous; wings hyaline, faintly clouded.

♂. The male has the anterior angle, thorax above and abdomen, except a rufous band on the second, third and fourth segments, black; pleura and pectus piceous-brown; hinder femora aud tibiæ, black; basal third of tibiæ whitish.

Canada. (Coll. Amer. Ent. Soc.) One ♀, one ♂.

This may be a variety of *T. dubitatus*.

6. **Taxonus albido-pictus**, n. sp.

Black, the abdomen of female banded with rufous, the collar, the hinder tibiæ and first tarsal joint banded with white. Length ♀ 0.32, ♂ 0.25. Br. wings 0.56 and 0.46 in.

♀.—Shining black, polished. Antennæ two-thirds the length of body, slender, third and fourth joints of equal length. Nasus slightly incurved and with the labrum white; palpi tinged with rufous, tegulæ and collar white; the lower half of pleura, the pectus, the apex of the first, the second and basal half of third segments of same color, their trochanters, the base of tibiæ and basal half of first tarsal joint pure white; apical joints of the four anterior tarsi blackish, the apex of their tibiæ obscure, the intermediate tibiæ obscure above, apex of hinder femora and the remainder of their tibiæ and tarsi black. Wings hyaline, faintly clouded.

♂.—Resembles female. Abdomen slender and flattened.

♂ Var.—Antennæ shorter, basal joint stouter, the abdomen wholly black, the hinder tibiæ beneath rufous.

Illinois (B. D. Walsh), Virginia, (Coll. Am. Ent. Soc.)

♂.—The male has the two basal joints of antennæ white above; apical half of fifth joint pale; head pale instead of testaceous; pleura almost entirely white; abdomen and legs paler than the female; hinder wings with no middle cells, outer cells complete, a nervure slightly bent at intersections running around the apical margin; second brachial and lanceolate cell extending to margin.

Mass., Conn., Pa.

Perhaps this should be called a variety of *S. terminalis*, but the dot back of ocelli, white collar, the V-spot and spot beneath wings, and are permanent differences in this. The male is described by Say as the male of *S. terminalis*.

The position of the outer marginal under wing nervure is like that of *Perineura*, Hartig, (Plate V, fig. 42), but this is throughout close to the outer margin.

3. **Strongylogaster pallidicornis**, n. sp.

Antennæ at tip, outer orbits, tegulæ and scutel white; head and thorax black; abdomen, spot on pleura and legs rufo-testaceous. Length 0.36. Br. 0.74 inch.

♀.—Body as in *S. terminalis;* head and thorax black; antennæ black, the four apical joints white, basal joint piceous; an angular orbital spot on each side of ocelli, a narrow line around the outer edge of head, the mouth, tegulæ, collar, V-spot, scutel, postscutel, upper edge of metathorax, and a dot below all four tegulæ, white; a large angular spot on pleura, back of metathorax, basal plates and abdomen and legs rufo-testaceous; coxæ black, white at apex and a white spot on posterior pair; wings smoky hyaline, base of stigma waxen.

Brooklyn, N. Y. (J. Akhurst.) One specimen.

4. **S. apicalis.**

Allantus apicalis, Say, Bost. Jour. I. 1835, 216, 3.
Allantus abdominalis, Norton, Bost. Jour. vii. 238, 4, ♀ ♂.
Strongylogaster abdominalis, Norton, Bost. Proc. ix. 120.
Strongylogaster apicalis, Norton, Bost. Proc. ix, 120.

Black; tips of antennæ and scutel white; abdomen testaceous. Length 0.30—.37. Br. wings 0.65—.75 inch.

♀.—Abdomen flattened, acute; antennæ with the four apical joints white; head large, polished as in *S. terminalis;* head and thorax black; nasus deeply incurved; nasus and mouth beneath, tegulæ, scutel and spot behind, pale yellow; abdomen and legs testaceous, coxæ black; tips of posterior pair and most part of trochanters, white; base of four anterior femora and apex of posterior pair black; wings faintly clouded, base of stigma pale.

♂.—The male has the color of venter and legs paler than with fe-

male; apical segment of abdomen sometimes blackish; under wings with no middle cells, outer cells complete as in *S. mellosus.* ♂.

Conn., N. Y.

Common. In one case the under wings of the female have but one middle cell. Say's description of this is very incomplete. He stated that the coxæ are white, which is not the case with any yet seen.

5. S. epicera.

Allantus epicera, Say, Bost. Jour. I. 1835., 216., ♂.
Norton, Bost. Jour. vii. 243, 15, ♂ ♀.
Strongylogaster epicera, Norton, Bost. Proc. ix. 120.

"Black; abdomen, base of antennæ and feet honey-yellow." Length 0.32. Br. wings 0.63 inch.

♂ ♀.—Body not very stout; abdomen of ♀ flattened; antennæ not longer than base of thorax; the two basal joints, and the third and fourth above rufous; third one-half longer than fourth; nasus wide, incurved, coarsely punctured; mouth, tegulæ, collar, abdomen and legs rufous or honey-yellow; apical segments of abdomen sometimes blackish; coxæ black, their tips and the trochanters pale; wings faintly clouded: under wings of males without middle cell, outer cells complete as in *S. mellosus.*

Conn., N. J., Ia. (Say).

Say described only the male.

6. S. rufocinctus.

Allantus rufocinctus, Norton, Bost. Jour. vii. 1860, 248. 25. ♂ ♀.
Strongylogaster rufocinctus, Norton, Bost. Proc. ix. 120.

Black; the five basal segments of abdomen and the legs rufous. Length 0.30—.35. Br. wings 0.62—.70 inch.

♂ ♀.—Shining black, rather long; head polished, wide, large, sutures deep; nasus incurved, face black; labrum in some cases piceous; tegulæ yellowish, basal plates black; the first four segments of abdomen and the legs rufous; coxæ, trochanters, tips of posterior tibiæ and their tarsi, black; in some cases the apical half of the four posterior coxæ and their trochanters are white, and the apical segment of abdomen rufous; wings faintly clouded, base of stigma white, under wings of female with one inner cell; of the male none; the outer cells incomplete, the second brachial and lanceolate cell not reaching margin of wing.

Ct., Md., West Va.

In specimens from Maryland and West Virginia, the apical segment of the abdomen is rufous.

7. **S. pallipes.**

Allantus pallipes, Say, West. Quart. Rep. ii. 1823, 1, 72.
Norton, Bost. Jour. vii. 243, 16.
Strongylogaster pallipes, Norton, Bost. Proc. ix. 120.

"Black; thorax rufous before; feet white." Length seven twentieths of an inch.

Body black; labrum and palpi white; thorax with a rufous triangle before, a rufous spot on each side of the disk, another beneath the origin of the wing, and tip of the scutel, rufous; a whitish spot before the wings; wings a little dusky; carpus whitish; feet white; posterior thighs blackish in the middle; tergum with the lateral basal margin of the segments rufous; venter rufo-testaceous on each side, dusky in the middle.

Missouri.

The tegulæ and prothorax, and a stripe across the middle of pleura are rufous, the coxæ and trochanters white; hinder femora black at tips only; under wings with two middle cells.

Connecticut, (August); West Virginia. Not common.

8. **S. pinguis.**

Allantus pinguis, Norton, Bost. Jour. vii. 1862, 244, 17, ♀.
Strongylogaster pinguis, Norton, Bost. Proc. ix, 120.

Black, antennæ mostly waxen-yellow, scutel white, abdomen testaceous. Length 0.30. Br. wings 0.60 inch.

♀.—Body short and stout as in *Macrophya cestus* and *goniphorus*; head and thorax black; antennæ flattened, rather serrate, waxen-yellow; second joint one-third the length of first, its basal half black; head wider than in *S. terminalis*, nasus slightly emarginate, neck produced, pleura with very large deep pits; mouth, tegulæ, scutel and postscutel whitish, (sometimes rufous,) abdomen and legs rufous or testaceous; basal plates black; coxæ black, tips and trochanters pale, the four anterior legs pale, apex of hinder femora and of tibiæ black; inner anterior spur very long and bluntly bifid, claws large, thick at base, with a circular hollow below inner tooth; wing ample, wide, faintly clouded; under wings with two inner cells, outer margin of outer cells with fractured outer nervures.

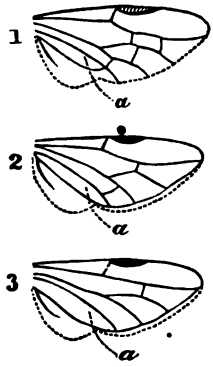
♂.—The abdomen of male is very short and stout, rounded at apex; anterior lobe of thorax and two edges of collar rufous, antennæ stouter, appearing almost filiform, like *Urocerus*; the outer cells of under wings all complete, having an outer nervure following the whole apical margin of the wing; no inner cell; the first brachial joining the marginal cell, as in *S. mellosus*.

Var. *a*. ♀.—Antennæ black; labrum, scutel and the four anterior

legs below the knees and the tarsi white, the femora chesnut-red Westfield, Mass.

Conn., Mass. 2 ♂, 2 ♀.

The under wings have the lanceolate cell extending to the margin of the wing, as in fig. 2 *a*, and all the outer marginal cells complete in the males; with the females these outer nervures are present, but are broken in several places.



This insect differs much from the other species of *Strongylogaster* in its antennæ, its shortened abdomen, and in its under wing lanceolate cell, which in this genus, as well as *Allantus* and *Tenthredo*, is formed as in fig. 1 *a*. The cell is usually shorter in *Selandria*, *Macrophya* and *Taxonus* and does not reach the cross nervure of the brachial cell above. It differs from *Perineura*, Hartig, in having its upper wing lanceolate cell with an oblique cross-line, and its under wing with an inner and outer apical cell.

Fig. 1. Typical under wing of *Allantus*, *Strongylogaster* and *Tenthredo*.

Fig. 2. Under wing of *Strongylogaster pinguis* ♂.

Fig. 3. Under wing of ♂ *Strongylogaster mellosus*, *apicalis*, *epicera*, and of *Perineura*, Hartig.

Tribe. 2.

9. S. tacitus.

Allantus tacitus, Say, Harris Cat.
Norton, Bost. Jour. vii. 1860, 246, 20.
Strongylogaster tacitus, Norton, Bost. Proc. ix. 120.

Black; abdomen rufous; wings violaceous. Length 0.30—.34. Br. wings 0.60—.68 inch.

♂.—Body rather stout, obtusely rounded at apex; antennæ moderate, flattened from base, third and fourth joints equal; eyes not as prominent as in Tribe 1; face and pleura coarsely punctured; nasus not deeply emarginate, face black; basal membrane black, abdomen chesnut-red; legs black, tips of anterior femora and base of tibiæ piceous; wings violaceous, subopaque, under wings with two middle cells.

♀.—The female sometimes has a faint rufous tinge on the inner orbits near the antennæ; basal joint of palpi rufous above; remainder piceous; tegulæ piceous; abdomen paler than in male; anterior tibiæ and tarsi piceous.

Mass., (Harris Coll,). Conn., N. Y., Canada.

10. **S. rufescens.**

Allantus rufescens, Norton, Bost. Jour. vii. 245, 19. ♀;
Strongylogaster rufescens, Norton. Bost. Proc. ix. 120.

Black; vertex and thorax, antennæ, orbits, abdomen and legs, dark rufous: mouth, collar and scutel, yellow. Length 0.40. Br. wings 0.80 inch.

♀.—Dull; head wide and slightly roughened at apex; antennæ dark rufous, rather stout, the two basal joints red; vertex black from back of head to clypeus; upper half of orbits rufous; a spot between and beneath antennæ, lower half of orbits and mouth, yellow; clypeus produced, incurved, thorax black; edge of collar, scutellum and a spot on pleura at base of coxæ, yellow; middle of pleura indistinctly rufous; abdomen and legs dark rufous; anterior coxæ at base, posterior coxæ, trochanters, femora, tips of tibiæ above and tips of intermediate femora black; tarsi pale reddish-yellow, wings smoky in middle, stigma, costa and tegulæ piceous.

Maine, (Harris Coll.). One ♀.

11. **Strongylogaster longulus**, n. sp.

Black: tegulæ and anterior angle whitish; abdomen rufous; wings hyaline. Length 0.32—.36. Br. wings 0.64—.68 inch.

♀.—Black; abdomen slender, much lengthened; antennæ short, rather stout, flattened, setaceous, third joint hardly longer than fourth; head and pleura coarsely pitted; channels at sides of ocelli not reaching back of head; labrum retracted, rufous; thorax black; tegulæ and anterior angle, whitish; abdomen rufous, a black band on first and second segments of tergum; legs waxen-yellow; base of coxæ black; wings hyaline, faintly clouded at apex, nervures piceous, apical half of stigma and costa beyond, pale; under wings with two middle cells.

Var.—Abdomen black, with a large reddish-yellow spot on the second, third and fourth segments above and beneath.

Norway, Me., (Cambr. Mus. S. I. Smith's Coll.); Brunswick, Me. (A. S. Packard, Jr.); Mass., (Coll. Amer. Ent. Soc.). Three ♀.

12. **Strongylogaster distans**, n. sp.

Black, tegulæ and anterior angle whitish, abdomen rufous, black banded. Length 0.32. Br. wings 0.64 inch.

♀.—Black; antennæ, head and thorax as in *S. longulus;* palpi whitish; abdomen testaceous, tip of each segment pale; the basal half of each segment black, venter almost brown; legs dirty white; coxæ black, except at tips; base of all the femora and apical half of posterior tibiæ, with their tarsi black-brown; wings smoky-hyaline, nervures yellowish; second recurrent nervure received near base of third sub-marginal cell.

California, (Cambr. Mus. Coll. by A. Agassiz, Jr.). Two specimens.

white; two brown or black vittæ on side lobes of mesothorax; seven blackish dots on each side of tergum; legs pale testaceous; apex of hinder tibiæ and their tarsi blackish; wings hyaline, stigma and costa black.

♂.—Dots on each side of tergum in male indistinct: the two apical segments of abdomen blackish; under wings with two middle cells.

Cuantla, tierra Caliente. (H. de. Saussure.) 2♀, 8♂.

17. **Strongylogaster nigritorius**, n. sp.

Testaceous; head and thorax mostly black; dots on the abdomen and apex blackish; wings hyaline. Length 0.26—.32. Br. wings 0.54—.68 inch.

♂ ♀.—Testaceous; abdomen stout, compressed, not widened beyond middle; antennæ moderate, basal joint sometimes tipped with white; head black, nasus and mouth below whitish; thorax black; tegulæ, edge of collar, scutel, a spot on pleura (size variable, sometimes most of pleura,) testaceous; dots at each side of each segment of tergum and two apical segments black; legs testaceous, hinder tibiæ and the tarsi more or less blackish; wings hyaline, stigma and costa piceous.

Var.—Thorax sometimes testaceous, with two vittæ.

Cuantla, t. c. Mexico. (H. de. Saussure.) 1♀, 9♂.

This is probably a variety of *S. meritorius*, from which it differs in the black basal joint of antennæ, in the thorax being mostly black.

18. **Strongylogaster illuminatus**, n. sp.

Black, with base of antennæ, mouth, tegulæ, collar, V-spot, scutel and spot on pleura white; abdomen testaceous with paler bands. Length 0.28—.32. Br. wings 0.64—.66 inch.

♂ ♀.—Three colors; body of ♀ not stout, of ♂ slender; antennæ moderate, basal joint white; head black; nasus and mouth beneath white, thorax black; tegulæ, prothorax, large V-spot, scutel, basal plates and a large irregular spot on pleura white; abdomen testaceous, with a brownish band across each segment of tergum; legs testaceous; femora darker at base; apical tarsi obscure; wings hyaline, faintly smoky, nervures piceous, stigma pale testaceous.

Cordova, t. c. Mexico. (H. de. Saussure.) 1♂, 1♀.

19. **Strongylogaster fulviventris**, n. sp.

Black; mouth, tegulæ, collar, middle of tergum in ♀, and part of venter orange-yellow. Length 0.24—.32. Br. wings 0.50—.64 inch.

♀.—Black; body stout, apex of abdomen not acute; antennæ slender, longer than thorax; third joint longer than fourth; head wider, nasus and mouth, below tegulæ, a wide mark on collar, coxæ and trochanters straw-yellow; a stripe down the middle of tergum, and all the venter except apex, orange-red, femora the same color, paler before;

the tibiæ white; a spot on tips of femora above, and a line down all the tibiæ black, apex of posterior tibiæ and all the tarsi blackish, apical joint white; wings hyaline, faintly clouded; stigma and nervures black.

♂.—The male has the tergum black; with an obsolete rufous stripe down the middle; only the base of venter rufous and less of black upon the legs.

Angang, Mexico. (H. de. Saussure). 2 ♀, 4 ♂.

20. **Strongylogaster lineatus**, n. sp.

Black; mouth, tegulæ, most of anterior angle, a line on pleura and most of venter reddish-yellow. Length 0.26. Br. wings 0.54 inch.

♂ ♀.—Black; body slender; antennæ slender, somewhat enlarged on middle; nasus and mouth below white; tegulæ, most of anterior angle, a longitudinal stripe on pleura, and a large spot on venter, covering four or five basal segments, reddish-yellow; legs the same color; a spot on tip of femora and a line down the four hinder tibiæ blackish; tarsi black; wings hyaline, stigma black.

Angang, Mexico. (H. de. Saussure.) 1 ♀, 3 ♂.

In the male the outer discoidal and apical cells are closed.

21. **Strongylogaster nigricans**, n. sp.

Black; mouth, collar, and bands on legs white. Length 0.24—.32. Br. wings 0.54.—64 inch.

♀ ♂.—Shining black; body slender; antennæ slender, not longer than thorax, third joint longer than fourth; nasus slightly incurved, and with the mouth beneath white; the edges somewhat blackish; tegulæ and collar white; remainder of body black; legs mostly white; two-thirds of coxæ, a line down the anterior legs above, a band on the medial femora, interrupted before, a wide band on posterior femora, apex of four posterior tibiæ, and the posterior tarsi black, the base of first joint white; wings faintly clouded, stigma and costa black.

Cuantla, tierra fav., Mexico. (H. de. Saussure.) 3 ♀, 3 ♂.

22. **Strongylogaster nigredo**, n. sp.

Black; legs white before; wings obscure. Length 0.28. Br. wings 0.58 inch.

♂.—Shining black; body slender; antennæ moderate, formed as in *Macrophya* and *Selandria*, enlarged in middle; mouth black, palpi pale; legs black, coxæ and trochanters black, anterior legs whitish before, a white band on the four posterior tibiæ, interrupted by a slender black line above; wings obscure blackish, stigma and nervures black.

Var.—Hinder tibiæ almost entirely dark.

Toluca, (H. de. Saussure.) Mex., 6 ♂.

53. PŒCILOSTOMA, Dahlb.

Pœcilostoma, Dahlbom.
Hartig, die Blattw. 302, Sec. 3.

Wings as in *Tenthredo*, two marginal and four submarginal cells, the second and third each with a recurrent nervure. Lanceolate cell open at shoulder, with oblique cross-line; under wings with one inner cell.

Antennæ 9-articulate, not longer than base of abdomen, generally filiform.

Head somewhat rounded as in the previous Section; body generally cylindrical, abdomen compressed, somewhat broader at the fifth or sixth segment; nasus slightly emarginate; labrum rounded; labium as in *Tenthredo*, the first joint of maxillary palpi almost wanting; mandibles thick, below the tip with a sharp tooth.

1. **Pœcilostoma inferentia**, n. sp.

Black, edges of ventral segments whitish; wings hyaline. Length 0.28. Br. wings 0.48 inch.

♂.—Black; body long, antennæ short, not longer than to scutel, flattened, third joint longest; nasus moderately notched, a tooth in notch on each side, making it appear 3-notched; mandibles stout, with a large tooth near the point; labrum, tegulæ, edge of collar, edges at sides of each segment of abdomen, white; abdomen flattened, not stout; legs black, tinged with piceous; trochanters, base and tips of femora, whitish; all the legs before obscure white; spurs very short, inner claw tooth near the middle of claws; wings clouded hyaline, stigma piceous.

Farmington, Ct. One ♂.

It is possible that *Strongylogaster rufocinctus* belongs to this Section, as its wings would lead to infer, but the general structure of the antennæ and head is more like that of the species with which it is placed.

54. PERINEURA, Hartig.

Perineura, Hartig, Die Blattw. 1860, 303, Sec. 4.

Wings with two marginal, and four submarginal cells, the second and third each with a recurrent nervure. Lanceolate cell closed in middle; under wings without middle cell, all the outer cells closed by outer cross nerves near the margin of wing.

Upper lip deeply emarginate, with prominent side angles; labrum large.

Remainder as in *Tenthredo*.

Europe.

It is possible that the first six species of *Strongylogaster*, of which the males have the under wing without inner cells and the outer cells closed, may be included in this genus, of which only one European species is yet described.

55. TENTHREDO, Leach.

Tenthredo, Leach, Zool Misc. 1814.
Hartig, Die Blattw. 303, Sect. v.
(Allantus) Fam. vi, Klug. Berl. Mag. vii, viii.

Wings with two marginal and four submarginal cells, the second and third each with a recurrent nervure. Lanceolate cell open at the shoulder, with a straight cross-line. Bullæ as in *Allantus*. Under wings with two middle cells.

Antennæ 9-jointed, long and slender, generally longer than base of abdomen and testaceous, sometimes shorter and filiform; joints usually enlarged at tips, second joint not half as long as first, third longer than fourth.

Head large, as wide as thorax, incurved behind, more extended between eyes and summit than in *Macrophya*; usually there are two deep channels at sides of ocelli, from antennæ to summit, with a cross channel back of ocelli, and a basin from lower ocellus to between the antennæ. The nasus is deeply emarginate, produced, and the labrum produced and rather pointed; mandibles lengthened, pointed, with two or three inner teeth; maxillæ with a long horny tooth on the inner side; the second joint of the palpi is sometimes apparently wanting.

Body long; abdomen beyond the middle in females distinctly widened.

Legs rather long; spurs of tibiæ long and sharp, inner spur of anterior tibiæ obtuse, deeply bifid, often with an obtuse inner division, while that of *Macrophya* is sharp.

Table to assist in determining species.

A.—Body long:
- Antennæ pale at apex ..... 1. **grandis.**
- Antennæ wholly pale ..... 2. **mellinus.**
- Antennæ pale at base:
  - Pleura and pectus rufous ..... 3. **xanthus.**
  - Pleura and pectus black ..... 4. **ruficolor.**
- Antennæ wholly black or ferruginous:
  - Head above antennæ more or less yellow;
    - Abdomen yellow or yellow banded ..... 5. **verticalis.**
    - Abdomen black ..... 6. **lobatus.**
    - Abdomen black above; pleura black ..... 7. **angulifer.**
    - Abdomen black above; an angulate spot on pleura ..... 8. **verticalis.**
    - Abdomen partly rufous:
      - Pleura and pectus pale ..... 11. **eximius.**

Spot on pleura, pectus pale.....9. **angulatus.**
Pectus pale.....16. **variegatus.**
Pectus black.....10. **formosus.**
Pleura and pectus black.....12. **dissimilis.**
Head above antennæ black:
Abdomen mostly rufous:
Spot on pleura:
Pectus pale:
Posterior femora and tibiæ in middle rufous.....13. **signatus.**
Posterior femora black above, tibiæ banded with rufous.....14. **variatus.**
Posterior femora black above, tibiæ banded with yellow; venter pale.....15. **pleuralis.**
Posterior femora black above, tibiæ black above..16. **variegatus.**
Posterior femora rufous, apical half of tibiæ black.....17. **rufopedibus.**
Pectus black.....18. **varipictus.**
No mark on pleura:
Pectus pale:
Posterior femora rufous.....19. **varians.**
Posterier femora black.....21. **discrepans.**
Pectus black:
Posterior femora rufous.....23. **mutans.**
Posterior femora black, tibiæ rufous.....20. **semirufus.**
Posterior femora and tibiæ black:
A yellow spot above coxæ.....22. **tricolor.**
Apical half of abdomen rufous; wings clear..24. **semirubra.**
A piceous band on abdomen; wings clear.....25. **piceocinctus.**
Apex of abdomen rufous; wings obscure.....34. **attractus.**
Middle of abdomen rufous; wings violaceous...33. **cinctulus.**
Abdomen rufous; wings violaceous.....33. **tardus.**
Abdomen black:
Venter white.....26. **pectoralis.**
Venter black:
Pectus rufous.....27. **rufopectus.**
Legs rufous, apex of posterior femora black.....28. **rufipes.**
Legs rufous, posterior femora black.....29. **concessus.**
Legs black and white, posterior tibiæ black; wings clear.....30. **flavomarginis.**
Legs black and white, posterior tibiæ banded; wings clear.....31. **cinctitibiis.**
Legs black and white, posterior legs black; wings obscure.....32. **fumipennis.**
Legs black and white, posterior legs black; wings violaceous.....33. **atroviolaceus.**
B.—Body short:
Pale spots on venter; thorax black; abdomen rufous.....35. **semiluteus.**
Abdomen with black dots.....37. **14-punctatus.**
Abdomen banded with rufous.....36. **confusus.**
C.—Species not determined.....38. **nigrofasciatus.**
39. **subceruleus.**

A.

T. grandis.

Allantus grandis, Norton, Bost, Jour. vii, 1860, 239. 7. ♂ ♀.

Tenthredo grandis, Norton, Bost. Proc. ix. 121.

Black; the tips of antennæ, collar, scutel and sides of basal membrane yellow. Length 0.40—.50. Br. wings 1.00—1.12 inch.

♀.—Bluish-black, body very long, abdomen compressed, widest beyond middle, at apex acute; the four apical joints of antennæ yellow; head polished, a spot on each side of clypeus, sometimes joined, disk of labrum, base of mandibles, edge of collar, scutel and sides of basal membrane, straw-yellow; legs black, a white line down the anterior pair below middle of femora, a spot on intermediate tibiæ below, their tarsi and the last tarsal joint of posterior pair whitish; inner anterior tibial spur deeply and widely bifid, the outer limb not branched; inner claw tooth large; wings sub-violaceous; under pair mostly hyaline.

♂.—The male has more of the collar, an oval dot above the anterior coxæ, a line on intermediate femora and spot at end of posterior tibiæ before, white.

Canada, Connecticut, Illinois. Not common.

2. T. mellinus.

Allantus mellinus, Harris, MS.

[Norton, Bost. Jour. vii, 1860, 24. ♀ ♂.

Tenthredo mellinus, Norton, Bost. Proc. ix. 121.

Reddish-yellow; antennæ mostly pale, mouth and a spot above posterior coxæ straw color. Length 0.44—.47. Br. wings 0.86—.90 inch.

♀.—Reddish or honey-yellow; body long; antennæ color of body, not very long; mouth below antennæ and cheeks, a spot above posterior coxæ, and anterior coxæ and femora, straw color; wings hyaline.

♂.—The male has a black spot about ocelli, the tegulæ, collar, V-spot, scutel, pleura, pectus and coxæ pale yellow; a line on posterior coxæ and half of their femora above, black.

Maine. (Harris Coll.)

Var. *a* ♀.—Tegulæ and sides of basal membrane pale yellow, a spot on each lobe of mesothorax and the apical half of femora black; wings smoky-yellowish. Norway, Maine, (Cambr. Mus.)

Another specimen has the scutel yellow and the four posterior coxæ black. Labrador. (A. S. Packard Jr.).

Var. *b*. ♀.—Tegulæ and edge of collar waxen, remainder of thorax and abdomen of one color; neck and sutures of pleura blackish; legs of one color; anterior pair pale before. Chilingunck Depot, Washington Territory. (Smiths. Inst.)

3. **T. xanthus.**

Tenthredo xanthus, Norton, Proc. Ent. Soc. Phila. III. 1864, 13. 26. ♀.

Honey-yellow; base of antennæ, mouth, edge of collar and spot above posterior legs white; neck and spot on pectus black. Length 0.52. Br. wings 0.92 inch.

♀.—Color honey-yellow; abdomen very long. Antennæ not reaching beyond first segment of abdomen, color black, the two basal joints and part of third beneath yellowish; head large; an indistinct line on inner orbits and a dot above each antenna, face below, tegulæ in part, collar with a connected dot beneath, sides of basal plates and spot above posterior coxæ, white or straw color; the prothorax, front of anterior lobe, a spot at base of side lobes of mesothorax, pectus, a narrow line in the joints of the first second, third and fifth segments of tergum and part of the apex beneath, black; legs the color of body, their anterior coxæ and the two anterior pair before, pale; anterior inner spur two-thirds the length of first tarsal joint, widely bifid; hinder legs long and stout, wings smoky yellowish, nervures black, costa and basal nervures rufous, base of stigma pale.

Var. *a*. A triangular white spot on pleura.

Var. *b*. The antennæ whitish beneath.

Pike's Peak, Colorado. (Coll. Am. Ent. Soc.)

Many specimens. The number and size of the black spots on the abdomen varies.

4. **Tenthredo ruficolor**, n. sp.

Black; base of antennæ, head, thorax above, and apex of abdomen yellow-red. Length 0.52. Br. wings 0.96 inch.

♀.—Body long. Antennæ moderate, black, the two basal joints yellow; head large; the head, tegulæ, thorax above, edges of basal plates and apical half of abdomen rufous or honey-yellow; a faint pale dot at summit of inner orbits, face below antennæ, collar, sides of basal plates and a spot beneath straw-yellow; back of head, a large spot on side lobes of mesothorax, pleura, pectus and three basal segments of abdomen black; legs rufous; coxæ, a line on basal half of intermediate femora above and on apex of posterior tibiæ black; anterior tibiæ above, pale; wings smoky, base of stigma and the costa pale, nervures darker.

Canada. (Coll. Am. Ent. Soc.) 2 ♀.

5. **T. verticalis.**

Tenthredo verticalis, Say, Longs. 2nd. Exp. II. 1824, 317. 2. ♀
Norton, Bost. Proc. ix. 1862, 121.

Allantus verticalis, Norton, Bost. Jour. vii. 1860, 250. 28. ♀ ♂.

Black; part of head, tegulæ, collar, V-spot, scutel, basal plates and bands on abdomen yellow. Length 0.40—.48. Br. wings 0.82—.88 inch.

♀.—Black, abdomen long and flattened; antennæ black, a spot on

the basal joint within, sometimes also on second and third joints, yellow; head mostly yellow, a large spot, trilobed below, on vertex from antennæ to summit, a smaller irregular orbital spot above and outside of each eye and the back of head, black; tegulæ, collar, V-spot, scutel and behind, ridges of metathorax, basal plates and a dot above posterior coxæ pale yellow; abdomen reddish-yellow, with a large divided spot on the first, second and third segments above and the three apical segments, black; legs same color, base of coxæ, apical half of posterior femora and tips of tibiæ black; wings faintly smoky, nervures brownish.

The male has the cheeks entirely yellow, pleura yellow, breast waxen, tergum rufous yellow, except some black spots at base; basal plates mostly black, legs of one color, except a dot on posterior coxæ and a line down the four posterior femora above.

Var. *a.* The spot on outer orbit entirely wanting. Pennsylvania.

Var. *b.* A yellow spot and dot beneath, on the pleura, below the anterior tegulæ. Connecticut.

New England, New York, New Jersey, Pennsylvania, North West Territory.

6. T. lobatus.

Allantus lobatus, Norton, Bost. Jour. vii. 1860, 253, 32. ♀.

Tenthredo lobatus, Norton, Bost. Proc. ix. 121.

Black; most part of head, tegulæ, two edges of anterior angle and V-spot pale yellow. Length 0.48—.50. Br. wings 0.90 inch.

♀.—Color black, abdomen long and flattened, antennæ long, a white spot on inside of basal joint; head yellow, black behind, with a spot on vertex, trilobed below, extending from antennæ to summit, touching the eyes above and extending a narrow line half down their orbits; tegulæ, two edges of anterior angle, V-spot, four slender lines on ridges of metathorax, sides of basal plates and a small dot below, pale yellow; legs pale yellow, coxæ black, except at tip; a slender black line on anterior femora and tibiæ above and on intermediate femora and tibiæ; posterior femora, tips of tibiæ and tarsi above black; wings faintly smoky.

Var. *a.*—♀. A black spot near base of mandibles, two dots behind ocelli, spot below tegulæ, four lines at V-spot, apex of scutel and two dots before, pale yellow; a black line down anterior tibiæ.

Farmington, Connecticut. Not common.

7. T. angulifera.

Allantus angulifer, Norton, Bost. Jour. vii, 1860, 252, 31. ♂

Tenthredo angulifer, Norton, Bost. Proc. ix. 121.

Black; most part of head, tegulæ, collar, two or four lines on thorax, angulate spot on pleura and venter pale yellow. Length 0.47. Br. wings 0.90 in.

♀.—Black; antennæ long; head mostly yellow, black behind, a large black spot on the vertex, trilobed below, extending from antennæ to occiput, broadly touching the summit of the eyes and not extending down without, black; tegulæ, most of collar, V-spot, a spot before scutel, upper and lower edges of basal plates, and a spot beneath their sides, a spot on pleura connecting base of wings, a large angulate mark below, a spot on pectus and basal two-thirds of venter, pale yellow; legs whitish, posterior coxæ, except at tip, a slender line on four anterior legs above, apical half of posterior femora, their tibiæ at tip and tarsi black; wings hyaline.

♂.—The male has the whole body beneath greenish waxen-yellow, the angulate spot on pleura enlarged and indistinctly reddish-yellow spots at junction of segments of tergum; hinder tarsi black.

New England; New York.

This is closely allied to *T. ventralis*, if it is not the same.

8. **T. ventralis.**

Allantus ventralis, Say, West. Quart. Rep. II. 1823, 72. 1.
Norton, Bost. Jour. vii. 253, 33.
Tenthredo ventralis, Norton, Bost. Proc. ix. 121.

"Black, feet before and abdomen beneath white. Length nine-twentieths of an inch.

"Body black; nasus, labrum, mouth, abbreviated line above the eye and large spot beneath it, white; thorax with a line before the wing and small spot each side on the scutel, white; wings a little dusky; feet white before; pectus with a white line on each side and somewhat testaceous central spot; tergum immaculate; venter white.

"Inhabits Arkansa."

9. **T. angulatus.**

Tenthredo angulatus, Norton, Proc. Ent. Soc. Phil. III. 1864, 13. 27. ♂.

Black; orbits and mouth, collar, V-spot, angular line and spot on pleura and the breast white, apical half of abdomen rufous. Length 0.32. Br. wings 0.70 in.

♂.—Black; antennæ long, third joint a little longer than fourth; an orbital line, interrupted at summit and diverging from outer side of eye above, face below antennæ, collar, V-spot, a large slender angular line on pleura, a spot above posterior coxæ and the breast, straw-white; abdomen rufous, the two basal segments and sides of the third black above, paler at base beneath; coxæ black above, the four anterior legs white, black above; posterior legs black, their trochanters white and femora whitish in the middle; wings hyaline, nervures blackish.

Massachusetts. (Coll. Am. Ent. Soc.

10. T. formosus.

Tenthredo formosus, Norton, Proc. Ent. Soc. Phil. III, 1864, 14, 28.

Black; inner orbital lines, face below antennæ, cheeks, collar, spot on sides of scutel, on pleura and venter white; apex of tergum and posterior femora rufous. Length 0.50. Br. wings 0.98 in.

♀.—Body very long; antennæ moderate, third joint one half longer than fourth; a line from near the occiput, interrupted half down the inner orbit on each side, face around and beneath antennæ, cheeks, tegulæ, collar, spot on each side of scutel, with an outer side spot, three dots beneath on each side of postscutel, edge of basal plates, a large spot on pleura, with one before and two behind it, and the venter, except at tip, white; the five apical segments of tergum and apex of venter rufous; the coxæ, trochanters, most part of anterior legs, of middle femora and basal third of posterior femora, white; intermediate tibiæ and tarsi and most part of posterior femora and tibiæ, rufous; a slender black line down the two anterior pair of legs, the base of posterior femora above, the apex of tibiæ and their tarsi, black; apical half of wings somewhat clouded, nervures blackish; stigma at tip black, its base and the costa pale rufous.

♂.—The male has most of the tergum rufous and the breast and coxæ of a waxen color.

Maine, Massachusetts.

11. Tenthredo eximius, n. sp.

Black; inner orbital spots, mouth, tegulæ, collar, angular mark and spot on pleura, white; apical half of abdomen red. Length 0·48. Br. wings 0.94 inch.

♀.—Black, abdomen not very long; antennæ moderate, slender; a short inner orbital line, face about and beneath antennæ, tegulæ, collar, a wide angular spot on pleura, a spot before and another behind and basal half of venter, white; the four basal segments of tergum black; remainder of abdomen rufous; legs whitish, becoming rufous towards the tarsi; a short line on anterior femora at tip, and on base of their tibiæ above, a line down the medial femora and tibiæ and most part of posterior femora and tibiæ black, with a whitish line beneath; wings hyaline, clouded toward apex.

♂.—The male has the inner orbital line extending to summit of eye; the pectus and all the legs are waxen white; a black line down all the legs above.

Summit of Mt. Washington, New Hampshire (Baron Osten Sacken); Maine (A. S. Packard, Jr.).

12. T. dissimilis.

Allantus dissimilis, Norton, Bost. Jour. vii. 1860, 250, 29.

Tenthredo dissimilis, Norton, Bost. Proc. ix. 121.

Black; orbital lines, and six lines before scutellum, yellow; apex of abdomen rufous. Length 0.45. Br. wings 0.90 inch.

♀.—Black; body long; antennæ quite long; face below antennæ, a short orbital line on each side of ocelli, two dots behind ocelli, an angulate line (not touching eyes) from cheeks to sutures of occiput, tegular, six lines, viz. four on mesothorax before and two from scutel to anterior tegulæ, a dot before scutel, lines on the ridges of metathorax, the upper and lower edges of basal plates, an oval spot above posterior coxæ and the basal half of venter, straw-yellow; apical half of abdomen rufous; legs yellowish; all the coxæ, the four anterior femora, except at tip and base, posterior femora and a slender line down the posterior tibiæ above, black; four posterior tibiæ reddish; wings yellow-hyaline, base of stigma and costal edge pale.

Northern Illinois. One ♀.

13. **T. signatus.**

Allantus signatus, Norton, Bost. Jour. vii. 1860, 246, 23.

Tenthredo signatus, Norton, Bost. Proc. ix. 121.

Black; mouth, cheeks, tegulæ, collar, pleural line, spot on pectus and coxæ, white; abdomen and hinder legs, rufous. Length 0.44. Br. wings 0.88 inch.

♂.—Color black; antennæ moderate, flagellum generally whitish beneath toward apex; mouth, cheeks, a minute dot at summit of eyes within, tegulæ, collar, a spot above anterior and posterior coxæ, a longitudinal line or large spot on pleura, with a perpendicular line behind, a large spot on breast before intermediate legs, edges and sides of basal plates, straw color; abdomen rufous, darkest on basal segments above; coxæ, trochanters and anterior legs before, white; a line down the four anterior femora and sometimes the upper half of tibiæ above, on the posterior coxæ, trochanters and base and tip of femora above and the tips of posterior tibiæ and tarsi black; remainder of legs rufous; wings smoky-hyaline, stigma at base pale.

♀.—The female has the tips of antennæ rufous beneath, more of black upon abdomen.

Var. ♀.—Flagellum beneath black, basal joints of antennæ ferruginous, no dot above eyes, spot on breast small; legs more yellow than rufous, less of black on coxæ.

Var. ♂.—Antennæ wholly black, apex of abdomen black, no dots above eyes.

Canada, Maine.

14. **T. variatus.**

Tenthredo variatus, Norton, Proc. Ent. Soc. Phil. iii. 1864, 12, 25, ♀.

Black; mouth, cheeks, collar, tegulæ, line and spots on pleura and pectus, white; abdomen rufous. Length 0.46—.48. Br. wings 0.86—.92 inch.

♀.—Black; antennæ moderate, joints somewhat globose, labrum pointed; a minute dot at summit of eyes within, an oval dot above base of each of antennæ, face below, cheeks, tegulæ, collar, a round connected dot below, a longitudinal line on pleura, a spot above the anterior and posterior coxæ, a spot on breast before intermediate legs, and sides of basal plates, white; abdomen rufous, with first second and third segments above and beneath and the apex beneath black; all the coxæ (except a black spot above) trochanters, anterior legs before and all the patellæ, white; anterior legs above and both the posterior pair partly rufous, with a slender black line down all the femora and the four anterior tibiæ; apical half of wings smoky, nervures black, stigma pale at base, costa rufous.

♂.—The male has the labrum not pointed but rounded before, a slender white orbital line on the inner half of orbit, all of pleura except a prolonged triangle beneath the wings and the breast, white; femora whitish beneath.

Rocky Mountains, Colorado. (Coll. Am. Ent. Soc.) 1♂, 1♀.

15. T. pleuralis.

Tenthredo pleuralis, Cresson, Proc. Ent. Soc. Phil. iv. 1865, 245, 7.

"Black; mouth, cheeks, margins of anterior angle, body beneath and most of the legs, white; apical half of abdomen ferruginous. Length, ♀, 5½ lines; ♂, 4½ lines. Br. wings, ♀, 11 lines; ♂, 9½ lines.

♀.—Black; antennæ moderate, a small dot near summit of eyes within, a dot above base of each of antennæ, face below, lower half of cheeks, tegulæ, upper and lower margins of anterior angle, a broad mark on pleura, most of breast, four posterior coxæ and sides of basal plates, white; basal half of tergum black, apical half ferruginous; venter white, reddish toward tip; legs whitish; femora and tibiæ behind, especially at tips, black; tarsi ochreous; wings pale yellowish-hyaline. nervures blackish yellowish at base as well as the costa and base of stigma.

♂.—The male has the antennæ a little longer; pleura entirely white; base of abdomen blackish, remaining segments honey-yellow; apical ventral segments tinged with same color; wings faintly yellowish.

Colorado. (Coll. Am. Ent. Soc.). Great Slave Lake, (Smiths. Inst. R. Kennicott.) 1♂, 1♀.

16. T. variegatus.

Tenthredo variegatus, Norton, Proc. Ent. Soc. Phil. iii. 1864, 12, 24, ♂.

Black; face, collar, tegulæ, pleura, pectus and legs beneath, white; apical half of abdomen rufous. Length 0.36. Br. wings 0.76. inch

♂.—Black; antennæ not reaching beyond second segment of.

men; an oval dot above base of each of antennæ, a short line at the summit of inner orbits, cheeks, face below antennæ, tegulæ, collar, a longitudinal mark on pleura, a large spot on breast before intermediate legs, a spot above posterior coxæ, and all the legs beneath, including the coxæ, white; abdomen mostly yellow-rufous; the first and half of second and of third segments of tergum black, and the venter toward its base whitish; legs black above (except apex of coxæ), tarsi all black, their patellæ white; apical half of wings clouded, nervures black, basal half of stigma white; second submarginal cell long and rather narrow, third submarginal not longer than the width of its outer end; second recurrent nervure received very near junction of second and third submarginal cells.

Rocky Mountains, Colorado. (Coll. Am. Ent. Soc.) One ♂.

17. **T. rufopedibus.**

Tenthredo rufopedibus, Norton, Proc. Ent. Soc. Phil. iii. 1864, 15, 30.

Black; mouth, cheeks, collar, tegulæ, spot on pleura and pectus, white; middle of abdomen rufous. Length 0.44. Br. wings 0.92 inch.

♂.—Black; antennæ long, slender, joints enlarged at tips; a minute oval dot at base of each of antennæ, face and cheeks beneath, tegulæ, collar, a wide angulate L on pleura and spots above anterior and posterior coxæ, white; breast waxen-white; abdomen rufous on the second, third and part of fifth segments above, and all but the two apical segments beneath; legs mostly rufous; the four anterior coxæ waxen; a spot on the tips of the anterior femora above and the apical half of posterior tibiæ and their tarsi black, except end of apical joint, which is rufous; ends of intermediate joints blackish; wings large, hyaline.

Pennsylvania, Illinois (Coll. Am. Ent. Soc.)

Two ♂. The color of the legs is honey-yellow like *T. rufipes.*

18. **Tenthredo varipictus**, n. sp.

Black; mouth, cheeks, tegulæ, collar, line on pleura, venter and coxæ straw white; apical half of abdomen rufous. Length 0.44. Br. wings 0.88 inch.

♀.—Black; antennæ hardly reaching beyond base of abdomen, slender; face and cheeks below antennæ, tegulæ, upper and lower margins of anterior angle, a large obtusely sub-angulate stripe on pleura and spot above posterior coxæ straw-white, venter waxen; the four basal segments of abdomen black, remainder rufous; coxæ, and four anterior legs beneath waxen; intermediate tibiæ and tarsi and posterior legs reddish; a black stripe down all the legs above; tarsi tipped with black; wings hyaline, faintly smoky, nervures black.

Cape Mendocino, California. (Cambr. Mus. Coll. by A. Agassiz, Jr.) One Female.

19. Tenthredo varians, n. sp.

Black; mouth, cheeks, a spot above posterior coxæ and on pectus, white; a band on abdomen and the femora rufous. Length 0.44. Br. wings o.84 inch.

♂.—Black; antennæ moderate; mouth, a spot on cheeks, edges of tegulæ and collar, a spot above posterior coxæ and on the breast, white; the second, third and fourth segments of tergum and five basal segments of venter rufous; legs rufous, the anterior coxæ and all the trochanters whitish; apical half of posterior tibiæ and their tarsi black; wings hyaline, nervures black.

Canada. (Coll. Am. Ent. Soc.) One male.

20. T. semirufus.

Tenthredo semirufus, Norton, Proc. Ent. Soc. Phil. III, 1864, 12, 23. ♀.

Black; mouth, cheeks and collar, white; apical half of abdomen rufous; wings hyaline. Length 0.46. Br. wings 0.92 inch.

♀.—Black; antennæ not reaching beyond third segment of abdomen; joints swelled at tips, the third one half longer than fourth; labrum rounded; clypeus, labrum, base of mandibles, collar, and a dot above posterior coxæ white; a spot on the third segment above and the five apical segments of abdomen rufous; legs black, with the anterior pair below the coxæ white beneath; the femora of medial pair and the tibiæ and tarsi of hinder pair reddish, paler on the tarsi; apical joints of all the tarsi pale; hinder spurs long, blunt, wings slightly clouded, nervures, stigma and costa blackish.

Var. *a*. ♀.—Collar, and fourth segment of abdomen black; posterior femora rufous before and also the basal half of their tibiæ rufous above; costa in both pair of wings and some of the basal nerves reddish.

Rocky Mountains, Colorado. (Coll. Am. Ent. Soc.) Two specimens.

21. Tenthredo discrepans, n. sp.

Black; mouth, spot on cheeks, tegulæ, collar, spot above coxæ and on pectus white, abdomen banded with rufous. Length 0.48. Br. wings 0.96 inch.

♂.—Black, (antennæ wanting), the nasus, labrum, base of mandibles, palpi, an oval spot on cheeks touching eyes, tegulæ, collar, dot above posterior coxæ and spot on breast, yellow-white; the first, second and third segments of tergum and four basal segments of venter rufous; legs black; all the coxæ beneath, the anterior legs before and most of medial pair before, yellow-white; wings smoky hyaline, stigma and costa black.

English River, H. B. T. (Smiths. Inst.) One male.

22. T. tricolor.

Allantus tricolor, Harris, MS.

Norton, Bost. Jour. vii. 1860, 247, 22. ♀.

Tenthredo tricolor, Norton, Bost. Proc. ix. 121.

Black; mouth, sides of basal plates and spot below, white; apex of abdomen rufous. Length 0.48. Br. wings 0.95 inch.

♀.—Black; antennæ long and slender; the two basal joints rufous within; mouth, sides of basal plates and a round dot above posterior coxæ straw-white; the four basal segments of abdomen black; remaining segments above and beneath rufous; the coxæ, base of anterior femora, four posterior femora, posterior tibiæ and first joint of tarsi black, (the two latter with a rufous tinge); remainder of legs rufous; wings hyaline, basal half of stigma pale.

Maine. (Harris Coll.) One specimen.

23. Tenthredo mutans, n. sp.

Black; mouth, cheeks and four anterior legs beneath yellow; abdomen and hinder femora rufous. Length 0.44. Br. wings 0.84 inch.

♂.—Black; antennæ moderate; mouth, cheeks, a spot above posterior coxæ and the four anterior coxæ and legs straw-white; abdomen rufous, except the two basal segments; posterior femora rufous; a line down the four anterior legs and the posterior tibiæ and tarsi black; wings hyaline, faintly clouded.

Canada. (Coll. Am. Ent. Soc.) One ♂.

This is allied to *T. Signatus.*

24. T. semirubra.

Tenthredo semirubra, Norton, Proc. Ent. Soc. Phil. III. 1864, 14. 29. ♀.

Black; mouth white; apical half of abdomen rufous. Length 0.54. Br. wings 0.98 inch.

♀.—Black; antennæ moderate, slender, joints enlarged at tips, slightly flattened beyond the middle; labrum rounded before; parts of mouth pale yellow; the two basal segments of abdomen black, remainder rufous; abdomen lengthened; legs black; the anterior tibiæ before, all the spurs, and tarsi of the two anterior pair and apex of last joint of posterior tarsi, piceous; wings faintly yellowish.

♂.—The intermediate as well as anterior femora and apex of tibiæ before, white.

25. T. piceocinctus.

Allantus piceocinctus, Norton, Bost. Jour. vii. 1860, 249. 26. ♀.

Tenthredo piceocinctus. Norton, Bost. Proc. ix. 120.

Black; antennæ piceous beneath, scutellum white, a piceous band on abdomen. Length 0.52. Br. wings 0.85 inch.

♀.—Dull black, abdomen very long, antennæ long; third joint but little longer than fourth; color piceous beneath, the first and second

joints piceous at base only; clypeus but slightly emarginate, labrum rounded; parts of mouth piceous, the clypeus sprinkled with black; scutellum white; the second, third, fourth and fifth segments of abdomen piceous; legs piceous; all the coxæ and the four posterior femora black; posterior tibiæ and tarsi dark above; wings slightly smoky, nervures black; basal half of stigma white.

Brooklyn, N. Y. (J. Akhurst.)

The wings are quite in proportion to the length of body.

26. T. pectoralis.

Tenthredo pectoralis, Norton, Proc. Ent. Soc. Phil. III. 1864, 11. 22. ♀.

Black; the mouth, cheeks, tegulæ, collar, pleura and body beneath, white. Length 0.36. Br. wings 0.72 inch.

♂.—Black; antennæ not longer than to first segment of abdomen; third joint one half longer than fourth; labrum rounded; face below antennæ, cheeks, an oval dot above base of each of antennæ; tegulæ, collar, pleura and the whole of body beneath, white; upper edge of pleura and a large semicircular line on pectus black; legs black above and white beneath, coxæ mostly white; wings faintly clouded on the apical half, nervures blackish.

Rocky Mountains, Colorado. (Coll. Am. Ent. Soc.)

The antennæ resemble those of *Macrophya*.

27. T. rufopectus.

Allantus rufopectus, Norton, Bost. Jour. vii. 1860, 258. 38. ♀ ♂.
Tenthredo rufopectus, Norton, Bost. proc. ix. 121.

Black, antennæ in part, pectus and legs rufous. Length 0.40—42. Br. wings 0.85.—90 inch.

♀.—Black, body not very stout; antennæ long and slender; color ferruginous, tips of joints above black, sometimes also the two basal joints; labrum rounded; labrum, base of mandibles and palpi, tegulæ, collar, and four radiating lines on ridges of metathorax, yellow; a white spot above base of posterior coxæ; pectus and legs orange-red; the four anterior tibiæ and tarsi and the medial femora tipped with black; apex of posterior femora, apical half of tibiæ and their tarsi black; wings hyaline, basal edge of stigma and the costa pale.

♂.—The male has a yellow spot on each side of the disk of clypeus and on the pleura over each of the four hinder coxæ; the first and second segments of abdomen and the basal segments of venter sometimes indistinctly rufous.

New England, New York, Pennsylvania, Illinois.

A specimen from Illinois has the venter white beneath.

28. T. rufipes.

Tenthredo rufipes, Say, Long's 2nd. Exp. II. 1824, 317. 3. ♀.
Norton, Bost. Proc. ix. 1862, 121.
Allantus rufipes, Norton, Bost. Jour. vii. 1860, 255. 37.
Allantus leucostoma, Kirby, Faun. Bor. Am. 1837, 256. 354.

Black, mouth yellow, legs rufous, apical half of hinder tibiæ and the tarsi black. Length 0.48.—52. Br. wings 0.96.—1.00 inch.

♀.—Black, body long, not very stout; antennæ reaching to about the second segment of abdomen, slender, slightly flattened beyond the middle; third joint longer than fourth, all the joints enlarged at tips; color rufescent, darkest toward base; nasus, labrum, mandibles and a spot above posterior coxæ straw color, tegulæ ferruginous or yellow, coxæ and all the legs orange-red, apical half of posterior tibiæ and their tarsi black; wings hyaline, very faintly smoky, stigma dark, marginal cross-nervure bent.

North West Territory. (Say) Maine, Massachusetts, Canada.

Var. *a*. ♀.—The lower half of cheeks rufous. Maine.

Var. *b*. ♀.—Collar yellow. Illinois.

Var. *c*. ♀.—Collar, lower half of cheeks and a dot on pleura yellow. Labrador.

A specimen from Massachusetts has the legs ochre-yellow, agreeing with Kirby's *Allantus leucostoma*.

This seems to be the same with *Tenthredo rufipes*, Ziegler. Europe, Le Pel. Mon. Tenth. 81. 239.

29. **Tenthredo concessus**, n. sp.

Black; mouth and spots over hinder coxæ yellow; tibiæ and tarsi rufous. Length 0.48. Br. wings 0.96 inch.

♀.—Black; antennæ moderate; third joint nearly twice as long as fourth; labrum pointed; nasus, mouth beneath, spot on sides of basal plates and spot above posterior coxæ, yellow; legs black, with the apex of four anterior femora, the four anterior and basal half of posterior tibiæ, spurs and all the tarsi yellow-red; wings yellowish-hyaline, stigma piceous, basal half pale.

Good Hope, Mackenzie River, H. B. T. (R. Kennicott.)

30. **T. flavomarginis.**

Allantus flavomarginis, Norton, Bost. Jour. vii. 1860, 254. 55. ♀.

Tenthredo flavomarginis, Norton, Bost. Proc. ix. 121.

Black; mouth, cheeks, tegulæ, collar and sides of basal plates yellow. Length 0.50. Br. wings 1.00 inch.

♀.—Black, abdomen long and not stout; antennæ long, third joint longer than fourth; edge of nasus black; nasus and mouth below, spot on cheeks, tegulæ, two edges of collar, sides of basal plates and spot beneath, straw-white; legs black; most part of anterior pair and the medial tibiæ at tip and apical tarsi whitish; wings hyaline, clouded toward apex, stigma mostly black.

Farmington, Connecticut.

One female. Another specimen, from the Notch, White Mountains, has the antennæ shorter and the medial tibiæ whitish before.

31. **Tenthredo cinctitibiis**, n. sp.

Black; the mouth, edge of collar, two spots above hinder coxæ, a band on all the tibiæ and tarsi yellow. Length 0.53. Br. wings 1.00 inch.

♀.—Body long and rather stout; antennæ moderate; the joints suddenly dilated at tips; head and thorax dull with dense fine punctures, which are coarser, and confluent on the head; clypeus moderately notched, and with the mouth beneath, a broad mark on collar (tegulæ black) and two spots above hinder coxæ, straw-white; legs black; a slender line on the four anterior femora above, and all the tibiæ except the tips yellow, (the anterior tibiæ before, whitish to apex): anterior tarsi and apical joints of the four others reddish-yellow, wings ample, yellowish-hyaline; nervures blackish, base of stigma and all of costa and costal space reddish.

Caribou Island, Straits of Belle Isle. (A. S. Packard, Jr.)

This is much like *T. flavomarginis*, but differs in its banded tibiæ.

32. **Tenthredo fumipennis**, n. sp.

Black; mouth and anterior legs before, white; wings fuliginous. Length 0.38. Br. wings 0.78 inch.

♂.—Body black; antennæ stout, not long, joints enlarged; abdomen stout, rounded at end as in *Selandria*; nasus, except in middle, mouth beneath, tips of anterior coxæ, anterior femora and tibiæ before and a line down the medial femora before, white; wings fuliginous, apical half darkest, nervures blackish.

Cape Mendocino, California. (Cambr. Mus. Coll. by A. Agassiz, Jr.)

One male. The lanceolate cell of one wing has a second straight cross line, that on the other wing has four.

33. **T. atroviolaceus.**

Allantus atroviolaceus, Harris, Cat.
Norton, Bost. Jour. vii. 1860, 255. 36. ♀ ♂.
Tenthredo atroviolaceus, Norton, Bost. Proc. ix. 120.

Black; a white spot on posterior coxæ; wings sub-opaque, violaceous. Length 0.45—50. Br. wings 1.00—1.10 inch.

♀.—Black; body large, abdomen long, quite stout, flattened; antennæ long, stout and compressed; head, thorax and legs dull with large punctures; labrum almost conical; posterior legs long; a white spot on base of posterior coxæ above; anterior tibiæ and tarsi and apical joints of all the tarsi piceous; wings large, sub-opaque, violaceous, with irregular whitish lines along the apical nervures.

♂.—The antennæ of the male are sometimes dark piceous; the abdomen is stout, rounded at apex and the under wings without middle cells; their outer cells complete viz. with an outer nervure near the margin, as in *T. ambigua* of Europe, but the outer nervure of the submarginal is partly wanting. The wing is formed as in *Perineura*.

Canada, Maine, Massachusetts, Connecticut, Pennsylvania, Maryland.

The abdomen is of nearly equal width from base to beyond the middle.

Var. CINCTULUS.

♀. Abdomen black, with a rufous band on the third, fourth and fifth segments. Massachusetts. Two ♀.

Var. TARDUS.

♀ ♂.—Resembles, *T. atroviolaceus* in form and marks, except that the abdomen is rufous or honey-yellow. The males have no inner under-wing cells; outer cells as above. New England; Illinois.

34. **Tenthredo attractus**, n. sp.

Black; mouth and apex of abdomen rufous; wings clouded violaceus. Length 0.56. Br. wings 1.10 inch.

♀.—Black; body very large and stout; antennæ moderate, not greatly flattened, third joint long; head as wide as thorax, large; nasus emarginate and with the labrum, base of mandibles and palpi, waxen-yellow; thorax closely punctured; punctures on the pleura not coarse; the five apical segments of abdomen ferruginous, abdomen long, widened beyond middle; legs black; the anterior tibiæ and tarsi pale before; wings clouded violaceous, the apical third least obscure, stigma and costa black, base of stigma pale.

English River. (Smiths. Inst.)

One femaie. This large species resembles *T. atroviolaceus* var. *tardus* in form, but the wings are less obscure, the mouth is pale and the abdomen is more slender and the punctures on head and pleura much finer.

35. **T. semiluteus.**

Tenthredo semiluteus, Norton, Bost. Proc. ix. 1862, 121. ♀ ♂.

Greenish-white and rufous, with the vertex and thorax above, black. Length 0.24—30. Br. wings 0.50—65 inch.

♀.—Body not very long or large, antennæ two-thirds the length of body, slender, luteous, the two basal joints and a narrow line above, black; head greenish-white; a large black spot on vertex extending down between antennæ; clypeus somewhat rounded before; mouth white; apical joints of palpi black; thorax black; tegulæ, all the edges of anterior angle, a spot on each side lobe of mesothorax, scutel, pleura and pectus pale yellow; an irregular spot on pleura, and the disk of basal plates, black; abdomen and legs honey-yellow; coxæ and base of femora, white; posterior femora blackish above; inner spur of anterior tibiæ obtuse, widely bifid; inner claw tooth larger than outer; wings hyaline; apical half of stigma and the costa luteous; marginal cross nervure bent and received in middle of third submarginal cell; underwings without middle cell. (One specimen with one inner cell in one underwing).

♂.—The male has the antennæ reddish-yellow; a black spot on upper side of two basal joints; apical segment of abdomen darkest; abdomen slender, legs of one color, under-wings as in *T. atroviolaceus.*

Connecticut, Pennsylvania.

36. Tenthredo confusus, n. sp.

Black; antennæ partly red-yellow, a rufous band on abdomen. Length 0.28. Br. wings 0.64 inch.

♂.—Black; body not stout; antennæ long and slender, about two-thirds the length of body, setaceous, joints not enlarged at tips, third and fourth joints equal, flattened; color piceous; the four apical joints whitish; head black, nasus emarginate, piceous, labrum white, scutel and mesothorax ferruginous, with vittæ on the side lobes; abdomen rufous, the two apical segments black; coxæ, except at tips, apex of hinder femora and tibiæ, black; tarsi white, remainder of legs ferruginous; inner anterior spur long, of equal size throughout, obtuse, not widely bifid; inner claw tooth not so large as outer; wings yellow-hyaline, base of stigma white; under wings without middle cell, outer cells incomplete, (as usual.)

United States. (Smiths. Inst.)

37. T. 14-punctatus.

Tenthredo 14-punctatus, Norton, Proc. Ent. Soc. Phil. I. 1862, 143, ♀ ♂.

Greenish-white, thorax black, tergum rufous, with seven black dots on each side. Length 0.34. Br. wings 0.68 inch.

♀ ♂. Body rather long, abdomen not flattened, antennæ long and slender, whitish, the upper side black, third joint a little longer than fourth; nasus not emarginate, a trilobed black spot on vertex; a spot on each lobe of mesothorax and sutures of metathorax, black; scutel pale; thorax white beneath; abdomen tinged with rufous; seven black spots on each side of tergum; legs pale, the upper side black, except on the coxæ, base of femora and an interruption near the base of tibiæ; claws apparently bifid, the two teeth close together; wings hyaline, stigma and costa pale, underwings without middle cells, outer cells incomplete, but the lanceolate and second brachial cells reaching the margin, an incomplete nervure springing from their upper tips.

Virginia. (Coll. Am. Ent. Soc.) 1 ♀. 1 ♂.

Uncertain species.

38. T. nigro-fasciata,

Tenthredo nigro-fasciata, Esch. Entomog. Berlin, 1822, 96. 64.

"Black; body beneath, with spot upon the head and thorax, and the scutellum yellow; the vertex and fasciæ upon the abdomen black, stigma brown. Isle of Unataschka, Russ. Am. Length 4 lines.

"This belongs to the division of Tenthredinidæ, of which the hin-

der thighs extend over the abdomen and it approaches closely to *T. vaga*, Fab. Head of a clear yellow, with a great black spot upon the vertex, with its hinder border black. Eyes grey, antennæ longer than the moiety of body, setaceous, black; first article white beneath. Corselet having before two longitudinal yellow marks, and the anterior border forming a collar of the same color. Scutellum yellow, dorsal granulation brown. Pectus of a clear yellow with a black spot upon the sides. Abdomen short, wide, black and shining above; the dorsal segments bordered narrowly behind on the sides with clear yellow; their base, from the middle black. Wings a little longer than the abdomen, transparent, at the nervures and stigma distinctly brown; marginal cell divided; discoidal cells three, recurrent nervure, the two marginal and the two first discoidal cells of a clear yellow. Legs of a pure yellow at their base. Anterior legs, inferior moiety of posterior thighs and the posterior knees, having on their superior side a black longitudinal mark; posterior tarsi black."

It is possible that the word "discoidal" is here used by mistake for cubital as it is not usual to mention the discoidal cells in description. If there are four submarginal cells this is probably a *Macrophya*. allied to *M. californicus*. The *T. vaga* to which it is likened, is synonymus with *T. cincta*. (*Zonata*) of which there are two, one of which is an *Emphytus* and one *Tenthredo*.

39. **T. subcoerulea.**

Tenthredo subcærulea, Esch, Entomog. Berlin, 1822, 96. 63.

"Black, with the back of abdomen blue-black, with the mandibles, palpi and legs pale.

"Isle of Unataschka, Russ. Am. Length 5 lines.

Similar to *T. mandibularis*. Head black; mandibles yellow, with the point brown and a black spot at their base. Palpi yellow; chaperon of some individuals having a yellow spot on each side. Antennæ a little longer than the corselet, filiform, black. Corselet dull black; dorsal granulation yellowish. Haunches with a yellow spot, abdomen shining black, of a blue black above. Wings longer than body, transparent, at sides and the nervures of a blackish brown. Legs yellow, at base black; the posterior pair with yellow spines, posterior tarsi brown."

The *T. mandibularis* to which this is said to be analogous is a true *Tenthredo*.

Hartig has specified another section of *Tenthredo*, *Synairema*, which differs only from *Tenthredo* in having the lanceolate cell closed. But one European species.

Synonymical notes on COLEOPTERA of the United States, with descriptions of new species, from the MSS. of the late Dr. C. Zimmermann.

EDITED BY JOHN L. LECONTE, M. D.

CARABIDÆ.

1. **Metabletus borealis** Zim.—Long. 1½ lin. Black, very similar to *M. americanus*, but easily distinguished by the prothorax, which is transversely quadrate, only slightly narrowed behind, with broadly reflexed hind angles.—Lake Superior.

[Dr. Zimmermann united with *Metabletus* both *Apristus* and *Blechrus*, with the following remarks:]

"The fundamental character of generic similarity, *resemblance in form of body*, belongs to all species mentioned below, which form a very natural group, easily distinguished from *Dromius*, with which it was formerly united; of the divisions which may be recognized among these species, some (*Apristus*, *Blechrus*) have been separated as distinct genera, although they must, by the want of primary generic right (Gattungsrechte), as well as by the absence of permanence in the secondary generic characters, fall again into the central group."

[The divisions alluded to above, are then arranged as follows:]

A. Head elongated, narrowed behind:
   a. Elytra scarcely shorter than the abdomen, but slightly truncate.—(*Variopalpus* Sol.)
   b. Elytra shorter than the abdomen.—(*Oxoides* Sol.)

B. Head shorter, not obviously narrowed behind:
   c. Peduncle of prothorax strongly projecting; elytra rectilinearly truncate behind; (emargination of mentum without prominent tooth.)—(*Blechrus* Schaum; *Bomius* Lec.; *Microlestes* Schmidt-Goebel.)
   d. Peduncle of prothorax strongly projecting; elytra feebly sinuate at the posterior truncation; (emargination of mentum with prominent tooth.) (*Metabletus* Schaum; *Dromoceryx* Schmidt-Goebel; *Syntomus* Hope.)
   e. Peduncle of prothorax very feebly prominent; tip of elytra scarcely sinuate; (emargination of mentum with a prominent tooth.)—*Apristus* Chaud.

2. **Cymindis brevipennis** Zimm.—Long. 4—4½ lin. Ferruginous, elytra dark brown, with greenish metallic gloss; palpi, antennæ, legs, a humeral spot, and the side margin of the elytra testaceous yellow. Head and prothorax thickly and coarsely punctured; the latter cordate, with broadly reflexed side margin, and almost rectangular slightly projecting hind angles. Elytra unusually short, slightly convex, with punctured striæ, intervals with double rows of punctures; the 3rd interval with scarcely discernable dorsal punctures.—Kansas.

LeConte (Ann. Lyc. Nat. Hist. N. York, iv, 186) has erroneously considered this species as *C. cribricollis* Dej.

[I learn by a recent letter from Baron Chaudoir that this species, from the vicinity of the Rocky Mountains, is not *cribricollis* Dej. as I formerly regarded it, but one thus far unnamed. Dejean's species is identical with *C. marginata* Kirby and *reflexa* Lec., and occurs in the most northern part of the United States and in Canada.]

3. **Platynus rubripes** Zimm.—Long. 3—3½ lin. Of the form of *P. punctiformis*, but smaller, with large deep basal impressions of the prothorax, and yellow-ferruginous legs. Shining black, smooth; palpi and antennæ testaceous, basal joint of the latter yellowish-red. Prothorax almost as long as wide, with rounded hind-angles, near which the broad basal impressions are marked with a small deep fovea. Elytra formed and sculptured as in *P. punctiformis*, but narrower towards the base, so that the humeri are more angular, while in *punctiformis* they are rounded.

This insect, omitted by LeConte in his Synopsis of Platyni, or perhaps confused with *punctiformis*, must be properly received as a separate species. It occurs, but not frequently, in the region north of the Potomac, while the species just named is very abundant in the Southern States.

[The bad condition of the specimens in my collection prevented me from describing this species as distinct, when I wrote the Synopsis.]

4. **Platynus lenis**, (*Ag. lenum* Dej.)=*P. retractus* Lec.

[The arrangement of the species of *Platynus* for which, on account of the confusion in the names previously used, Dr. Zimmermann proposed the name *Psilopodius*, seems so far superior in some respects to that adopted by me, that although I have not had leisure to test it by a re-examination of all my species, I think it well worthy of being presented:]

A. Prothorax cordate, or quadrate, with well defined hind angles; pubescence of antennæ beginning on the 4th joint:
   a. All the joints of the tarsi without longitudinal grooves.—(*oblongus* of Europe.)
   b. Only the front tarsi, ♂ ♀, without grooves.—(*Platynus* Bon.)
   c. All the tarsi with grooves.—(*Anchomenus* Bon.)

B. Prothorax rounded, or obtuse angled; pubescence of antennæ commencing with the 4th joint.—(*Agonum* Bon.)
   d. Prothorax broader than long, with depressed side margins which are reflexed behind.
   e. Prothorax broader than long, with narrowly beaded side margins.
   f. Prothorax small, elongate oval, with narrowly beaded side margins.

C. (g.) Prothorax rounded, or elongate oval; pubescence of the antennæ beginning on the tip of the 3rd joint.—(*Europhilus* Chaud.)

The species A—b group themselves as follows:

a. Winged species with strongly curved claws: (*decens, sinuatus, blandus* &c.)
b. Winged species with regularly curved claws: (*angusticollis* of Europe.)
c. Apterous species with regularly curved claws: (*angustatus* &c.)

Those of A—c may be grouped thus: according as the tarsi have a middle groove besides the lateral ones, and the mentum tooth is longitudinally impressed at tip, so as to appear slightly divided, or altogether simple and pointed:

Series I. Tarsal joints without medial groove; upper surface of body pubescent:
Group *A.* With lateral grooves on the first three joints of the middle and hind tarsi:
a. Mentum tooth broad, obtuse, and simple.—(*Orthotrichus* Peyr.) (*P. cymindoides* of Egypt.)

Series II. Tarsal joints without medial groove; upper surface of body glabrous:
Group *A.* Lateral grooves of the first three joints of middle and hind tarsi always evident:
a. Mentum tooth somewhat cleft.—(*bicoloratus* Zimm.=*bicolor* ‖ Lec.; *brunneomarginatus.*)
b. Mentum tooth smooth and simple.—(*extensicollis, decorus.*)
Group *B.* Lateral grooves of all the tarsi very feeble, in some specimens not apparent:
a. Mentum tooth smooth and simple.—(*prasinus* of Europe.)

Series III. All five tarsal joints with a medial groove; upper surface of body glabrous:
Group *A.* First four joints of hind and middle tarsi with lateral grooves:
a. Elytra with 3 dorsal punctures.—(*funebris* Lec.)
b. Elytra with 2 dorsal punctures.—(*albipes* of Europe.)

The species of division B—d have for the most part only lateral grooves on the basal joints, though sometimes the middle groove is also present. By this character and by the form of the claws, aided by the color of the elytra, they may be grouped as follows:

Series I. Tarsi with a medial groove; claws regularly curved:
Group *A.* First three joints of middle and hind tarsi with lateral grooves:
a. Elytra with three dorsal punctures.—(*subcordatus* Lec.)

Series II. Tarsi without medial groove; claws regularly curved:
Group *A.* First three joints of middle and hind tarsi with lateral grooves; elytra margined with yellow:
a. Elytra with 4 or more dorsal punctures.—(*maculicollis, variolatus.*)
b. Elytra with only 3 dorsal punctures.—(*marginatus* of Europe.)
Group *B.* First three joints of middle and hind tarsi with lateral grooves, elytra without yellow margin:
a. Elytra with 4 or more foveæ on the 3rd interval.—(*8-punctatus.*)
b. Elytra with 4 or more dorsal punctures.—(*deplanatus, placidus, chalceus.*)
c. Elytra with 3 dorsal punctures.—(*excavatus, cupripennis, metallescens.*)

Group *C.* First four joints of middle and hind tarsi with lateral grooves; elytra without yellow margin:

a. Elytra deeply striate, with 4 or more dorsal punctures.—(*fossiger.*)

b. Elytra deeply striate, with 3 dorsal punctures, the 1st and 2nd near the 3rd stria.—(*melanarius, lævis.*)

c. Elytra finely striate, with 3 dorsal punctures, the 2nd and 3rd near the 2nd stria.—(*collaris, Harrisii, dixianus* * Zimm.)

Series III. Tarsi without medial groove; claws bent somewhat backwards. (*Sericoda* Kirby, *Rhytiderus* Chaud.)

Group *A.* Lateral grooves of tarsi very faint, sometimes visible only on the basal joint:

a. Elytra with 3 dorsal punctures.—(*obsoletus.*)

b. Elytra with foveæ on the third interval.—(*bembidioides, stigmosus.*)

The species of division B—e have but three dorsal punctures, which in general are not connected with the striæ, but stand free upon the 3rd interval; but few are thus far known, which may be grouped thus:

Series I. Tarsi without medial groove:

Group A. Tarsi without distinct lateral grooves.—(*limbatus.*)

Group B. First three joints of middle and hind tarsi with fine lateral grooves.—(*punctiformis, rubripes* Zimm.)

Division B—f presents no special characters for grouping the species, of which *æruginosus* and *striatopunctatus* may be taken as examples.

In the species of C—g the lateral grooves of the first three joints of the middle and hind tarsi are visible, but finer than usual; according to the form of the prothorax the following groups are indicated:

a. Prothorax nearly quadrate, or feebly cordate, with distinct though obtuse hind angles.—(*micans* &c. of Europe.)

b. Prothorax rounded oval, without distinct hind angles.—(*lenis, picipennis, lutulentus.*)

DICÆLUS.—The species may be arranged as follows:

A. Upper surface violet, or copper colored:

a. Left mandible with a tubercle on the inner margin:—1. *purpuratus*; 2. *chalybeus*; 3. *violaceus*, (*cyaneus* Dej. *confusus* Lec.); 4. *iricolor* Lec. 5. *splendidus.*

B. Upper surface pure black:

b. Both mandibles without tubercles.

a. Elytra deeply striate, 2nd, 4th and 6th interval interrupted by annular punctures: 6. *sculptilis.*

b. Elytra deeply striate, all the intervals smooth: 7. *dilatatus* (of which *Dejeanii* is a larger Southern race,) 8. *elongatus.*

c. Left mandible tuberculate at the middle: 9. *furvus.*

d. Right mandible tuberculate on the outer margin: 10. *teter.* 11. *politus* Dej. (*Leonardi* Harris.)

[* I think this is merely an individual variation of *mærens* Dej.]

[I would observe in addition. that while *D. lævipennis* has the upper surface tinged with violet it differs from all the other species, not only by the feebly striate elytra, but by the labrum being much less emarginate; both mandibles are without tubercles; the names attributed to Nos. 8 and 9 do not seem to agree with my determinations of the same species.]

Feronia carbonaria Dej. Sp. Gen. iii, 283.—LeConte has twice mistaken this species: 1st he placed it (Ann. Lyc. iv, 336) as synonymous with *caudicalis* Say, which is an *Hypherpes*, and afterwards, (Journ. Ac. Nat. Sc. Phil. 2nd, ii, 243) as *luctuosa* Dej, which is equivalent to *P. abjectus* Lec.

[The name *carbonaria* has been inadvertently omitted in my List, and it is really a synonym of *muta* Say, as determined by Baron Chaudoir (vide infra); the confusion in my mind with regard to *F. luctuosa* Dej., which as I was afterwards informed by Baron Chaudoir (Say's Entom. Writings, ed. Lec. ii. 480) is the same as my *P. abjectus*, resulted from the fact that the description of Dejean will apply equally to both species; *carbonaria* cannot be referred to the present species since the description states that the outer stria of the basal impression is wanting; it is in *caudicalis* short, and very close to the carina of the angle, which is more distinctly defined than in the smaller species, *P. luctuosus*. About *F. caudicalis* Say, I may observe that Dr. Harris gave me specimens of the species under consideration, as having been compared with Say's type; moreover the expression "space of the basal angles depressed and punctured," and the fact that the insect is winged, absolutely forbid the reference of Say's description to any species of *Hypherpes*. The synonymy as printed in my List is therefore correct.]

Selenophorus parumpunctatus Dej. iv, 104. [This species, described by Dejean as being perhaps from the West Indies, has been identified by Dr. Zimmermann as the common small Southern species, *S. fatuus* Lec., New Spec. Col. (Smiths, Inst.), 17.]

Ochthedromus pardalis Zim. = *O. laticollis* ‖ Lec. Ann. Lyc. Nat. Hist. New York, v, 187. California.

Ochthedromus littoralis.=*Carabus litt.* Panzer, Fauna, 40, 6. *Elaphrus rupestris* Fabr. &c. *Bembidium andreæ* Er. &c. *B. tetracolum* Say.

Ochthedromus plagiatus Zim.—Length 2 lines. Somewhat larger than *O. niger*, but of the same general form; dark-green, black beneath; mouth, base of antennæ, and legs ferruginous-yellow; frontal grooves parallel, simple, deep; prothorax cordate, strongly narrowed behind, with rectangular hind angles, rugosely punctured at the hind margin, with deep basal impressions, and distinct carina at the angle. Elytra convex, much broader than the prothorax, with 7 strongly punctured dorsal striæ, which are obliterated behind, and marked in front of the tip with a large common reddish-yellow oblique spot.—Maryland.

and more or less extended along the apical margin of the prothorax, but recedes from it and agrees with our *nimbatus* in the small cusp near the tip of the last ventral segment (anal tooth) being prominent and acute.]

Hydroporus striolatus Lec.=*H. lateralis* ‡ Herbst. [This synonymy is correct, and that printed in my List is wrong.]

Hydrocharis grandis Zimm.—Long. 8 lines This species differs from *caraboides* and *obtusatus* by the elytra being more pointed behind, with the rows of punctures extremely fine, not becoming more obvious towards the tip, as is the case in each of those species.—South Carolina. [But two elytra remain of this species, which seems quite distinct by its greater size.]

Philhydrus pygmæus.=*Hydrophilus pygm.* Fabr. Ent. I, 186.=*H. nebulosus* Say, Long's Exp. 2, 277.

Philhydrus reflexipennis Zimm.—Long. 1¾—2 lines. Elongate oval, yellowish-brown, beneath blackish, upper surface very distinctly and thickly punctured; elytra behind with strongly depressed, almost reflexed margin.—New Jersey. [Very closely allied to *H. perplexus* Lec., but smaller, with more strongly margined elytra, and more prominent and acutely pointed mesosternal carina.]

Philhydrus nitens Zimm.—Long. 2¼ lines. Black, margined with yellow, beneath and legs brown; form size and color as in *H. cinctus*, but the upper surface is more feebly punctured, and very shining; the mentum is shorter and broader, and the prominence of the mesosternum short and placed transversely.—North Carolina.

Philhydrus semistriatus Zimm.—Long. 1¾—2 lines. Black, prothorax and elytra margined with ferruginous-yellow, body oval, distinctly punctured, elytra towards the tip distinctly punctate striate.—Maryland. [In this species too, the mesosternum is not carinate, but transversely prominent.]

Cyclonotum semiglobosum Zimm.—Long. 1—1½ lines. Shining black, palpi and feet testaceous; head and prothorax almost smooth; elytra distinctly and thickly punctured, without any striæ.—Carolina. [This species is allied to *estriatum*, but differs by its broader and more rounded form.]

Cercyon naviculare Zimm.—Long. ¾ line. Black, with a slight bronzed reflexion, shining, reddish translucent at the suture and side margin of the elytra; palpi, antennæ and legs yellow; prothorax smooth, side margins somewhat converging in front; elytra very evidently compressed, pointed behind, finely punctured, with 11 fine rows of punctures becoming indistinct towards the tip, suture elevated behind.—Middle States.

Cercyon melanocephalum.=*Dermestes melan.* Linn.=*Sphæridium apicialis* Say, Jour. Acad. Nat. Sc. iii, 203.

Cercyon pygmæum.=*Sphæridium pygm.* Illiger. Found both in Europe and North America.

RHYPOPHAGA.

Cyrtusa blandissima Zim.—Long. ¾ line. Ferruginous, shining; front finely punctured; prothorax behind not wider than in front, somewhat emarginate at tip, with the sides slightly deflexed, but only feebly rounded, the front angles therefore are nearly rectangular, disc feebly impressed and very finely punc-

tured both before and behind. Elytra with tolerably coarse rows of punctures, the sutural stria more deeply impressed; pectus distinctly and thickly punctured.—North Carolina.

Cyrtusa impubis Zim.—Long. ⅔ line. Much smaller than the preceding species, broadly elliptical, very convex, ferruginous, smooth, shining; prothorax entirely smooth, at tip feebly emarginate, narrowed in front, side margins not deflexed, and therefore between the obtuse front and hind angles more rounded than in the preceding species. Elytra with very fine rows of punctures, which are almost obliterated in front. Pectus finely punctured.—North Carolina. [Mr. Ulke has found this species in the District of Columbia.]

Toxidium compressum Zim.—Long. ⅔—¾ line. Of the same form and color as *gammaroides*, and equally smooth above, but somewhat smaller, and still more compressed, and easily distinguished by the coarse punctures of the pectus. The structure of the prothorax is very singular, the side margin is slightly prominent and carinate in front, but behind the middle, is pressed closely to the body, and therefore the impressed line of the marginal bead disappears, the margin itself where it meets the epimeron of the mesothorax forms an distinct angle, and causes the hind angles, which would otherwise be acute, to appear rounded.—Louisiana. [I have specimens of this species from Texas, Florida and Illinois.]

Scydmænus mississipicus Zim.—Nearly ⅔ lin. long. Ferruginous-brown, very shining, and smooth, although tolerably thickly clothed with hair, the head especially thickly covered behind with erect hairs; prothorax not longer than wide, narrowed in front, with slight transverse impressions behind, in which four deep foveæ are visible; elytra with one longitudinal impression in front near the suture, and a fovea near the sharply defined humeral carina; front thighs much thickened, front tibiæ strongly compressed towards the tip, and on the inner side furnished with a brush of hairs.

[The MS. of Dr. Zimmermann relating to the Scydmænidæ is prefixed by a brief treatise upon the classification of the RHYPOPHAGA, from which the following extracts are made, with the expectation that the suggestions contained therein may be useful to other students. After reviewing the relations in which the families of the series have been placed by Erichson, Lacordaire, Redtenbacher, Duval, and the editor, he proceeds to eliminate and transfer the following families: the Pselaphidæ, Claviger, and Staphylinidæ to form another series, BRACHELYTRA; the Phalacridæ and Telmatophilidæ to the series CORDYLOCERA; the Rhyssodidæ, Passandridæ and Cucujidæ to the series ISOMERA (XENOMORPHA), and also the Georyssidæ, Parnidæ, and Heteroceridæ, to the series PHILYDRIA. The families of Rhypophaga are then distinguished as follows:]

A. Wings membranous, with distinct veins, and mostly suitable for flight; ventral segments 5 or less in number:

a. Ventral segments 4; tarsal joints variable in form and length,.....**Paussidæ.**

b. Ventral segments 5; tarsal joints narrow:

Hind coxæ not excavated for the reception of the thighs; pygidium always exposed,.....**Histeridæ.**

Hind coxæ not excavated for the reception of the thighs; pygidium not exposed,.....**Mycetophagidæ.***

Hind coxæ excavated for the reception of the thighs,.....**Dermestidæ.**†

c. Ventral segments 5; first 3 joints of the tarsi dilated,.....**Nitidulidæ.**‡

B. Wings membranous, with distinct veins, and mostly suitable for flight, but in some genera wanting, or undeveloped; ventral segments 6 or more in number:

a. Elytra with distinct veins.....**Silphidæ.**

b. Elytra without veins:

Prothorax shield shaped, with sharply defined side margins...**Anisotomidæ.**

Prothorax rounded or cylindrical, without margined sides.....**Scydmænidæ.**

Platysoma æquum Lec. N. Sp. Col. 1, 61.—This is the *Hister frontalis* ‖ Say, which would with difficulty be recognized from Say's description unless a specimen were present (*in natura*) for comparison. The body is parallel in form, black, the antennæ and legs red, the club of the antennæ ferruginous, the front is flat, not impressed, thickly and finely, though quite distinctly punctured, with the anterior part raised above the clypeus, and surrounded by a fine marginal stria; the clypeus is therefore very short, (or as Say has expressed it, *linear* ∮). Prothorax transverse, quadrate, thickly punctured, with distinct marginal stria, which extends along the front margin, and with a small basal fovea at the middle. The elytra have 6 entire dorsal striæ, and no lateral stria; the epipleuræ are flat, narrow, scarcely punctured; pygidium and propygidium coarsely punctured; the middle of the under surface thickly and finely punctured; mesosternum not margined in front; front tibiæ 4-toothed. [I failed to recognize Say's species in this remarkable insect, believing with my father that we had determined it in another which more nearly resembles in form *P. parallelum* with which Say compares it.]

Hister servus Er.—Very similar to *indistinctus* Say, but easily distinguished by the pygidium which is very coarsely punctured.—Maryland, Cuba, Hayti. [Not before noted as occuring in the United States.]

Hister permixtus Zim.—Long. 1½ line. Also an allied species to *servus*, very similar to *indistinctus*, but entirely of a brown color, and distinguished by the following characters: exterior stria of prothorax abbreviated or interrupted at the middle; marginal stria of the elytra deeper and dilated in the form of a fovea, (grubenförmig); pygidium sparsely and very finely punctured; front tibiæ 4-toothed, the lowest tooth broadly divided.—Carolina.

Hister corvinus Germ.—Long. 1½—1¾ line. Antennæ and legs ferruginous;

* Here belong also the Colydiidæ, Cryptophagidæ, Trogositidæ, Peltidæ, Thorictidæ, Mycetæidæ, Murmidiidæ, Lathridiidæ, Monotomidæ, Derodontidæ, and Othniidæ of other authors.

† Including Byrrhidæ and Throscidæ.

‡ [This table, although written recently, appears to be partly provisional; in another MS. the Nitidulidæ are placed near the Phalacridæ, Eumorphidæ, Erotylidæ and Coccinellidæ in the series "Kolbenkäfer," CORDYLOCERA—LEC.]

∮ In a transverse direction; this peculiar conformation of head results from the fact, that the elevated margin, under which the antennæ are inserted, is prolonged transversely just in front of the frontal stria, instead of forming the side margin of the clypeus, producing thereby such a depression of the latter as is observed in most of the species of the genus.

four exterior dorsal striæ of the elytra entire, the two inner ones abbreviated in front; the inner lateral stria only rudimental, or entirely absent. I found this European species also in South Carolina. [Not before noted as occurring in America.]

Carcinops lautus Zim.—Long. ¾ line. Oval, convex, very shining piceous, antennæ and legs ferruginous; head and prothorax finely sparsely punctured, punctures of different sizes; marginal stria of prothorax very fine, scarcely obvious in front; elytra with the sutural stria feeble, composed only of separate punctures, and abbreviated in front, five dorsal striæ entire, slightly curved inwards, and distinctly punctured; the inner lateral stria is well developed, and finer than the dorsal striæ; pygidium and propygidium smooth; mesosternum deeply emarginate in front, and surrounded by a fine stria; front tibiæ 2-toothed.—North Carolina.

Carcinops troglodytes Mars.—[Under this name he notes the species which is not uncommon in the Southern States, and which is usually regarded as *Paromalus pumilio* Er.]

ECHINODES Zim.—An intermediate form between *Eretmotus* and *Hetærius*, and easily distinguished from the latter by the large, long, broad, and concave mental lobe, (Kinnlappen).

E. setiger.=*Hetærius setiger* Lec. Proc. Acad. Nat. Sc. Phil. 1859, 316.—I found this insect on April 13th, in the nest of a small brown ant at Columbia, S. Carolina.

PACHYLOPUS Er.—These insects differ from *Saprinus* by their incrassated thighs, and by the club shaped, thickened middle and hind tibiæ being densely clothed with spines. In the form of the head they agree with the first division of *Saprinus*; the prothorax is large and smooth, or at least only punctured along the hind-margin.

The following divisions may be established:

A. Upper surface smooth:
  a. Prosternum forming a strong acute keel.—(*P. dispar*, Africa.)

B. Upper surface punctured:
  b. Prosternum strongly carinate, margined only near the base, which is broader.—(*P. sulcifrons, serrulatus.*)
  c. Prosternal striæ equally apparent at the base, but converging at the middle into a longitudinal line.—(*P. palmatus.*)
  d. Prosternal striæ closely approximate, but separate to the apex.—(*P. dimidiatus* of Europe).

Epierus novellus Zim.—Long. 1 line. Smaller and narrower, and more parallel in form than *nigrellus*, piceous, with ferruginous antennæ and legs, very finely and thickly punctured, somewhat more coarsely upon the prothorax than the elytra; the striæ entire, fine but well impressed, and also regularly curved; the two inferior marginal striæ feeble and slightly punctured; pygidium flat, and like the propygidium, thickly and strongly punctured.—Carolina.

Epierus planulus Er.—Columbia, Mexico, California. LeConte has discribed (Ann. Lyc. Nat. Hist. New York, V, 164) this species under the name *decipiens*. The order of names given in his List, p. 28, is incorrect. [By a typographical error the synonym *decipiens* has been placed ofter *vicinus* Lec. instead of *planulus* Er.]

Paromalus affinis Lec.—Usually larger than *æqualis*, and more narrowed behind; easily distinguished by the pygidium, which is larger and more convex, sculptured only with fine reticulated aciculate lines; these are especially obvious in the male, but in the female are less marked, and sometimes entirely wanting. In both sexes of *æqualis* the pygidium is alike, and covered with coarse tubercles and deep rugosities.

Plegaderus Erichsonii Lec., List of Col. N. Am. (Smiths. Inst.) p. 28.=*P. pusillus* ‡ Lec. Bost. Jour. Nat. Hist.—Less than ½ line long. Pale or dark piceous, with ferruginous antennæ, and reddish-brown legs. Head and prothorax finely punctured, the latter with a deep lateral impressed line, and convex elevated margin, disc without transverse groove, but in place of it, in certain lights, a very faint transverse impression may be observed; elytra distinctly punctured, and with very fine and short hairs. Abundant in Carolina, in November under pine bark.

The species of *Plegaderus* may be divided into three groups:

a. Disc of prothorax with a deep transverse groove, and the prosternum with a patch of hair.—(Most of the species, including *transversus*.)

b. Disc of prothorax without transverse groove, but prosternum with a patch of hair.—(*Erichsonii*.)

c. Disc of prothorax without transverse groove, and prosternum without patch of hair.—(*pusillus* of Europe.)

Aulonium ferrugineum.*—Length 1½ line. Ferruginous, more slender than *parallelipipedum*; head distinctly punctured, with two elevations on the front, and one fovea. Prothorax much longer than wide, and as well as the elytra, very finely and sparsely punctured; the two inner longitudinal ridges are strongly elevated, and extended in a tooth like prolongation over the apical margin which therefore appears emarginate; the intermediate spaces on each side of the middle striæ are convex, the middle striæ approach each other in front and diverge curvilinearly behind; elytral rows of punctures very fine.—Carolina.

[**Lasconotus**] **referendarius** Zim.—Length almost 1 line, somewhat narrower than [*pusillus* Lec.], colored, punctured and pubescent in the same manner, but quite different in the prothorax. The dorsal costæ are in fact ill-defined, and only faint traces of two fine lines can be perceived in the deep longitudinal impression; on the elytra the 4 costæ next the suture are distinctly elevated, the first costa reaches the tip, the fourth is obsolete in front; between the costæ are two rows of coarse punctures.

Colydium lineola Say.—Probably *longiusculum* Say is not different from this species, from which it ought to differ by the absence of the medial dorsal line of the prothorax; since no other author mentions such a species, we might suppose that its description by Say has originated in some error.

PROLYCTUS Zim.—[Under this name he establishes for *Bothrideres exaratus* Mels., a separate genus, having the following characters.] These insects differ from the genuine *Bothrideres*, with which they are often confused, by the short thick head, and transversely elongate

[* No extracts from the MS. of Nitidulidæ are here made, because a Monograph of the family by Mr. A. Murray is now in progress.]

eyes. The prothorax and elytra are furnished with longitudinal costæ, but the antennæ, palpi, coxæ, and terminal spine of the front tibiæ are as in *Bothrideres*

MYCHOCERUS Er.—Very small insects, which in external structure have a general resemblance to *Cerylon*, but with the head so deeply retracted into the prothorax, that the genus cannot be properly referred to the same tribe, but must rather be reckoned as belonging to a separate tribe of the same family, DERMESTIDÆ.

The clypeus is separated from the front by an evident suture; the mandibles, palpi and labrum very short; the first two joints of the antennæ are thick, the 10th forms* a rounded club, received in a deep fovea of the prothorax; the latter is transverse, and shaped almost as in the Anthreni; scutellum very small. Elytra covering all the dorsal segments. Under surface flat, with broad sterna, and therefore all the coxæ widely separated; the prosternum separated from the lateral depressed parts by a longitudinal carina, prolonged in front so as to cover the mouth; first ventral segment as large as the other four together; tarsi slender 4-jointed.

M. [depressus.=*Murmidius depr.* Lec. Proc. Acad. Nat. Sc. 1866, 376.] Length ½ line. Elliptical, slightly convex above, ferruginous, with yellow legs; under a high lens the upper and under surface appear very finely punctured, and covered with fine pubescence. Prothorax transverse, twice as wide as long, with obtuse front angles, upon which the antennal foveæ are situated; the hind margin forms an obtuse angle at the middle, from which to the sides it is feebly emarginate, the hind angles are acute, the sides converge obliquely in front, flat, not deflexed, very finely margined, somewhat impressed near the hind margin. Elytra very distinctly punctate-striate, in front as wide as the prothorax, and closely affixed to it, behind rounded.—South Carolina.

[I have been thus particular in translating the whole of Dr. Zimmermann's description, because on renewed examination of the specimens I find that they differ from *Murmidius* generically by the antennal foveæ being *upon* the anterior angle of the prothorax extending below, instead of *above* them as in *Murmidius*, in which they occupy the dorsal surface just by the angle. Nevertheless, in comparing the two species before me which represent the two genera, I cannot but be convinced that they are closely allied, and that their affinities are rather with Histeridæ than *Cerylon;* nor in fact do I perceive any essential generic distinction, apart from the one above mentioned and minor differences in the antennæ, except that the prosternal striæ are more distant, and the anterior lobe less developed in *Mychocerus* than in *Mur-*

* According to Erichson's description; I have not been able to draw out the antennæ so as to count the number of joints.

midius. The antennæ are well displayed in the two specimens given me by Mr. Ulke, and show that the 1st joint is much broader than the 2nd, though the latter is thicker than the following ones, the 1st is not so elongated as in *Murmidius;* the tibiæ are narrower, and the legs somewhat less retractile. The pro- and meso-sternum fit closely together in both genera, precisely as in the Histeridæ, with which in all the characters mentioned they show a strong affinity, and no resemblance at all to *Cerylon* or its allies.]

Corticaria denticulata Mann., Germ. Zeitschr. v, 23.=*Lathridius dent.* Gyll. iv, 126.—Common to Europe and North America.

Corticaria serrata Mann. ibid. v, 28.=*Dermestes serr.* Payk. Fauna. i, 300.=*Lathridius serr.* Gyll. iv, 126.—Europe and North America. To this species without doubt belong *C. denticulata* Kirby, Fn. Bor. Am. iv, 110, and *Lathr. 8-dentatus* Say, Journ, Ac. Nat. Sc. Phila. iii, 325.

Corticara elongata Gyll. iv, 130, (*Lathr.*)—Europe and North America.

Corticaria pusilla Mann. Germ. Zeitschr. v, 48.—North America, from South Carolina to California.

[This is the species which I described under the name *rugulosa;* it is very abundant at Lake Superior, but is not found in California, the specimens so labelled in Dr. Zimmermann's collection were sent to him by me, and were collected on point Kewenaw.]

Corticaria villosa Zim.—Length ¾ line. Ferruginous, nearly allied to *americana,* but the head and prothorax are more thickly punctured, and clothed with very short grayish squamiform hairs, the transverse impression of the prothorax is less deep, the elytra with unusually long hairs, and also more densely pubescent on the intervals, so that viewed sideways they appear clothed with a silky covering.

Corticaria subimpressa Zim.—Length ¾ line. Ferruginous with brownish elytra; front much broader than in *americana,* with very fine scattered punctures. Prothorax a little broader than the head, transversely quadrate, moderately convex, very finely punctured, hind margin slightly rounded, hind angles acute, prominent, front angles rounded, disc in front of the base with a feeble transverse impression, which sometimes is scarcely visible, usually however composed of three foveæ of which the lateral ones extend to the side margin, and the middle one appears punctiform. Elytra finely punctate-striate, and in the striæ and upon the intervals furnished with short gray squamiform hairs arranged in rows.—North America.

C. similata and *subtilis* Mannh. are allied to this species.

Lathridius rugicollis Mannh. Germ. Zeitschr. v, 77.=*Ips rug.* Oliv. ii, 18, 13, tab. 3, fig. 19.—Europe and North America.

[This is the species I described under the name *L. reflexus* (Proc. Ac. Nat. Sc. Phil. vii, 304.]

Silvanus bicornis Rosenh.—Found both in Europe and America. This species closely resembles *S. surinamensis* in form, color, size and sculpture, and differs only by the elevated side margin of the front terminating anteriorly in a

small elevated tubercle, or little horn. Since this insect occurs wherever *S. surinamensis* is found, it may be only a variety of the latter, though much less common. Both forms occur in either sex, the males being distinguished in both species by the toothed hind thighs.

Lathropus vernalis Zim.—[This name is given to the species mentioned by me, Proc. Acad. Nat. Sc. Phila. 1866, 379, but the characters by which it is to be distinguished from the European *L. sepicola* are not pointed out. Comparison of specimens is therefore still necessary.]

Nausibius major Zim.—Length 2—2¼ lines. Of the same form as *N. dentatus*, but somewhat larger, of black color, with reddish-brown antennæ and legs, and perceptibly more coarsely punctured.—Carolina. This species is found only under the bark of old oaks.

Læmophlœus testaceus.=*Cucujus test.* Fabr. &c.—Europe and North America. [Not before noted as common to the two continents; I described it as *L. Zimmermanni.*]

Læmophlœus pusillus.=*Cucujus pus.* Schœnherr.=*C. minutus* Oliv.—Europe, Africa, North and South America. [Not before noted as occurring in the United States.]

Læmophlœus alternans Er.—Europe and North America. [Not before observed in the United States; neither of these species were in my collection.]

Cryptophagus croceus Zim.—Length 1—1¼ line. Ferruginous, coarsely punctured, clothed with long hair, moderately broad and convex. Prothorax with the lateral teeth directed more upwards than outwards, therefore appearing less prominent than they really are; the outer surface of the front tooth highly polished, convex and circular; elytra with punctures arranged in rows; antennal club unusually thick.—South Carolina.

Cryptophagus crinitus Zim.—Length 1—1¼ line. Ferruginous, thickly, tolerably strongly punctured, punctures placed without order, pubescence short. On the prothorax only the two front elevations are visible, the side margin is narrowly reflexed and the lateral teeth are very obtuse, the front tooth has a highly polished rounded surface which is impressed in the centre. Elytra with two fine striæ each side of the suture, which are abbreviated in front; antennal club unusually thick.—South Carolina [and Illinois.]

Cryptophagus fungicola Zimm.—Length 1 line. Ferruginous, finely and thickly punctured, clothed with prostrate gray hairs; marginal teeth of the prothorax scarcely visible, and the polished spots of the front angle very narrow; the four elevations and the little fold at the base are quite evident; antennal club small.—Carolina.

[This and the two preceding species belong to the division of the genus in which the prothorax has more or less evident smooth elevations, and a very short elevated ridge at the middle of the base; in the next species no such inequalities of the surface aré apparent, and the disc is regularly convex.]

Cryptophagus nodulangulus Zim.—Length 1 line. Ferruginous, very shining, finely and equally but not closely punctured, clothed with prostrate yellow hair; prothorax altogether evenly convex, distinctly bidentate on the sides, the front tooth not planed down, but convexly protuberant.—Middle and Southern States.

ATOMARIA.—The species of this genus are numerous, thus far found only in the northern temperate zone; the following divisions may be recognized:

A. Prothorax with the lateral margin double; 1st joint of the antennal club conspicuously smaller than the other two:
  a. Prothorax feebly bisinuate at base.....**ferruginea, testacea.**
B. Prothorax with single lateral margin; all three of the joints of the antennal club of nearly equal size:
  b. Prothorax feebly bisinuate at base.....**ochracea.**
  c. Prothorax not sinuate at base .....**ephippiata.**

Atomaria testacea Zim.—Length ⅔ line. Ferruginous, smaller than *A. ferruginea,* more strongly punctured, with the pubescence thinner and shorter; upper surface shining, prothorax distinctly broader than long, with rounded sides and distinct hind angles.—South Carolina.

Atomaria ochracea Zim.—Length ¾ line. Rounded oval, ferruginous or pale brown, moderately shining, very finely and thickly punctured and clothed with very short pubescence; head scarcely visibly punctured, prothorax transverse, very convex, in front much narrower than behind, sides rounded; elytra broadest before the middle. I found this species in Maryland, in copula, in September.

Atomaria ephippiata Zim.—Length ⅔ line. Black, antennæ legs, anus, and elytra ferruginous yellow, the last with a large black spot, at the middle, which extends from the side margin to the suture, near which it is very much narrowed thus forming an irregular transverse band; upper surface sparsely clothed with fine silvery pubescence. Prothorax and elytra very convex, so that in a side view the dorsal is as great as the lateral curvature, which is greater in this than in the other species, the puncturing of the prothorax is finer and closer than that of the elytra.—Middle States. [A common species resembling the Californian *A. lætula* Lec., but larger and more convex, and differently colored.]

Anthrenus museorum.—[Dr. Zimmermann notes this common European insect as found in North America; I have not as yet seen any native specimens.]

Anthrenus adspersus Herbst.—[Dr. Zimmermann considers this species the very common insect generally known as *A. castaneæ* Mels.]

HADROTOMA Er.—[Dr. Zimmermann refers to this genus the insect described by me as *Dearthrus longulus*, New Spec. Col. (Smiths. Inst.) 73, with the remark that the antennæ properly consist of but ten joints, which agrees with the description given by Duval, Gen. Col. Eur. ii. 256; I was misled by the original description of Erichson (Ins. Deutschl. iii. 444,) in which this important character is not noticed, and proposed for our native species a new genus.]

BYRRHUS.—[In this genus, as defined by Dr. Zimmermann, are included 3 divisions or groups of species, *Microchætes*, *Syncalypta* and *Curimus*, in which all the tarsi are retractile into tibial groves and the body clothed with erect bristles; a division with 3rd tarsal joint lobed

or simple, in which no erect bristles are present, but the tarsi are also retractile into tibial groves; and 3rd those in which only the anterior tarsi are retractile, and the tarsi lobed or not, including *Cytilus*, *Morychus* and *Pedilophorus*.]

B. alternatus Say.—Nearly allied to *varius*, but comparatively longer, or according to its length narrower. Kirby observed the differences between this insect and the European *varius*; Melsheimer also distinguished it as a separate species; whether the true *varius* Fabr. is found in America is doubtful.

Stenelmis vittipennis Zim.—Length 1¼ line. Similar to *sinuatus*, but somewhat broader, and less convex; above blackish-gray, antennæ, tarsi, abdomen, and head of prothorax, ferruginous; prothorax longer than wide, scarcely narrowed in front, with parallel sides, long and pointed front angles and slightly elevated dorsal costæ; elytra punctate-striate, the inner intervals broader than in *sinuatus*, 3rd tolerably flat in front, and only the 6th costiform.—S. Carolina.

Stenelmis linearis Zim.—Length 1 line. Slender, head, prothorax and scutellum dark bronzed; elytra shining black, with a broad yellow vitta, which begins on the humeral angle, then runs inside of the elevated costa of the 6th interval, nearly to the tip; under surface and thighs blackish-gray, with bluish and silvery reflections; antennæ, tibiæ and tarsi ferruginous, front and prothorax with a shining black longitudinal groove; prothorax elongate, scarcely narrowed in front, with very feeble longitudinal ridges; elytra deeply punctate-striate, with the 6th interval feebly elevated; middle tibiæ on the inner side finely toothed at the middle.

LIMNIUS.—These species exhibit an intermediate form between *Stenelmis* and *Elmis*; from the former they differ by the pubescent spot on the inner side of the tibiæ, from the latter by the round scutellum. In the structure of the elytra, they have the narrow inflexed side margin in common with *Stenelmis*, but differ in a less degree, since the costiform elevation, which in *Stenelmis* is always the 6th interval, here belongs to the 5th, (the space between the suture and the 1st dorsal being counted as the 1st interval.)

L. pusillus.=*Stenelmis pusillus* Lec., Proc. Acad. Nat. Sc. Phila. vi. 44.

PARNUS.—[In this genus, as here defined, are included as divisions, *Potaminus* (*Dryops* Leach), *Parygrus* and *Pelonomus*.]

Psephenus trentonensis Zim.—Length 2½ lines. Nearly allied to *Lecontei*, but darker in color, blackish-gray, only the base of the thighs, the tarsi and the inflexed margin of the elytra ferruginous-yellow; prothorax almost semicircular, the sides and apex, without prominent front, forming a common curve; base deeply bisinuate, with flat hind angles.—Trenton Falls, N. Y.

Descriptions of two new species of AROTES.

BY E. T. CRESSON.

Genus **AROTES**, Grav.

The North American species of this genus, as far as known, may be tabulated as follows:

A. Second recurrent nervure uniting with the cubital nervure:
  a. Color black, marked with yellowish:
    Hind femora black ..... **formosus.**
    Hind femora honey-yellow ..... **vicinus.**
  b. Color honey-yellow, marked with black ..... **venustus.**
B. Second recurrent nervure not uniting with the cubital nervure:
  a. Hind femora black, tipped with yellowish ..... **amœnus.**
  b. Hind femora honey-yellow, tipped with black ..... **decorus.**

1. **Arotes formosus**, Cresson, Canadian Entomologist, i. p. 34, ♂.—The ♀ closely resembles the ♂ in color and markings, but is more robust, and the wings have a blackish spot beneath the stigma, as well as a round spot at tip. Length 6—7½ lines.—Mass., ♀; Canada, ♂. (Coll. Am. Ent. Soc.)

2. **Arotes vicinus**, n. sp.—Closely resembles the ♂ of *formosus*, but is readily distinguished by the color of the hind legs, which is pale honey-yellow, their coxæ above are black, as well as incisure between their femora and trochanters; their tarsi are concolorous with the four anterior legs, which are of a deeper yellow than those of *formosus*, as also the markings of the body. Length 5 lines.
Hab.—Massachusetts. (Coll. Am. Ent. Soc.)

3. **Arotes venustus**, n. sp.—♀. Honey-yellow, inclining to ferruginous, shining; face and orbits yellow: space behind antennæ, covering ocelli, posterior margin of occiput, short line on each side of face, and tips of mandibles, black: antennæ black above, fuscous beneath, a broad annulus beyond the middle and scape beneath, yellow; pleura, sides and basal suture of metathorax, black: each lobe of mesothorax with a more or less distinct black stripe; scutellums and disk of metathorax, yellowish; wings yellowish-hyaline, the anterior pair with a blackish spot at tip; legs yellowish, hind coxæ, femora and tibiæ ferruginous, tip of the former black; abdomen ferruginous, base of second and third segments more or less, and sometimes part of the first, black; apical margin of first and second segments yellow. Length 6—7 lines.

♂. Lemon-yellow, slender; large transverse mark behind ocelli, broad stripe on each lobe of the mesothorax, two spots at base of metathorax, base and apex of posterior coxæ, tips of their trochanters and femora, middle of first segment of abdomen, and a broad band at base of remaining segments, black; antennæ longer than body, fuscous above; wings as in ♀; hind coxæ and femora above, pale fulvous. Length 5—6 lines. This may prove to be the ♂ of a distinct species, in which case it may be named *occiputalis*.
Hab.—Mass., ♀; West Virginia, ♂. (Coll. Am. Ent. Soc.)

4. **Arotes amœnus**, Cresson, Canadian Entomologist, i. p. 34, ♂ ♀.—W. Va., Penn., Mass., Canada. This is the most common species of the genus.

Arotes decorus. = *Acœnitus decorus*, Say, Bost. Jour. Nat. Hist. i. p. 248.—Virginia, ♂ ♀. (Coll. Am. Ent. Soc.)

NOTES ON AMERICAN TORTRICIDAE.

BY COLEMAN T. ROBINSON.

The object of the present paper, and of others now in course of preparation, is to make known the species of Tortricidae inhabiting the United States. The late Dr. Brackenridge Clemens of Easton, Pa., published descriptions of nearly one hundred species, and notices of a few others are to be found in the writings of Dr. T. W. Harris, Dr. A. S. Packard Jr., Dr. Asa Fitch, H. B. Moeschler, and Mr. Francis Walker in the British Museum List.

It will be perceived that the numerous families and genera into which the Tortricidae have been divided by J. F. Stephens, S. G. Wilkinson and H. T. Stainton are taken little cognizance of in these papers. Dr. Clemens endeavored to follow the English authors mentioned above, and even added to the number of genera they had described, but his writings expressly state that it was merely for the sake of convenience, and not because of a belief that they had any foundation in nature. In the Proceedings of the Academy of Natural Sciences of Philadelphia, page 360, Aug. 1860, he says: "This group of insects is probably the most difficult, in a systematic point of view, and the least interesting family in the order of Lepidoptera. The impression I have derived from the study of it induces me to believe that it is owing chiefly to the artificial system by which it is at present interpreted, and which I have endeavored to follow in this paper. Numerous families, or so-called families, have been arbitrarily instituted on the most trivial and untenable characters, some of which are only sexual peculiarities, while ornamentation appears to be a far more important element than structure in the diagnoses by which they are characterized. Such an arrangement possesses a certain amount of convenience, inasmuch as it frequently enables the student or inquirer to limit the probable number of genera to which an insect he may wish to classify may belong. This however, is its total significance, and even in this respect it is often deficient and deceptive. This is a system of convenience and not of nature, which works on categories of structure and recognizable conceptions or ideas."

It is to be regretted that Dr. Clemens had no access to the works of continental authors, while writing upon this subject. He says in the Proceedings of the Entomological Society of Philadelphia, Vol. v, p. 138, Sept. 1865: "The only work I have that treats of the *Tortricina*,

is Mr. Wilkinson's British Tortrices, and his generic diagnoses are so peculiarly written, his tables of genera founded on a fanciful comparison of the length of the middle joint of the labial palpi with the apical joint, that the location of a specimen is very troublesome and difficult. At some subsequent day I will review what I have done in this group, as soon as I can obtain types of European genera and thus correct the numerous errors I have doubtless committed by describing new generic groups, when genera have been already created into which they could have been received, and of which I have no knowledge." These were among the last words written by Dr. Clemens on any entomological subject. His death in the prime of life, two years afterwards, deprived us forever of one of the most thorough and intelligent students of nature America has produced.

A correspondence was commenced with Dr. Clemens shortly before his death, the object of which was to cöoperate with him in carrying out the intention mentioned in the paragraph quoted above, and to illustrate by plates and more detailed descriptions, the species discovered in the mean time. A library of important works on the subject has been accumulated as well as large collections of European and American specimens. I now, with much diffidence, undertake the task alone, hoping thereby to call the attention of abler systematists to the subject. Leaving the full discussion of generic values and other matters of classifications until a future period, I shall endeavor to illustrate the species thus far observed.

Messrs Francis G. Sanborn and Dr. A. S. Packard Jr. have assisted me materially by placing their collections in my hands for study and comparison.

TORTRICIDAE.

TORTRIX, Treitschke.

Tortrix rosaceana, Walker. (Plate 1. figs. 1—2 ♀, 3 ♂.)

Lozotaenia rosaceana, Harris, Inj. Insects, 1841; 3d. ed. p. 481. 1862.
Lozotaenia rosaceana, Fitch, 3d. Rep. Nox. Ins., p. 28. 1859.
Lozotaenia rosaceana, Clemens, Proc. Acad. N. S. Phil., p. 347. 1860.
Tortrix rosaceana, Walker, List, Lep. Brit. Mus., part, xxx, p. 984, 1864.
Lozotaenia rosaceana, Clemens, Proc. Ent. Soc. Phil., v., p. 136. 1865.

Palpi, head and thorax, dark reddish-brown. Antennae reddish-brown. Anterior wings cinnamon-brown, with a basal patch, central fascia and sub-apical costal spot dark reddish-brown and partially limited by slightly darker brown lines. The paler portions of the wing are irregularly striated with reddish-brown lines, three of which, originating in the costal spot, and respectively just before, in and above the internal angle. Fringes dark brown apically becoming paler below.

Posterior wings dull fuscous internally, deep ochreous beyond. Under surface of both pairs ochreous, deeper in color apically, where they are frequently speckled with brown irrorations.

Expanse, ♂ 22—25 mil,; ♀ 24—30 millimeters.

Habitat—Mass., N. Y., Pa., Fla., and Texas.

Tortrix gurgitana, n. s. (Plate iv, fig. 16.)

Head and thorax tawny brown. Palpi dark brown above, paler beneath. Anterior wings boldly arched at the base of costa, which is deeply excavate from the middle to just before the obtusely produced apices. The upper surface is irregularly striated with brown lines and all the veins distinctly covered with blackish-brown scales. Basal patch indicated by a fine line of brown scales which curving outwardly to below the cell, runs thence obliquely inwardly to internal margin. Central fascia brown, narrow from costa to the cell where it is interrupted; below the cell it spreads out broadly towards the internal angle. This fascia is distinctly limited by two lines of brown scales. Costal spot indicated by an aggregation of brown scales on the costa within and below the excavation, from which two fine lines run gradually approaching each other to internal angle. Fringes blackish-brown apically becoming paler towards internal angle.

Posterior wings pale shining fuscous internally, pale ochreous beyond.

Under surface of both pairs pale ochreous, of a deeper shade on costa and apically, where there are indications of two lines of brown scales running parallel with the internal margin.

Expanse, ♀ 26—28 mil.

Habitat.—West Virginia (Jas. Ridings), Illinois (J. C. Allen). Pennsylvania (Theo. Bunte).

This species is nearly allied to *rosaceana*, but is readily distinguished from it by the excavate costa of the primaries and the distinctness with which the veins are marked by lines of dark scales.

Tortrix purpurana. (Plate 1, fig. 4.)

Lozotaenia purpurana, Clemens, Proc. Ent. Soc. Phil., v, p. 136, 1865.

Palpi, head and thorax dark brown. Anterior wings with the usual markings nearly obsolete. In some specimens the basal patch is indicated by an indistinct curved line of glossy dark brown scales, and the central fascia by two similar, nearly parallel lines partly filled in with scales of a warmer hue. The excised portion of the wing before the apex is bordered with bright brown scales from which two lines run parallel with external margin to internal angle. Fringes concolorous.

Posterior wings dark fuscous internally, pale testaceous beyond.

Under surface of both pairs pale testaceous internally and centrally, externally, and on the costa, pale ochreous. Fringes shining blackish-brown.

Expanse, ♂ 22 mil.

Habitat.—Pennsylvania.

Tortrix lamprosana, n. s. (Plate 1, fig. 5, ♀.)

Palpi, head and thorax pale brown. Anterior wings pale cinnamon brown, with numerous scattered dark scales, with a basal patch, central fascia and sub-apical costal spot of a darker shade, the two first limited by lines of very pale scales. Outer margin of basal patch nearly straight. Central fascia broad on costa, of a nearly uniform breadth throughout to internal angle where it is slightly enlarged outwardly. Costal spot not distinctly limited, rounded internally, straight externally, ending in a point below the middle of the wing. Fringes unicolorous. Under surface of both pairs pale testaceous, with a few apical and costal irrorations.

The abdomen in the male broadly tufted, blackish.

Expanse, ♂, 21 mil.; ♀, 23—26 mil.

Habitat.—N. Y., Pa., Mass. (Sanborn.)

Tortrix limitata, n. s. (Plate 1, fig. 6, ♀.)

Palpi, head and thorax, brownish-testaceous. Anterior wings ashen brown, tinged with ferruginous beyond the central fascia. Basal patch, central fascia and costal spot dark brown, distinctly limited by lines of pale testaceous scales. Basal patch straight outwardly. Central fascia narrow on costa, increasing gradually in breadth to internal margin before internal angle. Costal spot semilunate and distinct, not continued towards internal angle as in *lamprosana*. Fringes brownish-ferruginous. Posterior wings shining fuscous internally, pale ferruginous beyond.

Under surface of both pairs pale testaceous internally, darker on costa and apically, with numerous brown irrorations.

Expanse, ♀ 21—25 mil.; ♂ 20 mil.

Habitat.—Pennsylvania.

Tortrix sapulata, n. s. (Plate 1, fig. 7 ♂.)

Head and thorax dull testaceous. Palpi brownish-ferruginous above and laterally, paler beneath. Anterior wings glossy golden-yellow, with a few scattered lines of darker scales. There are no indications of a basal patch. Central fascia brown on costa and below to the cell where it becomes nearly obsolete. Costal spot brown. Fringes unicolorous.

Posterior wings pale testaceous shaded with pale fuscous internally. Fringes whitish or very pale testaceous.

Under surface of both pairs pale testaceous, the anterior pair much clouded with brownish.

Expanse, ♂ ♀ 27—29 mil.

Habitat.—Illinois.

Tortrix sanbornana, n. s. (Plate 1, fig. 8.)

Antennae, head thorax and palpi ferruginous. Anterior wings deep glossy ferruginous. An aggregation of black scales on costa just before the middle and a larger patch on internal margin before internal angle, indicate the central fascia, which is obsolete centrally in all save one of twenty specimens examined. The sub-apical costal spot is black, semilunate. Fringes unicolorous. Posterior wings fuscous internally ochreous beyond. Abdomen above and beneath, under surface of thorax and both pairs of wings bright ochreous,

Expanse, ♂ 24, ♀ 30 millimeters.

Habitat.—Texas (Belfrage), Florida (Chas. Linden), Mass. (San born), Pa. (Theo. Bunte), Putman Co. N. Y.

I take pleasure in dedicating this species to Mr. Francis G. Sanborn, who has assisted me with valuable material in this family.

Tortrix furvana, n. s. (Plate 1, fig. 9 ♀.)

Palpi and head dark ochreous. Thorax and patagia dark brown. Anterior wings shining pale lemon-yellow, with a basal patch, central fascia and large costal spot rich dark velvety brown. The spaces between the ordinary markings, on and below the cell, clouded and speckled with dark brown intermixed with dull ochreous scales, the latter predominating beyond the central fascia. Fringes pale ochreous. Posterior wings dark fuscous with pale ochreous fringes.

Under surface of anterior wings dull brown centrally, the margins yellowish; of the posterior wings, pale fuscous iuternally, pale yellowish beyond. Abdomen dark fuscous above, yellowish beneath.

Expanse, ♀ 24 mil.; ♂ 19 mil.

Habitat.—New York, Massachusetts, (Sanborn.)

Tortrix fractivittana. (Plate 1, fig. 10, ♂.)

Lozotaenia fractivittana, Clemens, Proc. Ent. Soc. Phil., v, p. 136. 1865.

Palpi, head and thorax ochreous. Anterior wings ochreous, clouded with dark brown scales to the central fascia, which is dark brown and much dilated outwardly below the cell. An elongate sub-apical costal spot dark brown. Fringes unicolorous. Posterior wings dark fuscous with pale ochreous fringes.

Beneath the anterior wings are brown centrally with ochreous margins; the posterior pair pale fuscous.

Expanse, ♂ 19—21 millimeters.

Habitat.—Massachusetts, (Sanborn), Virginia (Jas. Ridings.)

Tortrix fuscolineana. (Plate 1, fig. 11.)

Lozotaenia fuscolineana, Clemens, Proc. Ent. Soc., v, p. 137. 1865.

Palpi, head and thorax grayish. Anterior wings grey. Basal patch dark fuscous, limited by a dark brown line angulated in the middle, and containing centrally a less distinct parallel line. Central fascia dark fuscous limited by two distinct dark brown lines. "The space exterior to the central fascia is clouded with fuscous, except a grey space above the anal angle, and varied with delicate blackish-brown lines." Posterior wings pale fuscous; fringes grey. Beneath, the wings are whitish, clouded with fuscous, and marked with numerous transverse interrupted lines.

Expanse, ♂, 18 mil.; ♀, 21 mil.

Habitat.—Virginia, Massachusetts (Packard.)

Tortrix vesperana. (Plate 1, fig. 12.)

Lozotaenia vesperana, Clemens, Proc. Ent. Soc. Phil., v, p. 136. 1865.

Palpi, head and thorax brownish-ochreous. Anterior wings ochreous, with numerous irregular, transverse pale brown streaks and lines. Central fascia obsolete centrally, indicated on costa and internal margin by two ochreous brown spots, frequently containing centrally an aggregation of purplish-brown scales. Sub-apical costal spot like the preceding, sometimes obsolete. Posterior wings pale ochreous; fringes paler. Beneath, both pairs of wings ochreous, the anterior pair deepest in color.

Expanse, ♂ 21—23 mil.

Habitat.—Massachusetts (Sanborn), Texas (Belfrage), New York, and Pennsylvania.

Tortrix pallorana, n. s. (Plate 1, fig. 13 ♂.)

Palpi, head and thorax pale brownish-ochreous. Anterior wings pale ochreous, without markings. Posterior wings very pale ochreous above and beneath. Under surface of anterior wings clouded with fuscous.

Expanse, 22 mil.

Habitat.—Ohio, Illinois.

Tortrix lata, n. s. (Plate 1, fig. 14 ♂.)

Palpi, head and thorax bright ochreous. Anterior wings pale lemon-yellow, without markings above, clouded with fuscous beneath. Pos-

terior wings pale fuscous internally, pale yellowish or whitish beyond. Under surface of posterior wings very pale; fringes white.

Expanse, ♂ 26 mil.

Habitat.—Illinois and Pennsylvania.

Readily distinguished from *pallorana*, by its greater size, more obtuse apices and straight external margin of anterior wings.

Tortrix alisellana, n. s. (Plate 1, fig. 15.)

Palpi, head and thorax white. Anterior wings white, clouded on and beneath the disk with purple. A line of purple scales from the costa at basal third runs obliquely into the main purple shade which latter attains the costa just beyond the middle. A narrower line from above the internal angle, bowed outwardly to just below the costa, turns thence inwardly and joining the purple patch encloses a large circular white space. Posterior wings and fringes white. Under surface of both pairs pure, glossy white.

Expanse, 24 mil.

Habitat.—Ohio.

Tortrix parallela, n. s. (Plate iv, fig. 17.)

Palpi slightly exceeding the head; ferruginous brown above and beneath, pale internally. Antennae ferruginous above, testaceous beneath. Head ferruginous brown, thorax paler.

Anterior wings, pale cinnamon brown, broad, boldly arched at the base, costa nearly straight beyond, parallel with internal margin. External margin straight, anal angle produced. Basal patch narrowest on costa, limited by a dark brown line, but slightly darker than the ground color. Central fascia dark ferruginous-brown, narrow on costa, expanding on and below the disc. Costal spot dark ferruginous-brown, broad on costa, becoming gradually attenuate, ending in a point at anal angle. The spaces between the ordinary markings are streaked with irregular brown lines. Fringes concolorous, sometimes slightly darker below the apices.

Posterior wings fuscous internally, pale beyond, with a few brownish apical streaks or reticulations; beneath pale ochreous, with numerous brown reticulations apically.

Under surface of anterior wings clouded with fuscous, ochreous along costa, where the markings of the upper surface are plainly reflected.

Abdomen and anal tuft, above and beneath, pale ochreous.

Expanse, ♂ 23—25 mil.

Habitat.—Putnam Co. N. Y., Philadelphia, (Bunte.)

This is a larger, broader species than *T. vesperana*, and the distinctness of all the markings readily distinguish it.

Tortrix grisea, n. s. (Plate iv, fig. 18, ♀.)

Palpi, head and thorax dark fuscous above, the palpi pale testaceous beneath.

Anterior wings grey, irregularly clouded with fuscous, with a few dark brown irrorations on costa at base, and along external margin. Central fascia blackish-brown, distinct on costa; indistinct, interrupted, almost obsolete on and below the disc. Beyond, a blackish-brown, semilunate costal spot. Fringes fuscous.

Posterior wings shining fuscous; fringes whitish.

Undersurface of anterior wings pale fuscous; of the posterior wings, very pale testaceous.

Expanse, ♀ 27 mil.

Habitat.—Ohio.

Tortrix fumosa, n. s. (Plate iv, fig. 19, ♀.)

Head and thorax dusky ochreous. Palpi dull ochreous touched with fuscous. Anterior wings dull ochreous. Basal patch indistinctly indicated by an improminent smoky brown cloud on and above internal margin at base. Central fascia smoky brown, indistinctly limited, more or less interrupted on the disc spreading out broadly below to internal margin. An elongated semilunate costal spot smoky brown. In some specimens there are a few faint reticulations beyond the central fascia. Fringes smoky brown, paler at internal angle.

Posterior wings very pale fuscous internally testaceous beyond, margined with pale ochreous.

Under surface of anterior wings bright ochreous; fringes fuscous. Posterior pair whitish internally, bright ochreous apically.

Expanse, ♀ 26—28 mil.

Habitat.—Ohio.

Tortrix nigridia, n. s. (Plate iv, fig. 20, ♀.)

Head and thorax dark fuscous; palpi fuscous. Anterior wings dark shining grey, with numerous brown patches and spots containing aggregations of blackish scales. The usual pattern of ornamentation is observable, but both basal patch and central fascia are very irregular in outline and coalesce below the middle. Apical spot semilunate, distinct. Below its outer half an elongate brown patch stretches to anal angle. This patch is filled in with blackish scales between the veins. A row of brown spots containing central blackish scales beyond, along external margin between the veins. Fringes dark fuscous.

Posterior wings and fringes dark fuscous.

Under surface of anterior wings fuscous, with a few darker costal and apical irrorations; of posterior pair whitish testaceous, mottled with fuscous beyond the middle.

Expanse, ♂ 22—24 mil.; ♀ 27 mil.

Habitat.—Ohio, Pa. and Mass.

Tortrix Pettitana, n. s. (Plate iv, figs. 22—23 ♀, 21 ♂.)

Palpi pale yellow above, ochreous or brownish ochreous beneath. Head and thorax above pale lemon-yellow, sometimes of a deeper shade.

Anterior wings very pale yellow or lemon-yellow, shining. Costa in the male with two aggregations of brownish ochreous scales at basal and apical third.

Posterior wings and fringes pure shining white.

Under surface of both pairs, and abdomen, above and beneath, pure white.

Expanse, ♀ 23—28 mil.; ♂ 22 mil.

Habitat, Canada West, (Johnson Pettit); Ohio, Illinois.

This is a very variable species. Two specimens from Illinois, which I saw in Dr. Herrich-Schaffer's collection at Ratisbon, Nov. 1867, differed somewhat from the specimens here figured and described, and were the subject of the following note made on the spot: Head, thorax and palpi above, clear lemon-yellow, the latter brownish-ochreous laterally and beneath. Upper surface of primaries in both sexes lemon-yellow; the costa covered with brownish-ochreous scales to one third from base. Hind wings above and under surface of both pairs brilliant white.

Expanse, ♂ 23 mil., ♀ 29 mil.

The specimens figured were received from Mr. Johnson Pettit of Grimsby, C. W., with other interesting material, and I take pleasure in dedicating the species to him.

Tortrix breviornatana. (Plate iv, fig. 24 ♀, 25 ♂.)

Leptoris breviornatana, Clemens, Proc. Ent. Soc. Phil., v, p. 140, 1865.

Head and thorax brown. Palpi three times the length of the head, proboscidiform, dark brown.

Anterior wings tawny-yellow or brown, with all the veins distinct, brown. An oblique pale brown or darker shade extends from the costa at basal third to beyond the middle. This shade is least prominent on the disc, where it is sometimes obsolete. A patch of a similar shade on costa before the apex. There is a brown shade along external margin; fringes of the general color.

Posterior wings pale testaceous with brown irrorations centrally and apically.

Under surface of both pairs pale testaceous centrally, pale ochreous with darker irrorations beyond.

Expanse, ♂ 20 mil., ♀ 21—3 mil.

Habitat.—Mass. (Sanborn), Canada West (Pettit), Putnam Co., N. Y.

In the produced apices, general form and coloration this species closely resembles the European *Teras contaminana* (Dictyopteryx contamiana, Stephens); however the fringes of *contaminana* are invariably pale or white below the apices, and veins 7 and 8 arise separate from each other and end in the costa, whilst in the present species they arise on a common stalk, vein 7 ending in the external margin and vein 8 in the costa, thus enclosing the apex, as in several other species in this genus

Tortrix caryae, n. s. (Plate iv, fig. 26.)

Palpi long, extending beyond the head, brownish-ochreous. Head and thorax brownish-ochreous.

Anterior wings pale ochreous, uniformly and distinctly reticulated with reddish-brown, with a prominent aggregation of scales of a similar color forming an irregular spot on the discal cross vein containing a few blackish scales centrally.

Posterior wings and fringes above and beneath pale testaceous.

Expanse, ♂ 20 mil.; ♀ 22 mil.

Habitat.—Illinois (J. C. Allen), Pennsylvania. (T. Bunte).

The distinct spot at the end of the disc readily distinguishes this species from all others of the genus.

Tortrix furcatana. (Plate iv, fig. 27 ♀.)

Dichelia furcatana, Walker, Brit. Mus. List, part xxviii, p. 319 1863.

Thorax, head and palpi yellow, the apical joint of the latter tinged with purple.

Anterior wings bright yellow with numerous purple reticulations. A line of bright purple scales beginning on the costa before the middle extends across the disc, and throwing out an oblique finer line to internal margin at basal third, runs obliquely outwardly to internal angle where it is extended into a spot. A similar line from costa at apical third curves slightly outwardly to one third below and thence boldly outwardly along external margin joining the spot at internal angle. Fringes pale yellow.

Abdomen, posterior wings and fringes above and beneath pearly-white. Under surface of anterior wings white.

Expanse, ♂ 13—17 mil.; ♀ 29—22 mil.

Habitat.—Pennsylvania (T. Bunte).

Tortrix rileyana. Grote. (Plate iv, fig. 28 ♀.)

Tortrix rileyana, Grote, Trans. Am. Ent. Soc. II, p. 121, 1868.

Tortrix melaleucana. (Plate iv, fig. 29.)

Lophoderus melaleucanus, Walker, Brit. Mus. List, Part 28, p. 335, 1863.

Ptycholoma ? semifuscana, Clemens, Proc. Ent. Soc. Phil., III. p. 519, 1864.

Palpi dull ochreous, hardly exceeding the head. Head brownish-ochreous above, paler in front. Thorax and patagia dark brown.

Anterior wings pale testaceous clouded with ochreous except below costa. A broad dark brown shade containing central aggregations of shining blackish scales, covers the internal region of the wing from base to before internal angle. A sub-apical costal spot dark brown, with central shining blackish scales. Costal fold in the ♂ extending two-thirds the length of the wing, dark brown at base.

Posterior wings pale fuscous internally, beyond whitish.

Under surface of both pairs and fringes white, the markings of the upper surface reflected on the anterior pair.

Expanse, ♂ 19—21 mil.; ♀ 23—25 mil.

Habitat.—Virginia, Pennsylvania, Maine.

Tortrix puritana. (Plate v, fig. 30.)

Croesia ? unifasciana, Clemens, Proc. Ent. Soc. Phil., III, p. 516, 1864.

Palpi long, proboscidiform, deep yellow above and beneath, laterally deep red. Head, thorax and patagia deep yellow above, the latter red in front. Anterior wings deep yellow, with a very oblique central fascia, a costal spot beyond the middle, and a similar spot beneath, near the middle of external margin, deep red much filled in with shining purple scales. Costa deep red from base to central fascia. Fringes yellow.

Posterior wings and fringes pale fuscous tinged with yellow apically.

Under surface of both pairs yellow; the anterior pair clouded with fuscous.

Expanse, ♂ 18 mil.; ♀ 20 mil.

Habitat.—Mass., Illinois.

The name *unifasciana* under which this species was described by Mr. Clemens having been already used for a European species by Duponchel, I have felt obliged to change it as above.

Tortrix violaceana, n. s. (Plate v, fig. 31.)

Palpi deep red, proboscidiform, greatly exceeding the head. Head and thorax red.

Anterior wings shining yellow at the base, beyond to just before the apices deep purplish or violaceous. Apices and fringes ferruginous.

Posterior wings fuscous; fringes paler. Under surface of posterior wings white, of anterior pair dark fuscous, tinged with ferruginous along costa and external margin.

Expanse. 21—24 mil.

Habitat.—N. Y., Mass. (Sanborn).

This species resembles in general appearance the European *T. ministrana*, Linn. (T. ferrugana, Hüb. fig. 56) but is readily distinguished by its narrower anterior wings, more oblique external margin and very long palpi, which in *ministrana* but slightly exceed the head.

Tortrix algidana, Moeschler. (Plate v, fig. 32.)

Tortrix algidana, Moeschler, Wiener Ent. Monatschrift, vi, p. 138, 1862.

Tortrix gelidana, Moeschler, Wien. Ent. Monatsch. vi, pl. 1, figs. 9—10, 1862.

Palpi brown, slightly exceeding the head, third joint depending. Head and thorax brown.

Anterior wings olivaceous yellowish or brown, with a reddish-brown patch on internal margin at base, a very oblique central fascia and a costal spot of a similar color.

Posterior wings fuscous.

Under surface of both pairs fuscous, the anterior pair touched with yellow on costa. Fringes pale fuscous.

Expanse. ♂ 19—21 mil.

Habitat.—Labrador (Moeschler), Mt. Washington (Sanborn).

This species is known generally in the Eastern States under the name of *gelidana*, but it will be seen from the citations given above that it was described as *algidana* and the name on the plate is undoubtedly an error.

Tortrix reticulatana. (Plate v, fig. 33, ♀ 34, ♂.)

Croesia? reticulatana, Clemens, Proc. Acad. N. S. Phil., p. 353, 1860.

Teras subauratana, Walker, Brit. Mus. List, Part 28, p. 28, 1863.

Palpi red, very long, proboscidiform. Head and thorax yellow above.

Anterior wings yellow finely reticulated with orange. Costa at base tinged with purple. Central fascia purple, commencing in a spot on costa before the middle and ending in the apex of a large triangular spot of the same hue on internal margin. The large purple costal spot throws out a line which is forked just below it, one branch running obliquely inwardly to the triangular spot on internal margin, the other outwardly to before internal angle.

Posterior wings and fringes very pale yellow.

Under surface of both pairs pale straw color, the anterior pair slightly reflecting the hue and markings of the upper surface.

Expanse, ♂ 17—19 mil.; ♀ 20—22 mil.

Habitat.—Putnam Co. N. Y., West Va. (Ridings), Pa.

This species varies greatly, the reticulations being sometimes obsolete and the ordinary markings partially so. I consider the specimens figured and numbered 35 and 36 to be varieties of this species.

Tortrix sulfureana. (Plate v, figs. 37—40.)

Croesia? sulfureana, Clemens, Proc. Ac. N. S. Phil., p. 353, 1860.
Croesia? fulvoroseana, Clemens, Proc. Ent. Soc. Phil., III, p. 516, 1864.
Croesia? virginiana, Clemens, Proc. Ent. Soc. Phil., III, p. 517, 1864.
Croesia? gallivorana, Clemens, Proc. Ent. Soc. Phil., III, p. 517, 1864.
Conchylis gratana, Walker, Brit. Mus. List, part 28, p. 359, 1863.

Palpi long, exceeding the head, yellow above, deep red laterally and beneath. Head and thorax yellow above tinged with red or purple at the sides. Patagia red in front, yellow beyond.

Anterior wings golden-yellow finely reticulated with red or purplish. Sometimes the reticulations are wanting (fig. 40). Costa tinged with purple at base. A purple spot on the middle of internal margin throws out two diverging lines, one of which attains the costa at basal third the other ending just below a similarly colored subapical costal spot. A broad purple stripe along external margin. Fringes yellow.

Posterior wings above and beneath varying from pale yellowish fuscous to dark fuscous or blackish.

Under surface of anterior wings clouded centrally with fuscous; the margins paler, sometimes yellow.

Expanse, ♂ 14—17 mil. ♀ 17—19 mil.

Habitat.—Mass., N. Y., Pa., West Va., Ohio, Illinois, Florida, Texas.

Dr. Clemens, (Proc. Ent. Soc., p. 518, 1867,) after describing some of the forms which I have united above, says: "I have described these various forms as distinct for the reason that the eye detects differences in them, without however believing that they are all specifically distinct."

An examination of Dr. Clemens' original types and of nearly one hundred specimens from the localities cited above, would seem to prove that this is a very variable species and that the intermediate forms are so graduated that it is not possible to limit the varieties.

Tortrix albicomana. (Plate v, figs. 41—42.)

Xanthosetia albicomana, Clemens, Proc. Ent. Soc. Phil., v, p. 137, 1865.

Palpi, head and thorax pale yellow.

Anterior wings bright lemon-yellow, all the central portions clouded with purple, the ground color being only exposed at base below costa,

and along external margin. A small patch of lustrous scales on costa at base. A broad oblique line of lustrous scales commencing at basal third ends at the middle of internal margin, and a similar parallel line commencing at middle of costa ends at internal angle. A few lustrous scales, along external margin and parallel with it. Fringes pale yellow.

Posterior wings whitish or pale fuscous above and beneath.

Under surface of anterior wings clouded with fuscous centrally, yellowish beyond.

Expanse, 15—17 mil.

Habitat.—Mass., N. Y., Pa., West. Va., Ohio., Texas.

Allied to *Tortrix bergmanniana*, Linn. of Europe, with which it agrees perfectly in structure.

Tortrix confusana, n. s. (Plate v, fig. 43.)

Palpi very long, pale yellow, slightly tinged with ochreous externally. Head, thorax and patagia pale yellow.

Anterior wings pale lemon-yellow. The costa is tinged with bright ochreous at base, and a very broad shade of the same hue extends along the central and lower portions of the wing to beyond the middle.

Posterior wings shining pale testaceous, almost white, slightly tinged with fuscous internally.

Abdomen above and beneath pale yellow.

Under surface of both pairs of wings pale testaceous; the anterior pair much clouded with fuscous except along costa and external margin.

Expanse, 20 mil.

Habitat.—Pennsylvania. (Bunte).

Tortrix irrorea, n. s. (Plate v, fig. 44.)

Palpi very long, blackish-brown. Head and thorax yellow above, tinged laterally with dark brown.

Anterior wings yellow, speckled with dark brown irrorations, which are most numerous and prominent on and beyond the middle. Costa dark brown at base, with an aggregation of irrorations at apical third forming an improminent spot. A distinct large dark brown dot below the costa at basal third, and a patch of the same hue extending from beneath the cell obliquely outwardly to the internal margin indicate the central fascia. The costal spot and patch on internal margin are followed by a few paler, brighter brown scales. Fringes yellow.

Posterior wings whitish testaceous with numerous fuscous irrorations.

Under surface of both pairs pale testaceous closely covered with pale fuscous irrorations.

Abdomen pale testaceous above and beneath.

Expanse, 20 mil.

Habitat.—Brewsters, Putnam Co. N. Y.

Tortrix paludana, n. s. (Plate vi, fig. 45 ♂.)

Palpi reddish-brown, short, the third joint extending beyond the head. Head and thorax reddish-brown above.

Anterior wings reddish-brown, much clouded with fuscous beyond the middle. A dark brown patch on the middle of costa and a smaller one on the disk below it indicate the central fascia. A large dark brown sub-apical patch is continued as a broad fuscous shade to internal angle. Fringes pale.

Posterior wings very dark fuscous above; pale testaceous beneath tinged with fuscous internally. Fringes pale testaceous. Abdomen fuscous above, pale testaceous beneath.

Under surface of anterior wings entirely clouded with fuscous, giving in some lights a purple reflection.

Expanse, ♂ 20 mil., ♀ 23 mil.

Habitat.—Pennsylvania. (Bunte), Putnam Co. N. Y.

Tortrix humerosana. (Plate vi. fig. 46 ♂.)

Amorbia humerosana, Clemens, Proc. Acad. N. S. Phila., p. 352. 1860.

Palpi long, gray above, brownish fuscous laterally, whitish internally. Head and thorax gray. Abdomen above and beneath whitish testaceous.

Anterior wings pale gray with numerous small tufts of blackish scales. A large triangular dark gray shade commences narrowly on costa at basal third, becomes gradually broader towards the middle and narrows again to the apex. A narrow ferruginous shade at base extends along internal margin to beyond the middle and there spreads diffusedly upwardly mingling with the inverted apex of the triangular dark gray shade. Fringes pale gray.

Posterior wings above fuscous sometimes with a slight ferruginous tinge; beneath pale testaceous with fuscous irrorations apically.

Under surface of anterior pair clouded centrally with fuscous, pale ferruginous reticulate with fuscous beyond.

Expanse, ♂ 26—28 mil.; ♀ 30 mil.

Habitat.—N. Y., Mass., Canada West, (Pettit), Pa.

Tortrix cerasivorana. (Plate vi, fig. 47 ♂.)

Lozotaenia cerasivorana, Fitch, Nox. Ins. N. Y., p. 64, pl. 2, fig. 3, 1859.

Head, palpi and antennae pale ochreous. Thorax bright ferruginous.

Anterior wings bright ferruginous with numerous irregular, broken transverse streaks of a dull leaden hue. A dark ferruginous spot on

costa at basal third and an irregular patch of the same hue on the disc indicate the central fascia. There is a subapical costal spot of the same hue.

Posterior wings and abdomen above and beneath, and under surface of anterior wings bright ochreous.

Expanse. ♂ 17—20 mil.

Habitat.—N. Y. (Fitch); Mass. (Sanborn).

I give on plate vi, fig. 48 a representation of the male of *Tortrix alisellana*, described on a previous page of this paper from a female specimen which is represented on plate i, fig. 15. Both specimens are from Ohio.

Tortrix minuta. n. s. (Plate vi, fig. 49.)

Palpi bright ferruginous above and laterally, whitish beneath. Head and thorax ferruginous.

Anterior wings bright ferruginous, very thickly covered with shining leaden-hued streaks and markings which give the surface a shining appearance.

Posterior wings, fringes and abdomen above, as well as the entire under surface, pale testaceous.

Expanse, 15 mil.

Habitat.—Texas, (Belfrage).

Tortrix cana, n. s. (Plate vi, fig. 50.)

Palpi long, slightly depending, gray. Thorax gray; patagia dark fuscous.

Anterior wings gray, with a short line of blackish scales extending from the costa near the base to the fold. A well marked central dark fuscous fascia interrupted on the disc, limited very distinctly internally by black scales. The sub-apical costal spot consists of a dark fuscous patch with a few black scales on its inner margin.

Posterior wings and under surface of both pairs fuscous.

Expanse, 20 mil.

Habitat.—Pennsylvania, (Theo. Bunte.)

Tortrix discopunctana. (Plate vi, fig 51.)

Coelostathma discopunctana, Clemens, Proc. Acad. N. S .Phil., p. 355, 1860.

Palpi and head pure white above, testaceous beneath. Thorax pale fawn color.

Anterior wings pale fawn color, with a broad central fascia of a darker shade, following which is a very distinct black dot on the disc. The apical spot is dark fawn color, and is continued along the external margin to internal angle.

Posterior wings and fringes, above and beneath, pale testaceous. Undersurface of anterior pair pale fawn color partially clouded with fuscous.

Expanse, 14—16 mil.

Habitat.—Mass., N. Y., Pa.

Tortrix peritana. (Plate vi, fig. 52.)

Smicrotes peritana, Clemens, Proc. Acad. N. S. Phil., p. 356, 1860.

Palpi, head and thorax pale brownish-ochreous.

Anterior wings pale brownish-ochreous, with a narrow central fascia and rounded costal spot, brown. A fine brown line runs from the costal spot to external angle.

Posterior wings and fringes, above and beneath, pale testaceous. Undersurface of anterior wings fuscous; fringes brownish-ochreous.

Expanse, 10—14 mil.

Habitat.—N. Y., Pa.

Tortrix flaccidana, n. s. (Plate vi, fig. 53.)

Palpi, head and thorax pale ochreous.

Anterior wings shining pale yellow, almost entirely covered with pale olivaceous scales, so that the yellow ground color is only evident just below costa at base, in two small costal spots at and beyond the middle, and in a similar elongate spot on the disc below the two last mentioned. There are three brown dots on the costa near the apex, which is also tinged with brown.

Posterior wings fuscous above, tinged apically with ferruginous; beneath tinged with fuscous internally, pale testaceous beyond. Fringes whitish.

Undersurface of anterior wings fuscous except the costa, which is pale testaceous.

Expanse, ♂ 20 mil.

Habitat.—Texas, (Belfrage)

Tortrix sentana. (Plate vi, fig. 54 ♀.)

Platynota sentana, Clemens, Proc. Acad. N. S. Phil., p. 348, 1860.

Head, thorax and palpi dark gray, the latter exceeding the head twice its breadth.

Anterior wings dark gray, with a brownish tinge on and below costa at base and on internal margin beyond the middle. Basal patch indicated by a few tufts of raised dark brown scales on and below costa. Central fascia distinct, dark brown, narrowest on costa, and limited by two lines of elevated blackish-brown scales. Beyond the central fascia three lines of elevated blackish-brown scales commence on the costa.

The first runs obliquely outwardly and only attains the middle of the wing. The other two lines run nearly parallel to the external margin and end respectively before and in the internal angle,

Posterior wings dark fuscous above; fringes blackish. Undersurface of both pairs dark fuscous with numerous blackish streaks and irrorations.

Expanse, ♂ 16, ♀ 20 mil.

Habitat.—Mass., N. Y., Pa.

Tortrix flavedana. (Plate vi, fig. 55 ♂.)

Platynota flavedana, Clemens, Proc. Acad. N. S. Phil., p. 348, 1860.

Head, thorax and palpi reddish or blackish-brown.

Anterior wings reddish-brown at base, ochreous along external margin; the intermediate portions of the wing blackish with a few tufts of elevated scales.

Posterior wings internally pale olivaceous, ferruginous beyond.

Undersurface of both pairs rusty ferruginous.

Expanse, 13—16 mil.

Habitat.—Mass., Putnam Co. N. Y., Pa.

Tortrix laterana, n. s. (Plate vi, fig. 56 ♀.)

Palpi exceeding the head twice its breadth, dark brown. Head and thorax deep ferruginous.

Anterior wings ferruginous to the central fascia, tinged with ochreous beyond. Basal patch concolorous, indicated by a broken line of raised scales. Central fascia distinctly limited by two lines of elevated blackish scales filled in with blackish above and very deep ferruginous below the middle. Costal spot limited internally by a line of blackish scales which is continued to the middle of the wing; a line of dark elevated scales along external margin. Fringes ferruginous.

Posterior wings and abdomen above, and undersurface of both pairs deep ferruginous. Fringes dark fuscous.

Expanse, 17—18 mil.

Habitat.—Pennsylvania (Bunte).

Tortrix incertana, Clemens. (Plate vi, fig. 57 ♂, 58 ♀.)

Tortrix incertana, Clemens, Proc. Ent. Soc. Phil., v, p. 138, 1865.

Palpi ochreous or brownish-ochreous except the minute third joint which is blackish. Head and thorax ochreous or brownish-ochreous.

Anterior wings pure pale reddish-brown within the central fascia, except on internal margin, which is broadly covered at base with blackish brown scales forming a rather prominent irregular spot followed by an aggregation of intermixed pale ochreous and blackish scales to the fas-

cia. Central fascia broad, distinctly dark brown, sometimes reddish-brown. The sub-apical costal spot is dark brown and separated from the central fascia by a reddish-brown shade. The remaining outer portion of the wing pale ochreous except a testaceous-brown spot above the anal angle. Fringes dark ochreous.

Posterior wings fuscous above, testaceous beneath. Fringes pale testaceous. Under surface of anterior wings pale testaceous, much clouded centrally with dark fuscous.

Expanse, ♂ 15, ♀ 19 mil.

Habitat.—Mass., N. Y., Pa., Ohio.

Tortrix lutosana. (Plate vi, fig. 59 ♂.)

Tortrix lutosana, Clemens, Proc. Ent. Soc. Phil., v, p. 138, 1865.

Palpi slightly exceeding the head, brownish-ochreous laterally, pale ochreous internally. Head and thorax brownish-ochreous.

Anterior wings pale ochreous, darker on costa at base. Basal patch large, dark brown, not quite attaining the costa. Central fascia dark brown to the middle of the wing, reddish-brown beyond, throwing out a hooklet inwardly below the cell, which curving upwardly nearly encloses a pale ochreous spot. Sub-apical costal spot dark brown, semilunate, connected by a paler streak with internal angle. There are a few dark ochreous irrorations in the paler portion of the wing. Fringes dark ochreous.

Posterior wings above fuscous with pale testaceous fringes; beneath pale testaceous, with numerous apical brown irrorations.

Under surface of anterior wings dark fuscous, with a small yellow spot on the middle of costa, and a similar spot at apex.

Expanse, ♂ 17 mil.

Habitat.—Mass., N. Y., Pa.

I have now described and figured all the North American species known to me of the genus *Tortrix* as limited by the late authors of continental Europe. No attempt has been made in this paper toward a systematic arrangement, as some of the species figured are represented by single specimens which would be rendered unfit for the engraver by any examination of the details of their structure. I hope that the descriptions with the aid of the plates will render the preservation of such specimens unnecessary.

TERAS Treitschke.

This very variable genus does not appear to be well represented on this continent. Of the few specimens in collections to which I have had access a large proportion resemble closely varieties of European

species, and some may prove not to be indigenous to this country. In all cases where I have not found them absolutely indentical with European specimens or figures new names are given, as I consider it preferable to increase the synonomy rather than leave the varieties undescribed or wrongly referred.

Teras flavivittana. (Plate vii, figs. 60—61.)
Peronea flavivittana Clemens, Proc. Ent. Soc. Phil., III, p. 516, 1864.

Head, thorax and palpi testaceous or pale ochreous, the latter fuscous externally.

Anterior wings dark brown with pale markings, with two tufts of elevated scales, the first, black or blackish-brown, just below the middle of the wing at basal third, the second, on the disc, pale brown or brownish-ochreous. Fig. 60 is broadly streaked along the internal margin with pale ochreous and apically there are some slight streaks of the same hue. Fig. 61 is of a uniform darker brown broadly marked with pale brown below the discal tuft to external margin.

Posterior wings above and under surface of both pairs pale shining fuscous.

Expanse, 18—19 mil.

Habitat.—N. Y., Mass. (Jas. Ridings).

Teras perspicuana, n. s. (Plate vii, fig. 62.)

Palpi and head pale gray, thorax white.

Anterior wings gray with a large black basal patch extending from costa to the middle of the wing, and a broad pale yellow stripe along internal margin from base to internal angle.

Posterior wings above, and undersurface of both pairs shining pale fuscous.

Expanse, 17 mil.

Habitat.—Pennsylvania.

This species has a superficial resemblance to the var. *scabrana* Hb. of *T. hastiana* Linn., but is a smaller species and the attenuate third joint of the palpi is not enclosed by the long scales of the second as in the European species.

Teara hastiana, Linn. (Plate vii, fig. 63.)
Var. *divisana* Hübner.

Palpi, head and thorax dark brown. Anterior wings chocolate brown, with a broad white stripe running from the base just below and parallel to the costa and ending attenuately at the apex. The general hue is [illegible] just beneath the stripe. Hind wings above and beneath pale [illegible] fore wings dark fuscous beneath.

Expanse, 21 mil.

Habitat.—Europe, Pa., Mass. (Sanborn).

Teras maculidorsana. (Plate vii, fig. 64.)

Cnephasia ? maculidorsana Clemens, Proc. Ent. Soc. Phil., III, p. 516, 1864.

Palpi, head and thorax dark gray. Anterior wings ashen gray. A large dark gray patch on internal margin near the base is prominently dark brown. A reddish-brown central fascia, limited internally by a line of dark dots, runs obliquely from the costa at basal third to internal margin. Beyond the fascia the wing is broadly clouded with dark gray on and below the costa. A central reddish-brown shade in the terminal portion of the wing is followed by a subterminal line of dark dots. Fringes gray. Posterior wings shining fuscous. Fringes pale, whitish.

Expanse, 20 mil.

Habitat.—Pa., (Bunte), Maine, (A. S. Packard Jr.).

This and the following may be varieties of the European *T. hastiana* Linn. (*scabrana* Hb.).

Teras inana, n. s. (Plate vii, fig. 65.)

Palpi, head and thorax pale grayish-brown. Basal third of anterior wings pale grayish-brown enclosing a patch of raised dark brown scales near internal margin. Beyond the wing is pale brown, at the edge of which shade on the disc is a raised patch of scales of the same hue. Posterior wings above, and under surface of both pairs shining fuscous.

Expanse, 19 mil.

Habitat.—Mass., N. Y.

Teras viburnana. (Plate vii, fig. 66.)

Peronea viburnana, Clemens, Proc. Ac. N. S. Phil., p. 347, 1860.

Palpi brownish-gray. Head dark brownish. Thorax and patagia dark brown in front, brownish-ochreous beyond. Anterior wings grayish tinged with ochreous. Costa dark reddish-brown at base. A large reddish-brown patch commencing before the middle is straightly and obliquely limited internally where it is broadest, extending below the disc; becoming gradually narrow it ends in the apex. The paler portions contain numerous small tufts of blackish scales and there is a terminal line of the same hue. Hind wings and under-surface shining fuscous.

Expanse, 20 mil.

Habitat.—Pennsylvania(T. Bunte).

Teras nigrolinea, n. s. (Plate vii, fig. 67.)

Palpi, head and thorax pale ashen gray. Forewings gray with a long-

itudinal black line extending from the base through the middle to just before external margin at one third below the apex. A raised tuft of black scales on the black line at basal third and a similar one at outer third. A small black tuft on the disk above the line and a similar one beneath near external margin. The general surface of the wing covered with tufts of gray scales.

Posterior wings shining fuscous, paler beneath.

Expanse, ♂ 24, ♀ 26 mil.

Habitat.—Canada West, (J. Pettit).

In two of the specimens received from Mr. Johnson Pettit of Grimsby, C. W., the black tufts are obsolete and the line nearly so except on the center of the disc.

Teras placidana, n. s. (Plate vii, fig. 68.)

Palpi, head and thorax very pale ashen-gray. Anterior wings pale ashen-gray, with two minute raised tufts of black scales at basal third, respectively just above and below the middle of the wing. Beyond, an oblique line of raised gray scales arises on costa before the middle and ends on internal margin just beyond the middle. This line contains a few black scales, an aggregation of which on the disc forms a distinct dot. The outer portion of the wing contains a few black irrorations which are most prominent along the costa and near the external margin. Fringes concolorous. Posterior wings pale shining fuscous with very pale fringes.

Under surface of anterior pair dark fuscous, of posterior pair whitish.

Expanse, ♀ 19 mil.

Habitat.—Pennsylvania, (Theo. Bunte).

Teras trisignana, n. s. (Plate vii, fig. 69 ♀.)

Palpi, head and thorax white. Anterior wings white, slightly roughened transversely with dots and lines of elevated scales. The costa is dotted with aggregations of blackish scales, two of which, larger than the rest, just before and beyond the middle, with a larger irregular spot beneath them on the disc, enclose a triangular space. Fringes white.

Posterior wings above and beneath glossy fuscous. Under-surface of anterior wings fuscous with whitish margins. Abdomen white above and beneath.

Expanse, ♀ 18 mil.

Habitat.—Western Virginia, (Jas Ridings).

Teras semiannula, n. s. (Plate vii, fig. 70 ♀.)

Palpi, head and thorax gray, the latter tinged with brown. Anterior wings with numerous scattered reddish-brown scales. A large ir-

regular semicircle of dark brown scales encloses a costal space of the general hue. Fringes pale reddish-brown.

Posterior wings dark fuscous above, beneath paler. Fore-wings dark fuscous beneath. Abdomen dark fuscous above, beneath whitish.

Expanse, ♀ 16 mil.

Habitat.—Pennsylvania.

Teras deflectana, n. s. (Plate vii, fig. 71 ♀.)

Palpi, head and thorax pure white. Anterior wings white, slightly tinged with ochreous on and beyond the middle. The costa contains two brown dots near the base; beyond it is bent inwardly to apical third and this portion is broadly bordered with dark brown, except in the center where it is paler. Fringes ochreous.

Posterior wings fuscous. Fringes pale.

Expanse, ♀ 17 mil.

Habitat.—Pennsylvania, (T. Bunte).

Teras gallicolana. (Plate vii, fig. 72 ♀.)

Peronea gallicolana Clemens, Proc. Ent. Soc. Phil., III, p. 516, 1864.

Head, thorax and palpi dark brown or blackish, the latter paler beneath. Anterior wings greyish with an ochreous tinge most prominent apically. A black dot on the fold near the base, and a broad, irregularly margined, blackish patch on the middle third of the costa, attaining the middle of the disc below. Posterior wings dark fuscous. Fringes pale.

Expanse, 17 mil.

Habitat.—Mass., Illinois.

Teras brewsteriana n. s. (Plate vii, fig. 73 ♀.)

Palpi, head and thorax dark gray or blackish. Anterior wings dark gray with a tuft of raised scales of a similar color on the center of the disc. This tuft is distinctly margined outwardly with reddish-brown scales. Fringes gray.

Posterior wings and fringes glossy white, hyaline.

Expanse, 23 mil.

Habitat.—Putnam Co., N. Y.

Teras celiana n. s. (Plate vii, fig. 74.)

Palpi, head and thorax dark, blackish-brown; patagia tinged with reddish-brown. Anterior wings rich dark chocolate-brown slightly mottled with dark gray. There is a tuft of pale ochreous scales on the center of the disk, and beyond, in the apical portion of the wing a few scattered similarly colored raised scales. Fringes gray.

Posterior wings and fringes very pale fuscous.

Expanse, 25 mil.

Habitat.—New York, Massachusetts, (Sanborn).

CONCHYLIS Treitschke.

Conchylis agassizii, n. s. (Plate viii, fig. 75.)

Head and palpi white, the latter slightly tinged laterally with brown, Thorax brownish-olivaceous; patagia pure white.

Anterior wings dark olivaceous-brown with lustreless silvery white markings. Beyond a narrow white costal spot a larger patch of white scales rests on the middle of costa and runs thence very obliquely outwardly half way to external margin, where it is separated from a similar spot which runs obliquely to costa just before the apex of the wing. These spots enclose a circular white dot on costa. An irregular white stripe commencing at the base runs irregularly through the central portion of the wing to just before external margin; it is narrow at its origin, constricted at basal third and again beyond the middle, where it curves down towards internal margin. On external margin above the end of the stripe a white spot with a few dark central scales, and a small white spot or dot on internal angle. The internal margin is narrowly white to end including a white patch before the middle. Under a lens the markings are found to be margined narrowly by blackish scales. Fringes white except a narrow fuscous tinge just below the middle.

Posterior wings fuscous. Fringes white.

Expanse, ♂ 23 mil.

Habitat.—Waco Co., Texas "May 17th." (G. W. Belfrage).

Conchylis quinquemaculana, n. s. (Plate viii, fig. 76.)

Palpi, head and thorax pale brownish-ochreous; patagia tinged with silvery.

Anterior wings dark brownish-ochreous with five shining silvery-white maculations. The first spot, at the base, is small and does not attain either margin; the second commencing narrowly on costa before the middle, is broadest centrally and narrowest on internal margin running entirely across the wing. The third spot large, rounded, rests on costa beyond the middle, narrowly separated from the fourth which is smaller and placed just within internal angle. The fifth spot is small nearly round, and is placed on the costa just before the apex. All these spots are narrowly margined with dark brown scales, and the veins of the wing are similarly marked beyond the third and fourth spots. Fringes pale fuscous, the ends of the scales blackish.

Posterior wings very pale shining fuscous.

Expanse, 20 mil.

Habitat—Pennsylvania (Theo. Bunte).

Conchylis ridingsana, n. s. (Plate viii, fig. 77 ♂.)

Palpi, head and thorax pale ochreous; patagia touched with silvery.

Anterior wings pale ochreous with shining silvery-white markings. A narrow silvery stripe runs from the base along internal margin to internal angle. A broader silvery stripe commencing at base runs through the center of the disc to the outer third of the wing, beyond, a slightly irregular spot runs longitudinally nearly to external margin. The center of the costa is marked with silvery scales which continue as a spot obliquely outwardly to above the center of the irregular spot mentioned above. A small rounded silvery dot on the costa is followed by a large sub-apical costal spot enclosing a pale ochreous dot. A marginal silvery stripe runs from the apex to the middle of the outer margin. All the silvery markings are narrowly margined with dark brown scales. Fringes pale fuscous with a fine line of black scales internally.

Posterior wings very pale shining fuscous. Fringes white.

Expanse, 23 mil.

Habitat.—Colorado Territory (James Ridings).

Conchylis bimaculana, (Plate viii, fig. 78.)

Head, thorax and palpi pale testaceous, the latter touched with fuscous externally.

Anterior wings pale fawn color, with a large brownish-olivaceous kidney-shaped spot on the disc, and a large blackish-brown, semicircular spot in the outer third of the wing. Costa at base tinged with brownish olivaceous and numerous minute brown dots along internal margin. Fringes pale.

Posterior wings dark fuscous above, paler beneath

Expanse, 15 mil.

Habitat.—Texas (Belfrage).

Conchylis dorsimaculana. (Plate viii, fig. 79.)

Lozopera ? angustana, Clemens, Proc. Ac. N. S. Phil., p. 354, 1860.

Palpi, head and thorax white. Anterior wings pale greenish-yellow, sometimes white. The costa streaked with greenish-brown, this shade being most prominent on and near the base, on the middle and just before the apex. A greenish brown fascia runs obliquely outwardly from internal margin near the base half across the wing; beyond, on the middle of internal margin a darker greenish-brown patch margined by dark brown scales. A dark brown dot near the middle of external

margin. Fringes whitish.

Posterior wings above and beneath very pale fuscous. Under surface of anterior pair darker fuscous.

Expanse, 14—15 mil.

Habitat.—Pennsylvania.

The name given this species by Dr. Clemens had already been used in this genus by European authors.

Conchylis promptana, n. s. (Plate viii, fig. 80.

Palpi white above and inwardly, laterally fuscous. Head slightly tinged with pale yellow; thorax entirely yellow.

Anterior wings very pale straw color with bright greenish-yellow markings. An abbreviated oblique fascia from internal margin at base extends outwardly to above the middle; beyond on internal margin a triangular patch with minute marginal dark dots. An oblique fascia from the middle of costa runs outwardly nearly across the wing beyond the triangular dorsal patch enclosing a minute discal dark dot. A small rounded patch near costa before the apex, and a subterminal band. Fringes concolorous.

Posterior wings and fringes above and beneath shining white. Under surface of anterior pair dark fuscous; fringes pale.

Expanse, ♂ 13 mil., ♀ 20 mil.

Habitat.—Pennsylvania (Theo. Bunte), Texas (G. W. Belfrage).

This is a brighter colored species than the preceeding, and agrees better in the character of markings and coloration with the European *C. smeathmanniana* except that the hind wings of the latter are always dark fuscous.

Conchylis angulatana, n. s. (Plate viii, fig. 81.)

Palpi, head and thorax pale yellow or whitish. Anterior wings yellowish with dark brown markings. An angulated brown fascia crosses the wing at basal third running obliquely outwardly nearly to the middle, thence inwardly to internal margin near the base. A broad abbreviated fascia runs from the middle of costa, gradually narrowing, to before internal angle; beneath it on internal margin a dark brown patch. A sub-apical costal spot and terminal shade dark brown tinged with olivaceous yellow.

Posterior wings and fringes above and beneath fuscous. Under surface of anterior pair fuscous, the markings of the upper surface reflected by darker shades.

Expanse, 13—15 mil.

Habitat.—Pennsylvania; West Virginia (Jas. Ridings).

Conchylis argentilimitana, n. s. (Plate viii, fig. 82.)

Palpi, head and thorax white. Anterior wings white, with a basal patch, central fascia, sub-apical costal spot and subterminal band dull golden-yellow margined with lines of shining silvery scales. The central fascia is bent slightly outwardly on the disc, and there are a few minute dark dots on costa most prominent on the basal half. Fringes yellow.

Posterior wings and fringes above and beneath pale fuscous. Under surface of anterior pair darker fuscous.

Expanse, 11 mil.

Habitat.—Pennsylvania.

Conchylis labeculana, n. s. (Plate viii, fig. 83.)

Palpi, head and thorax pale ashen-gray. Anterior wings shining pale ashen-gray or whitish, minutely speckled with dark scales, especially on the outer half. There is a basal patch, central fascia, subapical costal spot and terminal band, each composed of dull golden scales intermixed with fuscous. These markings are not limited by silvery scales as in the preceeding species, but the entire surface of the wings have a glossy appearance. Fringes shining golden-yellow.

Posterior wings dark fuscous above, paler beneath. Fringes whitish. Under surface of anterior pair dark fuscous with pale fringes.

Expanse, 14 mil.

Habitat.—Pennsylvania.

Conchylis lepidana. (Plate viii, fig. 84.)

Argyrolepia? lepidana, Clemens, Proc. Ac. N. S. Phil., p. 355, 1860.

Palpi pale yellow. Head and thorax ochreous. Anterior wings pale ochreous with a broad reddish fawn-colored central fascia running parallel with external margin. Outer third of the wing reddish fawn-color, separated from the central fascia by a pale ochreous line which becomes furcate below the middle of the wing enclosing a triangular reddish fawn-colored spot on internal margin. There are slight aggregations of dark brown scales along costa and on the margins of the central fascia, and a more prominent spot in the center of the outer third of the wing. Fringes pale ochreous.

Posterior wings fuscous, fringes paler. Under surface of both pairs fuscous, the anterior pair prominently tinged with ochreous.

Expanse, 13—15 mil.

Habitat.—Pennsylvania.

Conchylis interruptofasciata, n. s. (Plate viii, fig. 85.)

Palpi pale yellowish. Head and thorax ochreous. Anterior wings

with a large basal patch ochreous tinged with olivaceous, separated by a broad pale silvery band from two similarly colored patches situated respectively on costa and internal margin which represent the usual central fascia. The pale shade between and beyond the spots contains numerous dark brown scales; beyond, a broad subterminal band which is dark ochreous with a violaceous tinge. This band is narrowly limited externally by pale shining scales which are followed by a terminal ochreous shade. Fringes pale.

Posterior wings dark fuscous; fringes pale. Under surface of both pairs fuscous.

Expanse, 12—15 mil.

Habitat.—Pennsylvania (Theo. Bunte).

Conchylis bunteana, n. s. (Plate viii, fig. 86.)

Head, thorax and palpi white, the last tinged with ochreous laterally. Anterior wings broadly testaceous at base with a slight pinkish tinge. The central fascia narrow on costa, increasing in breadth to internal margin, consists of scattered aggregations of black and brownish scales. Outer third of the wing prominently tinged with pink, with scattered aggregations of blackish scales. A fascia of dull brown runs from costa at apical third to the middle of external margin beyond a large irregular patch of dull brown scales.

Posterior wings dark fuscous, fringes paler.

Expanse, 12 mil.

Habitat.—Pennsylvania.

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Rost. Bowen & Co lit.


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Drawn by D. Wiest.

Bowen & Co lith. Philada.

Plate

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Drawn by D. Wiest.

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Drawn by D. Wiest. Bowen & Co. lith. Philada.


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Drawn by D. Wiest.

Bowen & Co lith. Philada.


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Drawn by D. Wiest.

A list of the North American species of the genus ANTHOPHORA, with descriptions of new species.

BY E. T. CRESSON.

The species known to me may be recognized by the aid of the following table:

Abdomen with white marginal fasciæ:
- Thorax and base of abdomen with ochraceous pubescence:
  - Terminal joint of middle tarsi of ♂ ciliated laterally; clypeus with two black spots at base.....**Walshii**, ♂ ♀.
  - Terminal joint of middle tarsi of ♂ simple; clypeus with only a short black line on lateral suture.....**Smithii**, ♂ ♀.
  - Terminal joint of middle tarsi of ♂ simple; hind legs swollen and basal joint of their tarsi toothed within.....**californica**, ♂.
- Thorax and base of abdomen with sooty, or mixed black and white, pubescence.....**marginata**, ♀.

Abdomen subfasciate with pale pubescence:
- Thorax and base of abdomen with dense ochraceous pubescence....**montana**, ♀.
- Thorax and abdomen with thin pale or yellowish pubescence, tip of abdomen with fulvous pubescence; basal joint of hind tarsi simple..**terminalis**, ♂ ♀.

Abdomen not fasciate:
- Thorax and first segment of abdomen with a hoary pubescence, middle tarsi long, ciliated with fulvous, and terminal joint with black pubescence; basal joint of hind tarsi simple.....**ursina**, ♂.
- Thorax and first segment of abdomen with a dense ochraceous pubescence; rest of abdomen shining, almost nude; first recurrent nervure entering second submarginal cell at tip.....**floridana**, ♀.
- Thorax and first segment of abdomen, more or less, with a pale ochraceous pubescence; rest of abdomen dull, with short black pubescence; first recurrent nervure entering second submarginal cell in middle; basal joint of hind tarsi of ♂ with a blunt tooth within.....**abrupta**, ♂ ♀.
- Thorax, and first and base of second segments of abdomen with lemon-yellow pubescence; vertex and occiput with black pubescence; basal joint of hind tarsi of ♂ toothed within.....**canadensis**, ♂.
- Thorax, and the first and second, and sometimes the third segments of abdomen with whitish pubescence; the basal joint of hind tarsi of ♂ toothed within.....**bomboides**, ♂ ♀.

Entire body covered with a short, dense, bright yellow pubescence; basal joint of hind tarsi of ♂ toothed within.....**occidentalis**, ♂ ♀.

Pubescence of body black, except apex of thorax and base of abdomen where it is bright ferruginous; basal joint of hind tarsi (♂) simple...**tricolor**, ♂.

Pubescence of the body entirely black; basal joint of the posterior tarsi (♂) simple.....**atrata**, ♂.

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1. **Anthophora Smithii**, n. sp.

♂ ♀.—Form short and very robust; black, opaque; head, thorax, legs and first abdominal segment clothed with short, dense, pale yellowish pubescence, that on the thorax beneath hoary; apical margin of

all the abdominal segments above, except the last, and in the ♂ the clypeus, the space on each side, labrum, spot on mandibles and scape in front, white; on each side of the clypeus there is a short sutural black line, and the labrum has a black dot on each side above. Wings hyaline, apical margin faintly dusky; basal joint of posterior tarsi of ♂ simple. Length 6—6½ lines.

Hab.—Colorado, (Mr. J. Ridings); Dacota Territory (Mr. Henry Ulke). (Coll. Am. Ent. Soc.) This fine species is dedicated to Frederick Smith, Esq., of the British Museum, the distinguished hymenopterist.

2. **Anthophora Walshii**, n. sp.

♂ ♀.—Differs from *Smithii* as follows:—The clypeus of the ♂ has two black spots at base, and the apical joint of the intermediate tarsi is ciliated laterally with black pubescence, giving the joint a dilated appearance; base of claws ferruginous; basal joint of posterior tarsi of ♂ simple. Length 6—6½ lines.

Hab.—Illinois, (Coll. Am. Ent. Soc.).

Although the ♂ of this species presents characters by which it can at once be distinguished from that of *Smithii*, yet the only perceptible difference between the other sex is the greater breadth of the abdomen of *Walshii*. Dedicated to Benj. D. Walsh, Esq., to whom the Society is indebted for a fine series of this elegant species.

3. **Anthophora marginata.**

Anthophora marginata, Smith, Brit. Mus. Cat. Hym. ii, p. 339.

Hab.—Orizaba, Mexico. (Coll. Am. Ent Soc. from Prof. F. Sumichrast.) Three ♀ specimens.

4. **Anthophora californica**, n. sp.

♂.—Black; head, thorax, legs and basal segment of abdomen with dense ochraceous pubescence, short on the legs; clypeus, space on each side, transverse line above, large spot on mandibles, scape in front, and narrow apical margin of abdominal segments above, whitish or yellowish; wings hyaline, faintly dusky at apex; posterior legs very robust, apex of their tibiæ with a stout, blunt spine within, and basal joint of their tarsi dilated, with a long flattened process within. Length 5 lines.

Hab.—California. (Coll. Am. Ent. Soc., from Baron R. Osten Sacken.)

5. **Anthophora montana**, n. sp.

♀.—Robust, black; sides of face, labrum, vertex, cheeks and occiput, clothed with a short, dense, pale ochraceous pubescence, slightly

mixed with black on the vertex; face and clypeus closely punctured; mandibles black, polished, fulvous before apex, beneath with a fringe of long whitish pubescence; thorax and first segment of abdomen above, clothed with a short and very dense yellowish pubescence, the pleura with less dense ochraceous pubescence; wings subhyaline, apical margin broadly dusky; legs black, outer side of tibiæ clothed with ochraceous pubescence, base of claws fulvous; apex of abdominal segments above, with a more or less distinct band of very short, pale ochraceous pile, more obvious in certain lights; tip of fifth segment with dense black pubescence; extreme sides of apical segments with whitish pubescence, also tufts of same on sides of apical ventral segments. Length 6½—7 lines.

Habitat.—Colorado, (Coll. Am. Ent. Soc., collected by Mr. James Ridings).

6. Anthophora floridana.

Anthophora floridana, Smith, Brit. Mus. Cat. Hym. ii, p. 339, ♂ ♀.

Hab.—"Florida" (Smith); Penn. Ills. (Coll. Am. Ent. Soc. ♀).

7. Anthophora abrupta.

Anthophora abrupta, Say, Bost. Jour. Nat. Hist. i, p. 409. ♂.

Anthophora sponsa, Smith, Brit. Mus. Cat. Hym. ii, p. 339. ♀.

Hab.—Mass., W. Va., Ills. (Coll. Am. Ent. Soc.). The basal segment of abdomen is sometimes entirely black.

8. Anthophora ursina, n. sp.

♂.—Robust, black; sides of face, vertex, cheeks, thorax, anterior femora beneath, and base of abdomen, clothed with a rather dense, long whitish pubescence; remainder of abdomen shining, with very short black pubescence; apex of clypeus, a triangular mark on each side, labrum, except two dots at base, and the scape in front, lemon-yellow; remainder of antennæ black; wings hyaline; middle joints of tarsi fulvous; intermediate tarsi long and slender, ciliated with long fulvous pubescence, base of first joint and the terminal joint black, the latter ciliated laterally with black pubescence, as in ♂ of *Walshii;* basal joint of posterior tarsi long and simple. Length 6¾ lines.

Hab.—West Virginia. (Ridings, Coll. Am. Ent. Soc.) A very distinct species.

9. Anthophora bomboides.

Anthophora bomboides, Kirby, Faun. Bor. Am. iv, p. 271, ♂.

Hab.—Mass., Conn., Penn., W. Va. (Coll. Am. Ent. Soc.). In the ♀, the pubescence of the head, except a slight mixture of pale hairs, and also a spot on the disk of the thorax, is black; the first and second abdominal segments always, and sometimes more or less of the third

segment, are clothed with short ochraceous pubescence; the remainder is black or brownish; the venter of ♂ has sometimes a scattered pale pubescence; and the basal joint of the posterior tarsi is dilated and toothed within. Length 6—6¼ lines.

10. **Anthophora canadensis**, n. sp.

♂.—Much like *bomboides*, but differs by the pubescence of the thorax, and first and base of second abdominal segments above, being lemon-yellow; the pubescence of the vertex, occiput and cheeks is black. Length 5¾ lines.

Hab.—Ontario, Canada, (J. Pettit, Esq., Coll. Am. Ent. Soc.).

11. **Anthophora occidentalis**, n. sp.

♀.—Black; body clothed with a short, dense, yellow pubescence, shortest on abdomen, tip of latter dusky; legs with ochraceous pubescence; wings hyaline, apex dusky. Length 7¾ lines.

♂.—Clypeus, face on each side, labrum, except two black spots at base, spot on base of mandibles, and scape in front, lemon-yellow; most of tarsi fulvo-testaceous, basal joint of posterior pair acutely toothed within; tip of abdomen scarcely dusky; otherwise like the ♀.

Hab.—Colorado, (Ridings, Coll. Am. Ent. Soc.).

12. **Anthophora terminalis**, n. sp.

♀.—Form short and robust, black, shining; face, thorax and hind tibiæ densely, and abdomen sparsely clothed with a pale ochraceous pubescence; vertex and disc of thorax with black pubescence; two apical segments of abdomen with bright fulvous pubescence; second, third and fourth segments with an apical fringe of pale ochraceous pubescence, more or less interrupted medially; apex of tarsi fulvous; head and thorax closely punctured, abdomen indistinctly so; wings subhyaline, apical margin faintly dusky. Length 5½ lines.

♂.—Less robust, with longer pubescence, which is rather hoary; clypeus, a spot on each side, and the labrum, yellow; basal joint of posterior tarsi long and simple; abdominal fasciæ entire; two apical segments with short black pubescence; terminal segment deeply emarginate, and on each side of venter a tuft of whitish pubescence. Length 5 lines.

Hab.—Canada, Mass., Conn., Del., and Colorado, (Coll. Am. Ent. Soc.). Sometimes the pubescence is quite yellow, but generally very pale ochraceous.

13. **Anthophora tricolor.**

Anthophora tricolor, St.Farg. Hym. ii, p. 86 ♂.

Hab.—"Guadaloupe," (St.F.); Hayti, (Uhler, Coll. Am. Ent. Soc.)

14. **Anthophora atrata.**

Anthophora atrata, Cresson, Proc. Ent. Soc. Phil. iv, p. 189, ♂.

Hab.—Cuba, (Coll. Am. Ent. Soc.).

Species not recognized.

Anthophora frontata, Say, Bost. Jour. Nat. Hist. i, p. 409.

Hab.—"Louisiana." Near to *abrupta*, Say.

Anthophora fuscipennis, Smith, Brit. Mus. Cat. Hym. ii, p. 338.

Hab.—"North America." Allied to *atrata*, Cresson.

Anthophora domingensis, St.Farg. Hym. ii, p. 32.

Hab.—"St. Domingo."

Anthophora taurea, Say, belongs to the genus *Melissodes*, a list of the species of which is now in preparation.

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Notes on CUBAN HYMENOPTERA, with descriptions of new species.

BY E. T. CRESSON.

Sphex mandibularis, n. sp.

♀.—Deep black; broad anterior orbits, cheeks, pectus, narrow posterior margin of prothorax, three lines on mesothorax (the lateral ones confluent behind), tubercles, spot behind, stripe above each of the four posterior coxæ, and the post-scutellum, bright silvery; head thinly clothed with long black pubescence, whitish on the cheeks; mandibles flavo-testaceous, apical half black; pleura and metathorax with long, thin, whitish pubescence; sides of metathorax and coxæ with silvery pile, more obvious in certain lights; metathorax opaque, rounded above and behind, the surface not distinctly sculptured; tegulæ shining-black; wings smoky hyaline, with a brilliant violet reflection, apical margin broadly fuliginous; legs black, coxæ and femora with a changeable silvery pile; posterior tibiæ golden sericeous within; abdomen black, immaculate, smooth and polished. Length 11½ lines

One specimen. (No. 531, Coll. Dr. J. Gundlach).

Larrada luteipennis, n. sp.

♂.—Black, opaque, varied with a very fine changeable silvery pile, more obvious on face, sides and apex of metathorax and on abdomen; vertex with two broad, shallow, longitudinal impressions; antennæ nearly as long as head and thorax; metathorax finely sculptured, verge of posterior truncation carinate; tegulæ testaceous; wings yellow, apical half fuliginous; legs black, varied with silvery pile, spines whitish; abdomen short, ovate, first three segments above with a slightly interrupted silvery band at apex, apical segment also silvery. Length 4 lines.

Two specimens. (Coll. Am. Ent. Soc. and Dr. J. Gundlach.)

Monedula insularis.

Monedula insularis, Dahlb. Hym. Eur. i, p. 186, ♀. Cresson, Proc. Ent. Soc. Phil. iv, p. 143, ♂ ♀.

In addition to the markings enumerated in description of normal ♀ (l. c. p. 143), there is a transverse yellow mark, sometimes slightly interrupted in the centre, on posterior margin of mesothorax, immediately before the scutellum, and the two lines on the mesothorax are sometimes longer, broader and more distinct. In *Var.* ♀, some specimens have two small, oblique yellow spots on posterior face of metathorax, the longitudinal lines of mesothorax wanting, and the metathorax immaculate except a reniform mark on each extreme side.

Bembex argentifrons.

Bembex argentifrons, Cresson, Proc. Ent. Soc. Phil. iv, p. 141, ♂ ♀.

The ♀ varies much in size, from 4½ to 6 lines long; the two short lines on mesothorax are wanting, the emargination of abdominal fasciæ more or less obsolete; venter sometimes with more black than yellow. The ♂ is quite constant in coloration and style of ornamentation, the bands of the abdomen, however, are often without any green stains.

Bembex armata.

Bembex armata, Cresson, Proc. Ent. Soc. Phil, iv, p. 142, ♂ ♀.

The ♂ has the clypeus sometimes bright yellow; the pile on the thorax is sometimes so dense as almost to cover the markings, especially those of the mesothorax.

Odynerus dejectus.

Odynerus dejectus, Cresson, Proc. Ent. Soc. Phil. iv, p. 164, ♀.

♂.—Clypeus, mandibles, scape of antennæ, spot on each side of metathorax just behind postscutellum, four anterior femora, all the tibiæ, and spot on four posterior coxæ beneath, lemon yellow; tarsi yellowish-fulvous; fifth and sixth dorsal segments of abdomen have each a short, apical, yellow fascia. Antennæ subclavate, hooked at tip; otherwise like the ♀. Length 3 lines.

One specimen. (Coll. Dr. J. Gundlach.)

Odynerus cingulatus.

Odynerus cingulatus, Cresson, Proc. Ent. Soc. Phil. iv, p. 162, ♀.

♂.—Pubescent; head slightly broader than thorax; clypeus subemarginate at tip; flagellum of antennæ fulvous beneath, apex hooked; anterior angles of prothorax prominent; otherwise like the ♀. Length 3¼ lines.

Two specimens. (Coll. Am. Ent. Soc. and Dr. J. Gundlach, No. 216.)

Odynerus cubensis.

Odynerus cubensis, Cresson, Proc. Ent. Soc. Phil. iv, p. 156, ♀.

♂.—Fusco-ferruginous, covered with a rather dense, short, subser-

iceous, yellowish pubescence; tip of antennæ hooked and acute; metathorax with a large yellow spot on each side at base; pleura and metathorax silvery; second segment of abdomen with a short, transverse, sometimes uneven, line on each side, instead of a band as in ♀; beneath, the second segment has a large reniform mark at tip, sometimes with a median fuscous spot; otherwise as in ♀. Length 6 lines.

Two specimens. (Coll. Am. Ent. Soc. and Dr. J. Gundlach, No. 444.)

Agapostemon obscurata, n. sp.

♀.—Differs from *femoralis* ♂ only by the head and thorax being opaque black, with a more or less distinct purplish tinge, especially obvious on the face; the tip of clypeus and labrum are yellow, as in *femoralis*. Length 4—4½ lines.

Eight specimens. (Coll. Am. Ent. Soc. and Dr. J. Gundlach, No. 261). I at first supposed this to be a variety of *femoralis* (see *Proc. Ent. Soc. Phil.* iv, p. 171), but now think, with Dr. Gundlach, that it is a distinct species.

Megacilissa? nigrescens, n. sp.

♂.—Black; eyes large, almost meeting in the vertex, brown; cheeks, vertex and face, clothed with yellowish-white pubescence, slightly mixed with black; behind the ocelli the pubescence is black; third joint of antennæ long and slender, knobbed at the apex, sutures of remaining joints indistinctly defined, and palish beneath, the extreme tip slightly fulvous; thorax covered with a very dense, short, brown-black pubescence, a transverse band on the anterior margin, another between the wings, a stripe over the tegulæ, a mark on each side of the breast, behind the anterior femora, of whitish pubescence; metathorax with longer brown-black pubescence, and mixed with white posteriorly; tegulæ piceous; wings yellowish-hyaline, the neuration same as given by Smith (*Brit. Mus. Cat. Hym.* I, pl. iv, fig. 21) as that of *Megacilissa;* legs slender, brown, the femora reddish-brown behind, the pubescence short and pale brownish, the coxæ and base of femora with long dark pubescence, mixed with whitish; posterior legs slender, their tibiæ slightly curved downward; first joint of tarsi flat and as long as the remaining joints together; claws cleft; abdomen shaped much as in *Apis*, the first, fifth and following segments with long pubescence, that on the former mostly white, on the latter blackish; remaining segments almost nude, having a very short black pubescence, brownish when viewed in certain lights, their apical margins with a narrow fascia of pure white pubescence; venter flattened, piceous, paler at base, thinly pubescent. Length 7 lines.

One specimen. (Coll. Dr. J. Gundlach, No. 293.)

The shape of this remarkable insect is very similar to that of *Apis mellifica* ♂, but the oral organs, as far as can be examined, seem to refer it to *Andrenidæ*, and the neuration of the wings to *Megacillissa*, Smith.

Megacillissa ? subaurata, n. sp.

♂.—This is like the preceding species in shape, but differs by the pubescence of the head, thorax, legs, base and apex of abdomen and venter being yellowish-fulvous, that on face and anterior margin of thorax above being somewhat golden; that on vertex and rest of thorax above mixed with blackish, and that on the cheeks, occiput, base of abdomen and venter palest; legs pale fulvous, dusky at base, the four apical joints of tarsi fuscous; second, third and fourth abdominal segments brown-black, almost nude, and narrowly margined at tip with white pubescence; the apical margin of the first segment is slightly margined at tip with whitish. Length 7 lines.

One specimen. (Coll. Dr. J. Gundlach, No. 292.)

Megachile curta.

Megachile curta, Cresson, Proc. Ent. Soc. Phil. iv, p. 178, ♂

♀.—Form short, robust; head large, transverse; thorax and abdomen short, broad; face, cheeks, pleura, and metathorax, with long, more or less dense, white pubescence; clypeus nude, sparsely punctured, apex truncate; vertex and mesothorax with short, black pubescence, the latter closely punctured except on the disk; two spots on anterior margin of mesothorax, a spot in front and another behind tegulæ, and a broad band at base of scutellum, nearly confluent with spot behind tegulæ, all of short, dense, whitish pubescence; scutellum broadly rounded; wings hyaline, dusky at tips, nervures black; legs robust, with thin hoary pubescence, more dense on tarsi; abdomen minutely and closely punctured, basal segment deeply concave in front; all the segments, except the last, with a narrow apical margin of white pubescence, that on first ending laterally in a spot; venter with long, dense, white pubescence. Length 5 lines.

Var. TIBIALIS.—♀. Markings on thorax above yellowish, and all the tibiæ reddish.

Two specimens. (Coll. Dr. J. Gundlach, No. 109.) The variety may be a distinct species.

Megachile armaticeps, n. sp.

♀.—Form elongate, subparallel, opaque-black; head large, subquadrate, densely and deeply punctured, face and cheeks with long, whitish pubescence; a long hooked tooth projects from the middle of the face,

bent downward, with obtuse tip; from each side of clypeus projects a long mandibular process, flat and carinate outwardly and subemarginate at tip, and from the middle of the clypeus projects another process, slender at base and suddenly and broadly dilated at tip, which is flattened and shaped like the letter T; mandibles large, broad at base, acute at tip; antennæ short and black; thorax densely and deeply punctured, prothorax, pleura, postscutellum and metathorax clothed with long, more or less dense, whitish pubescence; lateral margin of mesothorax extending in front of tegulæ, two spots on anterior margin, spot on disk of prothorax, and sub-interrupted line at base of scutellum, of dense, short, white pubescence; wings subhyaline, faintly clouded at apex, nervures black; legs slender, with short, thin, hoary pubescence; abdomen elongate, subquadrate, sides parallel, first and last segments densely and strongly punctured, the former deeply concave at base; remaining segments with large deep punctures, scattered on the disk, and with a deep transverse line near base, the first five segments with a narrow apical fascia of short white pubescence, that on the first ending in a spot on each side; venter with long white pubescence. Length 5½ lines.

One specimen. (Coll. Dr. J. Gundlach, No. 527.)

Cœlioxys tegularis, n. sp.

♀.—Elongate, black, head and thorax opaque, with large deep punctures; face, cheeks, collar, pleura, anterior and lateral margins of mesothorax, base and apex of scutellum, sides of metathorax, legs beneath, entire margin of first abdominal segment, and apical and lateral margins of remaining segments above and beneath, clothed with a short, dense white pubescence; lateral teeth of scutellum long and obtuse, tip of latter broadly rounded; tegulæ and legs fulvous; wings subhyaline, stained with yellowish fuscous; abdomen narrow, elongate, conical, shining, with deep sparse punctures; first segment broadly concave at base, apical segment opaque, minutely punctured, much depressed at tip, which is subacute, and with scattered larger punctures, the inferior plate much longer than the superior and rather broadly rounded at tip. Length 5½ lines.

One specimen. (Coll. Dr. J. Gundlach.)

Cœlioxys producta.

Cœlioxys producta, Cresson, Proc. Ent. Soc. Phil. iv, p. 187, ♀.

The ♂ is shorter and rather more robust, the head broader, the face clothed with a dense ochraceous pubescence; the second to fifth segments of abdomen have only lateral apical fasciæ; the apex is armed with six acute teeth, one on each side and four at tip (two above and

two beneath, the latter the longer), middle of the segment deeply excavated; otherwise as in ♀. Length 5 lines.

One specimen. (Coll. Dr. J. Gundlach, No. 99.)

Melissodes mimicus, n. sp.

♂.—Black; head, thorax and base of abdomen clothed with a dense ochraceous pubescence, mixed with black on disk of mesothorax; clypeus white; antennæ as long as body, undulate, flagellum fusco-ferruginous beneath; wings hyaline, faintly dusky at tips, nervures brown; legs piceous-black, anterior pair with ochraceous, the two posterior pair with fulvous pubescence, tips of tarsi pale fulvous; abdomen piceous-black, shining, palish at apical margin of segments, base of first segment with long, rather dense, ochraceous pubescence, a fascia of same color on disk of second, third and fourth segments, oblique and subinterrupted on second; remainder of abdomen with very short black pubescence. Length 4 lines.

Three specimens. (Coll. Am. Ent. Soc.) Smaller than *Lanierii*, and with pubescence of abdomen differently arranged.

Exomalopsis similis.

Exomalopsis similis, Cresson, Proc. Ent. Soc. Phil. iv, p. 191, ♀.

The ♂ differs from the ♀ only by the smaller size, narrower face, which is densely clothed with whitish pubescence, as well as the cheeks; the scutellum has long, erect, brown pubescence; legs clothed with whitish pubescence, mixed with brown on posterior pair; abdomen more convex. Length 3 lines.

One specimen. (Coll. Dr. J. Gundlach.)

Centris armillatus, n. sp.

♂.—Deep black; eyes large, pale; face sparsely punctured, shining; vertex, occiput and cheeks clothed with short black pubescence; flagellum palish beneath; thorax clothed with dense short, deep black pubescence, a broad band of yellowish-white pubescence on the anterior margin above; wings subhyaline, subviolaceous, uniformly tinged with dusky, nervures black; legs black with black pubescence, the middle femora and base of tibiæ fringed behind with long black pubescence and the posterior pair fringed on both sides with longer, dense black pubescence, forming a flattened brush; spurs of posterior tibiæ being long and curved; tarsal claws long and deeply cleft, the inner tooth much the shorter; at the base of the posterior pair a long tuft of pubescence, projecting inwardly; abdomen short convex, nude, finely punctured and shining above, the basal and apical segments and the venter with rather thin black pubescence. Length 6 lines.

One specimen. (Coll. Dr. J. Gundlach, No. 214.)

BIOLOGICAL NOTES ON DIPTERA.

(Galls on Solidago.)

BY R. OSTEN SACKEN.

Five galls, produced by N. American Diptera on the golden rod (*Solidago*) have hitherto been described; the history of three of them is complete, as the insect, producing them, has also been described; (*Trypeta solidaginis* Fitch, *Cecid. solidaginis* Lw; *Cec. hirtipes* O. S.); two have been named in anticipation of the discovery of the insect (*Cec. racemicola* O. S. and *Cecid. carbonifera* O. S.).

To this number I can now add three more galls from which I have bred the following insects; *Trypeta polita* Lw., *Asphondylia monacha* n. sp. and *Cecidomyia anthophila* n. sp.

These eight galls, produced by Diptera on *Solidago*, may be classified as follows:

1.—Smooth swelling of stem or branch; *Trypeta solidaginis* Fitch; *Cecidomyia hirtipes* O. S.

2.—Accumulation of leaves in consequence of the arrest of growth of stem or branch; *Trypeta polita* Lw., *Cecidomyia solidaginis* Lw., *Asphondylia monacha* n. sp.

3.—Enlargement of bud on flower, amongst the racemes; *Cecid. racemicola* O. S., *Cecid. anthophila* n. sp.

4—Hardened spot on the leaves; *Cecid. carbonifera* O. S.

(The descriptions of the two *Trypetæ*, as well as that of the above mentioned *Cecidomyiæ* and their galls, may be found in the first volume of the *Monographs of North America Diptera*).

ASPHONDYLIA MONACHA, n. sp.

The gall of *A. monacha*, like that of *Cecidomyia solidaginis*, consists of an accumulation of leaves upon a stem or branch the growth of which has been stunted by the operation of the insect. Several branchlets being stunted in this way alongside of each other, form a more or less elongated head, sometimes several inches long, consisting of an accumulation of leaves. This head, at least the specimen which I have before me, is more elongated, less stout than the heads of *Cec. solidaginis* which I have seen. But the principal difference lies in its inner structure. The leaves forming the inner part of the gall of *Asph. monacha* although stunted in their growth, have none of the characteristic appearance of the numerous narrow ribbond-like leaves, surrounding a central cell, in the gall of *Cec. solidaginis;* (compare *Monograph*, etc., l. c. Tab. 1, f. 9, 10).

These galls, collected by me in September 1867, near Brooklyn, L. I., on *Solidago altissima*, very soon gave me several specimens of the fly.

Asphondylia monacha n. sp.—Nigra, tarsorum basi niveâ.

Black, basis of the tarsi snow-white.

Body blackish, clothed with black hairs (dry and somewhat faded specimens look brownish, with an admixture of yellow hairs); feet with a deep black, appressed pubescence; the short first tarsal joint and the basis of the second are snow-white; knees likewise whitish. Wings clothed with blackish hairs, especially dense along the anterior border; the venation shows nothing extraordinary, being like that of *Cecidomyia* or *Diplosis* (*Monographs* etc., 1, page 174, fig. 1 and 2), that is, it consists of three veins, the last of which is forked; the second vein is nearly straight and ends almost in the middle of the apex of the wing; the anterior branch of the fork of the third vein is concealed in a fold, running backwards to the root of the wing, which produces the appearance as if there were four longitudinal veins (somewhat like fig. 5 on the above quoted page of the *Monographs*); in order to perceive the real direction of the anterior branch of the fourth vein a very close examination of a denuded wing is necessary. The antennæ are 2 + 12 jointed, filiform, pubescent; the joints of the flagellum are cylindrical, of nearly equal, gradually diminishing length up to the ninth; the tenth is smaller than the ninth; the two last joints, the eleventh and twelfth, taken together are about equal to the tenth in length; they are short, button shaped. Halters black.

I have two male and a female specimens before me, which I regret not to have described when they were alive; I merely took a note relative to the structure of the antennæ of one of the specimens, but forgot to observe its sex. As described by me, the antenna of *A. monacha* is exactly like that of *A. sarothamni* ♀ figured by Winnertz (*Linnæa Entomologica* Tab. iv, f. 2 *b*); the antennæ of the male of this species have one joint more, that is, 2 + 13 joints. Owing to the present dry condition of my specimens I am unable to say whether the same difference exists in *A. monacha*. My female specimen shows, at the end of the body, a long, yellowish, almost cylindrical ovipositor, nearly like that of *A. sarothamni*, figured by Winnertz (l. c. Tab. 1, f. 15). But it does not show the long, needle-shaped, horny organ which appears on Mr. W. figure as protruding beyond the cylindrical joint of the ovipositor, and is also mentioned in the description. The character mentioned by Mr. Winnertz (l. c. p. 185) as belonging to *Asphondylia*, that "the second longitudinal vein reaches the margin beyond the apex of the wing," does not seem to be essential to the genus, as it is not to be found in *A. monacha*.

The pupa, immediately before the exclusion of the fly, extricates itself from the gall and falls to the ground. In this *Asphondylia monacha* again differs from *Cec. solidaginis*; the extremely light and fragile pupa case of the latter remains hanging on the outside of the gall

after the escape of the insect. The pupa case of *A. monacha* has a much harder consistency, has two contiguous, short, subconical, pointed projections at the top of the head, (exactly like the pupa of a *A. sarothamni* figured by Mr. Winnertz l. c. Tab. 1, f. 6.) The dorsal segments of the abdomen are covered in the middle with a number of small points; the last segment, at the tip, has a crown of such points.

As far as I know, six european *Asphondyliæ* are described; most of them develop in the buds of flowers, or produce galls. In the *Monographs of N. A. Diptera*, Vol. 1, p. 7, Mr. Loew made the suggestion that "*Cec. grossulariæ* Fitch, ought, as it seems, to be referred to the genus *Asphondylia*." But when he made this statement, he could hardly have seen Dr. Fitch's description of the antennæ of this species, the joints of which are "separated by hyaline pedicels one third as long as the joints, which are short cylindrical, with rounded ends, their length scarcely more than double their breadth." It results from this description that *Cec. grossulariæ* Fitch cannot be an *Asphondylia*, and that *A. monacha* is the first N. A. species hitherto described.

But I possess in my collection an undescribed species communicated to me by Mr. Walsh some time ago under the name of *Cecid. helianthi globulus* Walsh in litt., which is an *Asphondylia*. The pupa has the same coriaceous, hard consistency as that of *A. monacha;* the dorsal segments of the abdomen of the pupa are likewise muricate and the end of the abdomen has a crown of little spines; the two horny frontal projections are likewise contiguous, only much smaller than those of the pupa of *A. monacha*.

It results from the foregoing that, as far as observed, the characters of *Asphondylia* consist principally in the structure of the antennæ (cylindrical, elongated, sessile or nearly sessile joints, pubescent, without verticils; their number the same, or nearly the same in both sexes), and in the elongated ovipositor of the female; to which may be added the structure of the pupa-case, which is of a rather tough consistency, is muricate on the dorsal segments of the abdomen and has the frontal pointed projections *contiguous*, and not remote as in many other *Cecidomyidæ*.

TRYPETA POLITA, Loew.

I have been fortunate enough to trace the history of this pretty fly, described and figured in the *Monographs*, etc. Vol. 1, page 77, Tab. II, fig. 12. It produces galls, not unlike small Brussels sprouts in appearance, caused by the arrest of the growth of the side branches of *Solidago altissima*. The accumulation of leaves produced by this stunting

is a little over half an inch long, sometimes much smaller; on the inside there is a comparatively large hollow space, containing the pupa. Some of the galls were nearly sessile on the central stalk of the plant; in other cases, the branch had grown an inch or two before being deformed by the gall. In some cases from four to six galls occupied the end of the stalk. The flies after escaping leave a whitish, transparent pupa-case inside of the gall. I found these galls quite frequently near New London Conn., and in the environs of Brooklyn, L. I. As several of the specimens collected by me produced flies about the middle of September and as *T. polita*, if I remember right, is frequently found in the spring and in summer, the question remains to be solved whether the flies hybernate, or whether some of them remain quiescent within the pupa until the next season?

CECIDOMYIA ANTHOPHILA n. sp.

Among the racemes of *Solidago* I observed (in September 1867, near Brooklyn, L. I.) that some of the flowerlets were deformed into a gall, somewhat analogous to that of *Cecid. racemicola* O. S. (*Monographs*, Vol. 1, p. 196), on account of the mode of its occurrence, but different in structure. The new gall is elongated-conical, blunt at the end, about 0.25—0.3 of an inch long; the basis about 0.1 broad; the surface is pale green, covered with a white down; the inside of the gall is hollow, divided in two compartments by a delicate, somewhat funnel-shaped membrane, placed about the middle of the cavity, point upwards. At the bottom of the lower compartment, that is, at the lower and broader end of the gall, the small, whitish larva may be found; it shows no sign of a breast-bone, except two, exceedingly minute black dots, visible only under a very strong lens. Towards the end of September, numerous *Cecidomyiæ* were obtained from these galls. Unfortunately, I have preserved only a few specimens, all males. Thus I am unable to state, whether the antennal joints in the female are pedicelled, as in the male, or sessile. The structure of the antennæ renders it apparent that this species belongs to the genus *Cecidomyia*, in the narrower sense, and not to *Diplosis*.

Cecidomyia anthophila n. sp. ♂.—The pale brown antennæ count 2 + 19 joints;* those of the flagellum are nearly as long as their pedicels; the length of each joint is nearly double of its breadth; the shape of the single joints is somewhat square (otherwise the flagellum is not unlike Tab. I, f. 5 of *Monographs*, etc. Vol. I). Thorax pale brown, shining above; a spot on the humeri is pale yellowish; stripes hardly indicated by rows of hairs; pleuræ brownish in front,

* It must be borne in mind that the number of joints of the flagellum in *Cecidomyia* sensu str. is often not quite constant in the same species.

which color extends to the mesosternum (the interval between the first and second pair of coxæ); the posterior part of the pleuræ is yellowish, which color surrounds the root of the wings, even encroaching upon the mesonotum, and extends towards the hind coxæ, without reaching them; the halteres are inserted on brown ground; they are brownish but the basal half of their stem is pale yellow; the scutellum brownish anteriorly, is yellowish posteriorly; the metathorax is yellowish anteriorly, brownish posteriorly. Abdomen brown, hairy; male genitals yellowish-brown. Feet brownish, underside with a whitish reflection; (when denuded, the feet appear pale). The first joint of the tarsi, as usual, is very short; the second is about equal in length to the three following taken together; (the relation of these four joints is about as follows: 6½. 3½. 2¼. 1: it is nearly the same on all feet.) The wings are clothed with grayish hairs; the second longitudinal vein is very gently arcuated; no perceptible cross-vein between the first and the second longitudinal veins. (Description drawn from three dry specimens, males).

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Description of a new genus of PIERIDÆ, and certain new species of butterflies from California.

BY HERMAN BEHR, M. D.

Genus NEOPHASIA, Behr.

Larva ignota.

Imago; caput globuliforme, oculi pro forma thoracis magni prominentes; palpi strictiusculi, capite longiores, compressi, hirsuti, antennæ mediocres in clavam fusiformem desinentes, abdomen gracile alis inferioribus brevius, alæ elongatæ tenerrimæ, cellula discoidalis in mediam alam porrecta. Alarum anticarum angulus superior acutiusculus.

This Genus forms a very natural passage from *Pontia* to *Pieris*. From *Pontia* it differs by the shape of the wing; from *Pieris* by its gauze-like substance, by the shape and proportions of the head and the slenderness of thorax and abdomen.

The shape and position of the discoidal cell separates *Neophasia* from *Leucophasia*.

I know of two species belonging to this genus, both of them inhabitants of the pine forest region of the mountain chains parallel to the coast of the Pacific.

1. N. MENAPIA. (*Pieris menapia*, Felder) is found on a certain elevation of the Sierra Nevada. Of its habits, I only know that it is found in pine forests. Mr. Lorquin, well known by his scientific travels, ventures the opinion that the caterpillar feeds on some coniferous tree, a supposition, that, notwithstanding the unusual food for a Pierid larva, is not altogether so improbable as it appears at first, as, I, myself have found the larva of a true *Pieris*, in South Australia, on a species of Loranthus.

2. N. TERLOOII. nov. spec.—Alæ anticæ longitudinaliter dimidiatæ, dimidium superius nigrum, fascia maculari repanda alba intersectum, dimidium inferius cum alis posticis album.

It is not necessary to point out how very different the coloration of this species is from *Menapia*. It was caught by Baron Terloo in the pine forest region of the Sierra Madre in a cold, inhospitable region. It was fluttering at a considerable height between the fronds of the coniferous trees and finally alighted on a Loranthus, the only plant in flower in the neighborhood.

ANTHOCARIS EDWARDSII, nov. sp.— *Ausonoidi* similis, sed alis anticis repandiusculis, posticis subtus lilacinis obscurius undulato-marmoratis, ad marginem anteriorem macula candida signatis.

This fine species is very different from all the other Californian species and the most considerable in size. The line of the outer margin of the forewing is somewhat that of *Genutia*, but the general shape is more like that of *Sara* and of *Cardamines*. The under side of the hind wings approaches in its markings some African species; it is of a silky, shining, lilac color marbled by short undulated lines of a darker hue with a reflex of olive color, that also tints the disk and anterior margin. This tint is interrupted on the anterior margin, some small patches of pure white and a conspicuous stripe extending from the subcostal vein to the middle of discoidal cell. I possess only two females, so that I am not certain whether the male has an orange tip or not. Both specimens are from Downieville.

ANTHOCARIS COOPERII, nov. sp.— *Saræ* similis sed macula aurantiaca in alis anticis maris nec marginem exteriorem nec posteriorem attingit; fœminæ alæ si umbram fulvescentem exemeris a margine anteriori oriente macula omnino destitutæ sunt. Alæ posticæ subtus fasciis læte viridibus irregularibus sed cohærentibus, neque ut in *Sara*, punctulatis ornatæ.

Smaller than *Sara*. I received several specimens of both sexes by the kindness of Dr. Cooper, who collected them in San Diego. The male seems not to vary either in size or markings but the female varies in both, and in one individual approached very near *Lanceolata*. Even the outline of the wings is not constant in the three specimens I possess of the female.

Descriptions of new species of ORTHOPTERA, in the collection of the American Entomological Society.

BY SAMUEL H. SCUDDER.

Xiphidium attenuatum.

Green, mottled with reddish-brown; a reddish-brown median stripe extends from the tip of the vertical tubercle backwards to the posterior border of the pronotum, broadening posteriorly; the color is more distinct upon the head; tubercle of vertex nearly as long as the first antennal joint, well rounded in front, laterally hollowed. Tegmina nearly twice as long as the body; wings extending considerably beyond the tegmina. Ovipositor exceedingly long, fully twice the length of the body. Length of body ♂ 12 mm., ♀ 12.5 mm.; of antennæ ♂ 48 mm., ♀ 54 mm.; of tegmina ♂ 17 mm., ♀ 20 mm.; of wings ♂ 20 mm., ♀ 23.5 mm.; of hind femora ♂ 12 mm., ♀ 14 mm.; of ovipositor 27.5 mm.

One ♂, one ♀. Illinois.

Opomala aptera.

Head streaked with reddish testaceous and dull yellowish; upper edge of clypeus bordered with whitish; clypeus and labrum dotted with fuscous; joints of palpi blackish at base; antennæ brownish; prolongation of vertex as long as the eye, the sides parallel, the front well rounded. Prothorax, abdomen and appendages brownish, the median and lateral carinæ of pronotum distinct, rather sharp. Tegmina slender, lanceolate, nearly abortive; wings wanting. Length of body 35 mm.; of antennæ 7.5 mm.; of hind femora 15.5 mm.; of tegmina 6 mm.

One ♀. Pennsylvania.

Gomphocerus simplex.

Front of head dark brownish yellow, spotted with fuscous; clypeus and labrum dirty olivaceous, flecked with fuscous; median carina on summit of head and approximate lateral carinæ slight but distinct, testaceous; between the two brownish fuscous; a broad blackish fuscous streak from the upper edge of the eye backward, bordered above by a black line lying next to the lateral carinæ; another broad dull blackish fuscous band running backward from the lower edge of the eye; antennæ testaceo-fuscous at base, blackish fuscous at tip, the terminal eight or nine joints depressed, forming an elongated club. Median carina of pronotum slight, testaceous; lateral carinæ rather prominent, yellow, bordered on either side, but especially interiorly, with black; top of pronotum brownish-fuscous, deepening in tint toward the lateral carinæ;

sides of pronotum brownish yellow, clouded with fuscous. Tegmina testaceous, diaphanous toward the apex; wings pellucid, slightly clouded along the costal border. Hind legs brownish testaceous, the superior carina of femora interrupted with black, spines of hind tibiæ tipped with black. Length of body 16.5 mm.; of antennæ 6 mm.; of tegmina 13 mm.; of hind femora 10 mm.

One ♂. Delaware.

Œdipoda carinata.

Head blackish, profusely streaked and spotted with dull bluish white; frontal carinæ and upper border of clypeus edged with whitish; palpi blackish, the joints tipped with luteous. Pronotum dull dark brownish fuscous, with a short pale streak behind the lower edge of the eye; hinder edge of pronotum forming less than a right angle; median carina very prominent, whole, sharp, rounded. Basal third of tegmina dark brownish fuscous; beyond ash gray, profusely and rather regularly sprinkled with small brownish spots; basal half of wings pale dull orange, bordered by a broad blackish fuscous band, occupying the rest of the wing, excepting the apex, and encroaching on the orange near the costal margin, as in *Œ. xanthoptera;* apex semi-pellucid, a little fuliginous, darker at the very tip. Hind femora dull dirty hoary without, black with three transverse white bands within, the tibiæ blackish brown with black spines and a broad pale band near the base. Length of body 30 mm.; of tegmina 30 mm.; of hind tibiæ 14.5 mm.

One ♀. No locality. I have specimens in my own collection from Iowa.

Tettix femorata.

Vertex but little broader than one of the eyes, barely projecting in advance of them, the front scarcely rounded. Pronotum reaching to the tip of the abdomen, not including the ovipositor; median carina very prominent, slightly arched; surface of the pronotum arenose. Tegmina small, well rounded, with shallow punctulations; wings not surpassing the tegmina in length. Hind femora very broad and stout. Length of body 9.5 mm.; of pronotum 8 mm.; width of pronotum at the base of the tegmina 2.5 mm.; length of tegmina 1.6 mm.; breadth of tegmina .7 mm.; length of hind femora 5.25 mm.; breadth of hind femora 2 mm.

One ♀. Maryland.

Ischnoptera hyalina.

Head pale testaceous, slightly obscured with reddish brown; eyes blackish; first two antennal joints testaceous, remainder brownish fuscus, delicately and sparsely pubescent; mouth parts pale testaceous. Pronotal shield pale testaceous, the outer border paler. Tegmina nearly uniform pale testaceous, the costal border for nearly one-third the length of the wing paler. Coxæ brownish fuscous; femora and tibiæ pale testaceous; tarsi, like the tibial spines, a little darker. Abdomen blackish fuscous, darker posteriorly. Length of antennæ 25 mm.; of pronotum 4.25 mm.; breadth of pronotum 6 mm.; length of tegmina 21.5 mm.

One ♂. Delaware.

On the structural characters of POLYOMMATUS TARQUINIUS.

BY AUG. R. GROTE.

In this species the antennae are relatively short; the "club" long and narrow. The head is well sized, held free from the thorax. The labial palpi are long, well advanced beyond the front, divaricate, the elongated third article slender and thinly scaled, curving slightly upwards. The thorax is large and full. The legs unarmed and thinly scaled, moderate, the anterior pair more slender and shorter than the middle and hind pairs. The wings are entire and ample; primaries triangulate; secondaries rounded. The primaries are slightly arcuate along the costa, straight along internal margin, rounded along the full external margin which retires slightly before the determinate internal angle. The anterior wing is dilated at its outer third; the median nervules well separated. The primaries have eleven veins or veinlets. The costal vein is simple, joining the costa a little beyond the middle. The subcostal throws off the 1st, 2nd and 3rd s. c. veinlets on the costal margin, these veinlets approximate and parallel in their course. The 3rd s. c. is very slightly further removed from the 2nd than this latter from the 1st, and is furcate before the margin, sending out the 4th s. c. outwardly to the apex of the wing. The 5th s. c. joins the external margin and is widely separate from the 4th. The cell is not closed; the independent vein simple and straight. Three median veinlets, the 1st and 2nd springing from one point, divaricate. The internal vein is straight. The secondaries have nine veins or veinlets. The

costal vein is abruptly bent upwardly at base, thence following the costal edge to the apex of the wing. The subcostal vein is two and the median three branched. The cell is open; the independent slight. The submedian and internal veins are simple. The abdomen is shorter than the internal margin of the secondaries.

I take the Hesperia tarquinius of Fabricius (the *Polyommatus crataegi* of Boisduval and Leconte) as the type of the genus Feniseca. Congeneric with Fen. tarquinius, and a second species of the genus, is Fen. porsenna, considering Mr. Scudder's *Polyommatus porsenna* from New England in reality a distinct species. I have specimens of F. tarquinius from Georgia and, on comparison, I cannot distinguish specifically between them and material from Pennsylvania which I refer to this same species.

Above, the colors and ornamentation of Feniseca tarquinius somewhat resemble those of certain species of Hesperia, while reminding us more strongly perhaps of Thecla (favonius), with which latter genus its structural affinities lie.

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On a new Genus of NOCTUIDAE allied to DYOPS, with remarks on certain species of AGROTIS.

BY A. R. GROTE.

To a genus indicated, but not named, by Guenée, and for which the term Litoprosopus is proposed, belong three species of Noctuidae with ocellated secondaries allied to the South American Dyops, but distinctively characterized by the smoothly and closely scaled elongate and subspatulate third article of the labial palpi.

In the South American Dyops ocellata, and D. oculigera, the labial palpi are given as "a 3e article court, conique, confondu avec le précédent" (Noct. Vol. 2, p. 283). It is noteworthy that while M. Guenée says: "Peut-être faudra-t-il faire deux genres des trois espèces qui composent celui-ci (c. a. d. le genre Dyops)", and while the genus is divided by this Author into two Groups, no remark is made on the differences of palpal structure which I suppose induced the division of the Genus into "Groupes," although, indeed, no reason at all is given in Vol. VI of the Species Général des Lepidoptéres for the observation (as above cited) or the procedure.

The specific distinctiveness of all the three species described by Authors and here enumerated, is assumed but not assured. The species described by Guenée as *Dyops Hatuey*, does not indeed seem to be the Noctua Hatuey of Prof. Poey, as suggested by Mr. Walker, who ap-

pears to have had the true Noctua Hatuey *Poey*, before him and to have correctly separated Dyops confligens *Walk.* (*Dyops Hatuey* Guenée?) from that species. A single species inhabits our Territory and is known to me in Nature. This is Dyops futilis *G. & R.*, from Florida. In the representation of this species only one palpus is indicated by the Artist; an error caused by the fact that but one remained on the only specimen of the species known, after its dissectional study. As remarked at the time of its description, the presence in Florida of a species congeneric with West Indian forms, shows the near relationship of the Lepidopterological faunae of the Peninsula and the West Indies.

The synonymy of the three species of Litoprosopsus is as follows:

LITOPROSOPUS, *m.*

L. hatuey.

Noctua Hatuey Poey, Cent. Lep. Cuba.

Dyops Hatuey Walk., C. B. M. Lep. Het. p. 855.

Habitat.—"Cuba" *Poey*. "St. Domingo" *Walk.* (l. c.).

L. confligens.

Dyops confligens Walk., C. B. M. Lep. Het. p. 856.

Dyops Hatuey Guenée, Sp. Gen. Lep. Vol. 2, p. 284?

Habitat.—"Honduras;" "West Coast of America," *Walk.* (l. c.).

L. futilis.

Dyops futilis Grote and Robinson, Trans. Am. Ent. Soc. Vol. 2, p. 202, fig. 73.

Habitat.—"Florida" (Linden leg.) *G. & R.* (l. c.).

On pages 524 to 528 in the third Volume of the Proceedings of the Entomological Society of Philadelphia, I described four species of American Noctuidae under the genus Noctua as amended by Guenée in the Species Général des Lepidoptéres. The genus is not distinguished by recent authorities from Agrotis and I now refer these species to Treitschke's genus. The four species are: Agrotis brunneicollis l. c., Plate 5, fig. 5; Agr. cupida, l. c., Plate 5, fig. 7; Agr. alternata, l. c., Plate 5, fig. 8; Agr. vittifrons, l. c., Plate 5, fig. 6.

I have elsewhere erroneously referred the Noctua lubricans of Guenée as identical with our common Agrotis clandestina (*Noctua clandestina* Harris), a species found under the loose bark of trees in company with Amphipyra. A. clandestina is nearly allied to Agr. brunneicollis, while M. Guenée's species is totally different in form from these, and hardly belongs to this genus. I discovered my mistake during a visit to M. Guenée at Chateaudun, and afterwards verified this correction by an examination of M. Guenée's type in London. The deceptive coloration of M. Guenée's badly drawn figure of N. lubricans, together with points in the description which agreed with A. clandestina, induced my earlier reference.

On the American Butterflies referred to the Genus CHARIS by Doubleday.

By A. R. GROTE and C. T. ROBINSON.

Doubleday and Hewitson, (Text p. 452,) retain the Genus Charis *Hübner* Verzeichniss, for a generic group of Erycinidae species belonging to which have been described under the genus "Nymphidia" or "Nymphidium" by Authors.

In the Verzeichniss, Hübner's genus is erected for two of Cramer's species unknown to us in nature. Without specimens of the South American Butterflies referred to Charis by Doubleday and Hewitson, we follow these Authors in associating our two United States species with those referred to Hübner's genus, but one of which species was then known to the English Entomologists.

These species are C. caenius *Doubl. & Hewit.* (*Nymphidia pumila* Bois & Lec.) and C. borealis (*Nymphidia borealis* G. & R.).

After giving the characters af the genus Charis, Doubleday & Hewitson remark: "The majority of the species are further distinguished by the hirsute eyes, a character *wanting*, however, in Ch. caenius and two or three allied species. The last named species is remarkable for being the only butterfly of the family found in the United States (l. c.)."

For the group so characterized, and of which our C. caenius is typical, we propose the name Calephelis. Judging from figures, indeed, we may conceive that Calephelis is entitled to be received as a distinct genus for which the term may with propriety be used. The following is a synonomy of our two species.

CHARIS, *Hübner* (1816).

Nymphidium et *Nymphidia* Boisduval, Blanchard, Gr. & Rob., (nec Fabricius).
Charis Hübner (Verzeichniss); E. Doubleday, Doubl. & Hewit. in part.
Charis (*Calephelis*) Grote & Robinson.

Charis (Calephelis) caenius.

Papilio caenius, Linn. Syst. Nat. II. p. 196, n. 273.
Charis cereus, E. Doubleday List Lep. B. M. Pt. 2, p. 16.
Erycina virginiensis, Bois. in Guerin Icon. R. Anim. Ins. t. 81, fig. 1.
Nymphidia pumila, Bois. & Lec. Icon. Lep. Am. Septem. t. 37, fig. 6, 7.
Charis caenius, Doubleday & Hewitson l. c. p. 453.
Nymphidia pumila, Gr. & Rob. Ann. N. Y. Lyc. N. H. Vol. viii (Oct. 1866).

Our specimens were collected in Georgia by Mr. Jas. Ridings, and agree well with Boisduval's description and the figures above cited.

Charis (Calephelis) borealis.

Nymphidia borealis, Gr. & Rob., Ann. N. Y. Lyc. N. H. Vol. viii (Oct. 1866).

Our specimens were collected in New York State by Mr. Grote in July. While closely resembling C. caenius this species is distinguished by its larger size, the narrower and differently appearing metallic

lines of the under surface, the more obscurely colored upper surface (which contrasts so much the more forcibly with the paler and bright hue of the under side) and by the straighter external margin and more prominent angles of the primaries, while the antennae seem proportionally longer, the "club" more prominent.

We have heard of the discovery of this species in Michigan and look to hear of its capture in New England.

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Descriptions of certain species of DIURNAL LEPIDOPTERA found in the United States.

BY WM. H. EDWARDS.

HESPERIA WAKULLA, n. sp.

Male. Expands $1\frac{3}{10}$ inch. Upper side olive brown; primaries have an irregular row of six small, angular spots, commencing on the costa one fourth the distance from apex to base and running nearly parallel with the hind margin to middle of the wing; secondaries immaculate; fringes long, whitish, cut with brown at tips of nervures.

Under side of primaries olive brown; the spots indicated on upper surface are here enlarged, distinct, yellow white and nearly of equal size, the fourth from costa only being minute; at the lower end of these spots and anterior to the line is sometimes a larger, indistinct spot with a small one below, making eight in all, extending nearly across the wing; a minute spot at end of cell.

Secondaries brown, with a grey violet tint except near abdominal margin; the disk crossed by a tortuous, connected row of irregular yellow-white spots, from outer angle to near abdominal margin, dilated at the extremities; a branch from this row connects with a spot at end of cell; the nervures of the disk yellowish white, giving with the spots a reticulated appearance.

Body above brown; antennæ brown above, annulated with yellowish below; club black above, yellowish below.

From three males received from A. W. Chapman, Esq. of Apalachicola, Florida.

HESPERIA EUFALA, n. sp.

Male. Expands $1\frac{1}{10}$ inch. Upper side olive brown; primaries have three semi-transparent dots in a line from costa near apex and two small spots below and anterior, separated from the others by the space of a line.

Secondaries immaculate; fringes fuscous.

Body above brown, beneath grey white.

Female. Expands $1\frac{2}{10}$ inch. Similar to male, but on both surfaces with a slight violet tint.

From 2 ♂, 1 ♀, received from A. W. Chapman, Esq., Apalachicola, Florida.

I learn from Mr. Chapman that a specimen of *Timetes Eleucha*, Hübner, has been taken at Apalachicola; it is a Cuban species, and not hitherto known to belong to our fauna.

HESPERIA MELANE, n. sp.

Male. Expands $1\frac{3}{10}$ inch. Upper side brown more or less tinted with fulvous, especially at base of primaries and over whole surface of secondaries; primaries have three small fulvous spots between the subcostal nervules, a fourth, minute, in a line with these, but separated; two large angular spots on disk and another on edge of inner margin; all these spots forming an irregular row across the disk.

Secondaries have a row of indistinct fulvous spots nearly parallel to hind margin.

Under side brown with a yellow tint, most decided on secondaries; spots on primaries repeated but paler and enlarged; on secondaries diffuse, forming a broad yellowish band.

Body brown above, beneath yellow; palpi yellow; antennæ brown above, yellow below; club black, tip ferruginous.

Female. Expands $1\frac{4}{10}$ inch. Similar to male; the spots on secondaries more distinct and those on primaries larger and translucent.

From California 1 ♂, 1 ♀. Collection of Tryon Reakirt, Esq.

Description of a new species of GRAPTA, and Notes on G. interrogationis.

BY J. A. LINTNER.

Grapta umbrosa, n. sp.

Primaries.—Anterior margin moderately curved toward the tip, similar to *comma*. Tip never falcated, as in *interrogationis*. Posterior and interior margins less excavated than in *interrogationis*. Above fulvous; basal region deeper; disc not so red as in the other Graptas. Fringe white in ♂, except at tips of nervules, where it is brown; in ♀, white in some of the interspaces, and brown interspersed with white in others. Posterior border, with a narrow submarginal band of fulvous, preceded by a connected series of dark brown crescents rather obscurely defined. The row of triangular spots anterior to these, a shade lighter than the disc, with the two next the tip, edged before with black. The seven discal spots are of a less glossy black than in *interrogationis*.

Secondaries.—Tail straight, short, not exceeding three-fourths the length of that of *interrogationis*, which it equals in breadth; length in ♂, one-half greater than in ♀. Above, the disc is purplish black, shading into dark fulvous at the base and at the interior margin. The black spot between the subcostal nervules is not so conspicuous as those of the primaries; that between it and the costal nerve, indistinct or wholly wanting; that lying partly within the discoidal cell and extending over the lower nervule of the submedian (which spot is oblong and quite distinct in *interrogationis*) is small, sometimes geminate, or reduced to a simple dot; in lieu of the conspicuous triangular black spot at the bifurcation of the submedian in *interrogationis*, is an obscure shade resting on the upper nervule and above it, and extending nearly to the subcostal nervule. The submarginal row of red crescents which characterizes *interrogationis*, is here obsolete or limited to three rounded spots at the most between the nervules of the subcostal. Tail and tips of nervules with lilac scales; in *interrogationis* the entire hind margin is bordered with lilac.

Beneath in *interrogationis*, a marked feature is the series of yellow or whitish spots of the primaries, usually eleven in number, nearly square, placed on the basal third of the marginal nervure, joining which and extending to the costal nervure are groups of darker colored yellow scales irregular in outline, but grouped opposite to the above costal spots. In this species, the costal spots are fewer in number, smaller, elongated, occupy but the basal fourth of the costa, and are not so conspicuous as to be a prominent feature; the contiguous yellow scales are not grouped,

but are reticulated with the brown of the alternations of the costal spots. Both wings in the ♂ are beautifully and distinctly variegated with light and dark brown; on superiors, a costo-subapical violet shade, and inner margin of inferiors glossed with violet. The ♀, of a duller brown, and less variegated with dark brown on the basal half; the superiors faintly glossed with violet, the inferiors conspicuously so. A submarginal series of crescents of violet colored scales, forms in the ♂ a connected band except at the apex, in the ♀ an interrupted one. Before and parallel to this in the ♂, the inferiors have a dark brown band extending from the anal to nearly the anterior angle, contracted centrally and at its extremities. Within this band, between the nervules, is a row of rounded spots of lighter brown, pupilled with black; these spots, but without the enclosing band, are better defined and more distinctly pupillated on the primaries. In the ♀, instead of the dark band on the inferiors, there is simply an interruption of the violet shading, in which space are the rounded pupillated spots; on the superiors, the spots are obsolete, but the pupils distinct; in *interrogationis* ♀, these pupillated spots do not appear. The silver discal character is similar in outline to that of *interrogationis* but more delicate, its upper portion being sometimes divided in two parts. Palpi above, dotted with a few light fulvous scales, barely visible without a lens. Expanse of wings, ♂ 2.25, ♀ 2.50 inches. Described from four ♂, nine ♀.

It is not a little singular that this species should for so long a time, have escaped detection, but the probable reason may be found in its comparatively rare occurrence preventing the bringing together of sufficient numbers to show the constancy of its characteristic features. Its marked difference of color has long been known, and had lent to it in ordinary reference, the designation of "the black variety." Harris in 1841 in his Report on the Insects of Massachusetts, refers to it in his description of *interrogationis* thus: "hind wings in the male most often black above, except at the base, and sometimes of this color in the other sex also." The occurrence of both sexes, afforded sufficient evidence of its not being a sexual variety, which it was thought by many to be, and its association with *interrogationis* in New England, New York and elsewhere, proved it not to be a casual result of local influences. It does not appear to have been particularly described even as a variety. The figures of *interrogationis* of Cramer and of Sm.–Abb., represent the posterior half of the secondaries black merging into dark fulvous, but these are probably only exaggerations of coloring, for the outline of the wings in both cases, is that of *interrogationis*. Were

they faithful representations, they would indicate a passing of the one style of coloration into the other, which intermediate grades have never come under our observation.

In addition to the black wings of *umbrosa*, there are the marked differences of color as compared with the species from which we separate it, of the duller shade of the anteriors as above described, and a less degree of blackness of the spots. There is also a translucency of the wings, which usually permits the silver character of the under surface to be seen from above. This translucency is very noticeable when the insect is held between the eye and the light, when, also, the obsoleteness of the spots of the inferiors is favorably shown, in the almost immaculate appearance of the wings.

But if these differences are of questionable specific importance, conclusive evidence of the distinctness of our two species is afforded in the shape of the wings, viz., in the curve of the costo-apical margin of the primaries, in the degree of excavation of their posterior and interior margins and in the length of the tails. Placed side by side, these features will at once strike the eye, and so marked and constant are they, that from comparison of outline alone, the species can be determined. There is also a difference in their sizes,—the expanse of *interrogationis* being in the ♂ 2.50, ♀ 2.75 inches, which exceeds *umbrosa* by .25 inch.

Additional confirmation of the validity of this species, may be found in the circumstances under which it first was brought to my observation. During the first week of July 1861, there were brought to me at Schoharie, fourteen larvæ and chrysalides taken from or very near a garden hop-vine, which, from the casual notice given them, were presumed to be those of *interrogationis*. The larvæ were mature, and in a day or two entered their pupal state. The imagines emerging in about twelve days, proved, to my surprise, to be every one of the "black variety"—three males and eleven females. About the middle of July, several other seemingly identical larvæ were taken by me from hop-vines, which emerging the last of the month, gave the ordinary *interrogationis*. Impressed with a belief in the specific difference of the "black variety" I endeavored to ascertain its larva, and to this end, collected on Aug. 10th two chrysalides, and twenty larvæ varying from one half-inch in length to nearly full size. During the ensuing two weeks many additional larvæ were taken by me from hop yards, and grouped in four breeding cages, in accordance with colorational differences which were observed and noted. Of these differences, in lieu of copying at length the notes then taken, it may suffice at the present to state that they

presented the following gradations: head ranging from red to a glossy black; spines of the head, from red at base and black above with white annulations to the branches, to wholly black; spines of extremities, from black below and red above, to wholly red; dorsal spines, from red banded with white, and black tipped, to entirely red; lateral rows of spines, from pale red almost white, to ferruginous; body with pustulations from white to rufous; linings of body, from well defined and continuous stripes, to lines simply indicated by interrupted markings.

After their transformation to the pupal state, several of the above were found to have fallen victims to their natural enemy *Pteromalus ranessæ* Harris. From four chrysalides especially observed, above one hundred of these parasites emerged from each, a few words respecting which,—in illustration of the remarkable development of the sexual instinct with which we are so frequently presented in the insect world—may not be out of place in this connexion. Escaping from their cocoons contained within the chrysalis one or more small holes were eaten by them, usually in the wing-cases, through which they came forth with fully expanded wings and in perfect condition, as rapidly as one could follow another. No sooner had a male made his exit, than he at once sought out and united with the opposite sex, quickly passing with vibrating wings and antennæ from one to another: and so extreme was the ardor impelling them to their unions, that several were observed intently watching at the holes through which their companions were to emerge, and instantly appropriating each female as she made her appearance.

As the result of the above larval collections, about one hundred and ten *interrogationis* were obtained, and not a single *umbrosa*. Some minor differences of shading were presented, but none sufficient to warrant classification in accordance with the previous larval grouping.

The pupa cases from which *umbrosa* emerged, were lain aside for future comparison, but when opened after the lapse of two or three years, they were found to be almost entirely powdered by the destructive *Anthrenus varius* Fab. Unless my recollection is much at fault, they were of a delicate purplish cast, quite in contrast with the ferruginous hue of *interrogationis*; and with several of the dorsal spines having a notable degree of transparency.

The observations above recorded, render it probable that the specimens of *umbrosa* obtained, were the progeny of one parent. We may also infer a close larval resemblance to *interrogationis*,* and also a pre-

*Mr. Edwards has obtained the larvæ in W. Virginia, and reared numbers of

cedence in the time of appearance of the summer brood of the former, of not less than two weeks. Its rarity is shown by the above collections made from different hop yards, as well as by the fact of its falling so very seldom in the hands of the collector. Besides the above specimens, but one other has ever been taken by me.

Since the preceding pages were written, it has been represented to me that *umbrosa* is identical with the *C. aureum* of Fabricius. A careful examination of the Fabrician descriptions of *C. aureum* and *interrogationis* has shown me that neither can be regarded as synonymous with *umbrosa;* they are as follows:

Papilio N. C-aureum.

Fab. Syst. Ent.(1775) p. 506, n. 266. P. N. P. alis dentato-caudatis, fulvis, nigro-maculatis; posticis subtus C-aureo notatis. Linn. Syst. Nat. ii, 777, 169.

Habitat in Asia.

Fab. Spec. Ins. (1781) tom. 2, p. 94. n. 410. Mant. Ins. (1787) tom. 2, p. 50, n. 495.—P. N. P. alis dentato-caudatis... .....as in Syst. Ent.

Fab. Ent. Syst. em. (1793) tom. 3, pars 1, p. 78, n. 243. Description as in Syst. Ent., and in addition, quotation of Cramer Pap. ii, tab 19, figs. E. F.

Papilio N. interrogationis.

Fab. Supp. Ent Syst. (1798) tom. 5, p. 424, n. 243-4. P. N. alis caudatis fulvis, nigro maculatis; subtus glaucis; striga punctorum nigrorum, posticis C-aureo notatis. Habitat in America boreali. Nimis affinis P. C-aureo at paullo major et alæ subtus glaucæ striga punctorum nigrorum.

From the citations by Fabricius of Linnæus and Cramer, it appears that his *C-aureum* was identical or supposed to be the same with the Asiatic species (Chinese, Cramer). This species according to Godart "resembles strongly *polychloros* on the upper side. The underside of its wings is obscure towards the base, yellowish towards the extremity, with a golden C, or rather silver, on the disc of the inferiors. The upper side of most of the females, presents between the middle and the posterior border, five bluish spots, of which three are on the superior wings and two on the inferiors." To this species are referable, *Papilio Angelica* Cramer, Papil. pl. 388, figs. G, H, and *Papilio Angelica* Herbst, Papil. tab. 160, figs. 3, 4.

In elucidation of the error of Fabricius, Godart's description and synonymy of *interrogationis*, is herewith presented, from Encycl. Method. Herbst, (1819) tom. ix, p 301, n. 15.

Vanessa P. interrogationis.

Van. alis anticis falcatis, suprà fulvis, nigro maculatis; posticis extus subcaudatis, cœrulescenti-nigris, basi ferrugineâ: his subtus ? argenteo notatis.

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the imago therefrom, during the month of June of the present year.

Papilio N. C-aureum, Fab. Syst. Entom. p. 506, n. 266.—Spec. Insect. tom. 2, p. 94, n. 410.—Mant. Ins. tom. 2, p. 50, n. 495.—Ent. Syst. em. tom. 3, pars 1, p. 78, n. 243 (Le Mâle).

Papilio N. interrogationis, Fab. Ent. Syst. em. tom. 5. Suppl. p. 424, n. 243-4 (La femelle).

Papilio C-aureum, Cramer, Pap. 2. pl. 19, figs. E, F.

Papilio C-aureum, Herbst, Pap. tab. 162, figs. 1, 2.

Papilio C-aureum, Smith-Abbot, The Nat. Hist. of the rarer Lepidop. Ins. of Georgia, vol. I, p. 21, tab. 11.

Fabricius has taken the male of this Vanessa for the *C-aureum* of Linnæus, and he has made of the female a separate species under the name of *Papilio interrogationis*.

It has between two, and two and a half inches of breadth. The upper surface of the superior wings is fulvous, with seven or eight unequal black spots, and the posterior border of an obscure brown. The upper surface of the secondaries is of a bluish-black, with the base ferruginous. The under surface of the male is of a wood gray (*gris-bois*) undulated and variegated with brown; the under surface of the female is brown and lightly glossed with whitish-green, especially on the secondaries, on which the disc presents in both sexes, a silver spot in form of an interrogation point or interrupted C. There is besides toward the posterior border of each wing, a row of black points. The body is black above, with some greenish hairs on the thorax; the antennæ are brown, with the anterior third of the club whitish and the rest black. From Virginia and the neighboring States.

The description in the above paragraph is applicable to *umbrosa*, and if unqualified, would lead us to refer it to that insect. The "alis anticis *falcatis*," however, forbids such a reference, and indicates its having been drawn from some Grapta which as yet has no place in our collections, or, as is more probable, from Abbot's figure of *C-aureum*, to which it suspiciously conforms, and which is not our *umbrosa*. In *C-aureum* of Abbot, the primaries are conspicuously falcated; in *umbrosa*, they are never falcated. The two differ otherwise materially in outline, and in the extent of the black shading of the posterior wings.

In the Supplement to vol. ix, Enc. Method., page 819, n. 15 (duplicata), Godart has amended his *interrogationis*, so that it conforms to the species as generally accepted at the present day. It is as follows:

Vanessa P. interrogationis.

It has from two to two and a half inches breadth. The upper side of the wings is fulvous, with eight or nine unequal black spots on the superiors, and three on the inferiors. The outer margin, which is of a ferruginous more or less intense, with a transverse series of yellow spots, is bordered exteriorly with ash-blue.

The under side is of a blackish brown or dead leaf color, more or less shaded with gray violet, with a silver spot in form of an interrogation point or interrupted C on the disc of the inferiors. There is also toward the terminal border of the four wings, a transverse row of black points, in part sprinkled with bluish.

The female, ordinarily larger than the male, has the origin of the costa be-

neath yellow, reticulated with ferruginous. The prolongation of its secondaries is less, and the upper surface of the primaries has nine black spots. From North America.

Boisduval and Leconte in their *C-aureum*, describe the upper side of the inferiors as brown, or of an obscure ferruginous glossed with bluish green, with the base of a bright ferruginous. The outline of their figure approaches very nearly to that of *umbrosa*, but the representation of the inferiors differs widely from it, in that less than their inner half along the internal margin is shaded lightly with brown, while the rest of the wing is fulvous and distinctly spotted with black as in *interrogationis*. In their synonymy, they cite *C-aureum* of Cramer, of Fabricius in Ent. Syst., and of Smith-Abbot; the *interrogationis* of Godart (p. 301, n. 15,) and of Fabricius in Supp. Ent. Syst.

From the above it is evident that *umbrosa* is not the *C-aureum* of Fabricius, Smith and Abbot, Boisduval and LeConte, or the *interrogationis* of Godart, and is justly entitled to its indication as a new species.

New York State Cabinet of Natural History, May 1869.

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Descriptions of two ACARIANS bred from the White Maple (*Acer dasycarpum*).

BY HENRY SHIMER, M. D.

VASATES, nov. gen.

Abdomen long, tapering to a point, with two long anal setæ. Legs *four* in number. Inhabits galls. Movement not rapid.

Vasates quadripedes, n. sp.—Body pale yellowish or yellowish-red, elongated to a point behind and terminated by two long slender hairs. Legs directed forward and quite at the anterior extremity, four in number, of the two posterior pairs, usually found in acarians, there is positively not the slightest trace, even in the most mature specimens; a few hairs are scattered over the legs, the foot appears to be 3-jointed, and is terminated by spines or hairs, tibiæ short. Length, 008—.005 inch.

Gall on the upper side of the leaf, by a small pedicel; form angular, wrinkled and pitted; at first green, but at length becoming reddish; the opening beneath is very small and surrounded with a little woolly down; size variable, say from one-twenty eighth to one-eighth of an inch in diameter.

For several years I have observed these galls in the early part of the summer. In the early spring as the leaves begin to expand from the bud, these galls, of very minute size, may be seen forming on the leaf. They appear first on the lower limbs and leaves next to the body of the tree, hence it appears probable that they pass the winter—perhaps in the egg-state—on the ground around the tree, and in early

spring ascend the trunk. As spring passes into summer, I observe many leaves entirely covered with these galls, so that the leaf is dwarfed, curls up and sometimes drops off; a thousand or more galls are sometimes found on a single leaf. In June I observed in the galls numerous whitish, translucent eggs, and larvæ in abundance; these latter are falciform and very sluggish and without much observable motion. After about two weeks, I saw them in great numbers, crawling about on the leaves, having left the galls to ascend to the body, doubtless for the purpose of establishing new galls; one fine warm days, thousands may be seen on one leaf. Some spider webs on the under side of the leaves serve as traps for these creatures, where they accumulate in such numbers as to give the web a pale reddish color, although the individual acarians are undistinguishable to the naked eye. The galls continue during the summer, but later many of them become black and *dry and very few of the green ones then contain inhabitants.*

ACARUS, Linn.

Acarus aceris, n. sp.—*Imago.* Thorax yellowish-brown, legs inclined to same color; a grayish central line on the back, on each side of which there is sometimes another line of like color; a number of whitish hairs about as long as the legs are scattered over the body; tarsi 3-jointed, with two claws and a number of hairs; head rounded, depressed, grey, forehead slightly emarginate. Length of body 0.13 inch; to end of extended forelegs, .02 inch.

Pupa of various colors, from pale greenish-grey to blackish, with a few comparatively long hairs; legs greyish, translucent; head and anterior part of body pale. The very young larvæ are nearly white.

Eggs globular, milk-white, 0.04 inch in diameter, placed on under side of the leaf.

In June these acarians were quite numerous on the underside of the leaves, and a number of their moulted skins were observed, principally along the veins of the leaf. I sometimes find this species on the same leaves in company with *Vasates quadripedes.* From observing their motions, and from often finding them without any other probable food, I concluded that they feed on the sap. The larvæ of *Chrysopa* and also of some species of Coccinellidæ have been observed feeding upon these acarians, and no doubt devour many of the larvæ of *Cecidomyia aceris* (Trans. Am. Ent. Soc. i. p. 281) which were abundant on the leaves.

Mt. Carroll, Illinois, April 1st, 1869.

Catalogue of the described TENTHREDINIDÆ and UROCERIDÆ of North America.

BY EDWARD NORTON.

(Continued from page 242.)

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Sub-family 4, LYDIDES, Westw.

Lydides, Westw., Mod. Int. ii, App. 54, 1840.
Lydiens, Brullé, Hym. iv. 658. 1.
Tenthredinides, Sec. 8, Steph. Brit. Ent. Mand. vii, 95.
Tenthredonidæ, Genus 4, 11, 12, Hartig. Die Blattw.

Antennæ multiarticulate, short or lengthened, setaceous, simple or pectinate; posterior tibiæ often with side spurs; labrum minute; saws but slightly serrated at tip, dilated and elbowed at the base.

56. **LOPHYRUS**, Latr.

Lophyrus, Latr., Hist. Nat. des Crust., Lepel. Mon. 53., Leach, Steph., Hartig. &c.
Hylotoma *, Fab. Syst. Piez., 20, 1.
Diprion, Schrank, Fauna Boreal.
Pteronus, Jurine, Hym. 1807, 61.
Tenthredo, Panz., Geoffroy, &c.

Wings with one marginal and four submarginal cells, the cross-nervure between the 1st and 2nd incomplete; 2nd and 3rd submarginal cells each with a recurrent nervure; under wings with two inner cells.

Antennæ 17—23 articulate, among the females serrate, with the males bi-pectinate, the rays short toward the apex, sometimes the several final joints bearing but one; terminal joint simple.

Head transverse, wide in the males, in the females small; maxillæ with a tooth-like horny continuation on the inner sides; clypeus small, with distinct, wavy edge; labrum small, roundish; mandibles obtuse, 3-toothed, with horny base.

Abdomen broad, depressed in females.

Legs simple, tibiæ with two acute spurs at apex.

Larvæ, 22-footed, not hairy, social, appearing in great numbers, feeding on the pine and fir.

The females are much larger than the males.

They form a simple opaque cocoon, which is very small in proportion to the size of their bodies.

They generally come forth in about two or three weeks, but Curtis records one instance in which an individual remained two years unchanged. Dr. Hartig has given complete details of the transformations of seventeen species, (European).

The imago presents great variations in color, so that caution should be exercised in determining new species; Dr. Hartig has described no less than sixteen varieties of *L. pini*.

Fortunately they are attacked by many parasites, both Ichneumonidæ and Diptera, which aid in diminishing the numbers which are so destructive.

Sub-genus I. (Hartig.)

Lanceolate cell open at shoulder, with oblique cross line and broken hinder veins. Antennæ of males bipectinate; tibial spurs blunt, membranous; on the hinder tibiæ sometimes much enlarged, widened.*

Synopsis of arrangement of species.

A. Lanceolate cell petiolate;
Antennæ ♂, 15-jointed, stout †.....1, **tropicus.**
Antennæ ♂, 15-jointed, slender.....2, **Cordoviensis.**
B. Lanceolate cell with straight or oblique cross-nervure;
Antennæ ♀, 16-jointed.....3, **Fabricii.**
4, **compar.**
Antennæ, ♂ 15-, ♀ 17-jointed.....5, **pinus-rigida.**
Antennæ, ♂ 18-, ♀, 17-jointed.....6, **Abbotii.**
Antennæ, ♀ 17-jointed.....7, **Akhursti.**
Antennæ, ♂ 21-, ♀ 18-jointed; tergum pale.....8, **abietis.**
Antennæ, ♂ 19-, ♀ 18-jointed; tergum black.....10, **pinetum.**
Antennæ, ♀ 18-jointed.....9, **abdominalis.**
Antennæ, ♀ 19-jointed.....11, **americanus.**
Antennæ, ♂ ♀ 21-jointed.....12, **Lecontei.**
Antennæ, ♂ 24-jointed.....13, **Edwardsi.**
Cuban species.
Antennæ, ♂ 20-, ♀ 17-jointed.....14, **insularis.**

1. **Lophyrus tropicus**, n. sp.

Antennæ, head and apex of abdomen black; remainder of body testaceous: wings hyaline. Length 0.28. Br. wings 0.58 in.

♂. Antennæ 15-jointed, short, stout, pilose, each ray short, enlarged at end; that upon the 3rd joint, (basal ray) very much enlarged at base, so as to be serrate; antennæ piceous, rays paler; head black, shining; labrum, mandibles and palpi, luteous; the whole body testaceous, the two apical segments of abdomen blackish; legs testaceous, apex of hinder tibiæ and all the tarsi piceous; inner spur of hinder

* Dr. Hartig has three Sections, viz:

Sec. 1.—Antennæ of females thickened near the end; of males with unfeathered, reflexed tips.

Sec. 2.—Antennæ of females thickened in the middle, somewhat serrate: of the males with a complete comb. Inner spur of hinder tibiæ rough and enlarged. Female with black cross-bands between eyes.

Sec. 3.—Antennæ of females thickened in middle, wholly serrate; of the males fully pectinate; spurs of hinder tibiæ as usual.

Most of our species belong to Section 3.

† It is often difficult to count the number of joints in the antennæ of the males. In some cases two rays appear to spring from one joint.

tibiæ as usual; claws long, simple; wings unequally blackish, obscure, clearest at 1st discoidal cell, marginal cell appendiculate; 2nd submarginal cell with two recurrent nervures; lanceolate cell petiolate; under wings with one inner cell.

Cordova, t. c., Mexico. One ♂. (H. de Saussure.)

The marginal cell is rounded at the end, leaving a small apical space, or cell at its tip.

2. **Lophyrus cordoviensis**, n. sp.

Color black, legs partly white; wings sub-hyaline. Length 0.22. Br. wings 0.44 inch.

♂. Antennæ black, 15-jointed; pectination of 3rd joint single, serrate, the joint stout; pectination of remainder very slender, produced, not pilose; head and whole body black; abdomen slender as in *Nematus*; legs black, the anterior pair obscure reddish white before; hinder spurs as usual, claws long, simple; wings blackish, semi-obscure; marginal cell appendiculate; first submarginal oval, as long as second; the second recurrent nervure received at intersection of second and third submarginals; lanceolate cell petiolate; under wings with one inner cell.

Cordova, t. c., Mexico. One ♂. (H. de Saussure).

3. **L. Fabricii.**

Lophyrus Fabricii, Leach, Zool. Misc. iii, 1817. 3.
Lepel. Mon. Tenth., 56, 161.
Fitch, Nox. Ins. iv, 60, 276.

"♀. Antennæ black; head luteous, spotted with fuscous; abdomen and legs luteous; wings sub-fulvous hyaline. ♀ Long 3¾ ex. alar. 7½ lin. Antennæ of female 16-articulate.

"Georgia." Not seen.

4. **L. compar.**

Lophyrus compar, Leach, Zool. Misc. iii, 1817. 4 ♀ ♂.
Lepel. Mon. Tenth., 54, 153.
Fitch, Nox. Ins. iv, 60, 277.

"♀ ♂. Antennæ, head, thorax and abdomen black; legs pale, femora black; wings hyaline. Antennæ of female 16-articulate.

"Georgia." Not seen.

5. **L. pinus-rigida.**

Lophyrus pinus-rigida, Norton, Packard's Guide, p. 228, 1868.

♀. Length 0.30. Br. wings 0.65 inch. ♂. Length 0.25. Br. wings 0.55 inch.

♀.—Color of body luteous-brown; antennæ 17-jointed, brown, a line joining the ocelli, a stripe down each of the side lobes of the mesothorax, and the sutures of metathorax, black; body pale beneath; the trochanters and base of the tibiæ waxen-white; claws with an inner tooth

near the middle; wings faintly clouded; cross-nervure of the lanceolate cell straight.

♂.—Color black. Antennæ black, quite short, 15-jointed, with twelve rays on each side, those at the base nearly as long as on the sixth and seventh joints of flagellum; apical joint simple, enlarged at base; abdomen beneath and at base yellow-brown; legs at base, of the same color; below the knees whitish.

Massachusetts. (A. S. Packard.)

The larvæ were collected by Mr. Fish at Eastham (Cape Cod), ravaging the young pitch-pines of that region. The eggs are laid singly in the side of the pine needle, sometimes one on each side of the leaf.

6. L. Abbotii.

Lophyrus Abbotii, Leach, Zool. Misc. iii, 1819, 2 ♀. Lepel. Mon. Tenth. 56, 159. Fitch, Nox. Ins. iv, 60, 275. Riley, Prairie Farmer, May 25, 1859. Packard, Guide, p. 226, fig. 153.

♀.—Long, 0.32; wings 0.66 inch. ♂. Long, 0.25; wings 0.50 inch.

♀.—Antennæ 17-jointed, stout; a strong blunt process as long as width of joint on all but the final article, which is quite short and partly concealed in the one preceding; nasus emarginate; the three apical joints of maxillary palpi short, third joint as long as fourth and fifth; head, thorax above and pleura covered with coarse separated punctures; spurs of hinder tibiæ long and blunted; claws with a strong inner tooth distant about one-third their length from the tip; color yellow-brown; antennæ black, with the basal half of third joint pale; tip of mandibles, sides of metathorax and claws black; palpi, tegulæ, collar, pleura, sides of abdomen and tibiæ waxen-white; wings faintly clouded; lanceolate cell with slightly oblique cross nervure.

♂.—Antennæ 18-jointed, rays apparently fifteen on each side (C. V. Riley states eighteen on one side and fifteen on the other); apical article clubbed; color of antennæ and body above black; labrum, palpi, tegulæ and edge of collar white; remainder of body and legs yellow-brown; spurs of inner tibiæ apparently not cleft; basal half of wings clouded; lanceolate cell with straight cross-nervure.

Hab.—Georgia, (Leach); Indiana, (Riley).

Found destroying the leaves of the white pine at Valparaiso, Ind. "These flies appear early in June. There is but a single brood of larvæ which remain on the trees in Illinois until November (!) and hiberate before changing into pupæ."

7. Lophyrus Akhursti, n. sp.

♀. Long, 0.30. Br. wings, 0.66 inch.

♀.—Antennæ 17-jointed, quite tapering toward the tip; processes

about half as long as width of joints, shorter toward the tip; apical joint blunt, without process, as long as the preceding; nasus scarcely emarginate; third joint of maxillary palpi a little longer than fourth; the three final joints longer and more slender than those of *L. Abbotii;* punctures coarse, separated; claws with a rather obtuse inner tooth; color of antennæ ferruginous-blackish; color of body ferruginous; sutures of face, thorax and abdomen, most of metathorax and part of third and fourth segments of tergum blackish; pleura dark brown; wings slightly clouded; lanceolate cell with straight cross-line.

New Jersey. (J. Akhurst.) One ♀.

It is possible that a further comparison of species may prove this to be the *L. pinus-rigida.*

8. L. abietis.

Lophyrus abietis, Harris, Inj. Ins, 1841, 2nd Ed: 1852. 411.
Fitch, Nox. Ins. iv, 63, 283.

Color of female mostly testaceous; of male black, legs testaceous; wings hyaline. Length ♀ 0.28. Br. wings 0.56 inch. Length ♂ 0.24. Br. wings 0.48 in.

♀. Color yellowish-brown. Antennæ black, base of third joint pale, 18-jointed, thickest in middle, serration distinct, that of third joint as deep as those succeeding; head of one color; a stripe on each side lobe of mesothorax and the sutures, metallic black; body and legs beneath paler than above; hinder spurs as usual; claws with a short inner tooth near the tip; wings hyaline, nervures blackish, stigma and costa yellowish.

The male has the antennæ 21-jointed, short, rays longest in middle (fifth to ninth joints), each covered with short, strong hair; those on basal joints double and long; head and thorax black; tergum dark piceous; pleura and breast black; venter reddish brown; legs reddish yellow, darkest at base; wings hyaline, iridescent, apical half of under wings clouded.

Massachusetts, Connecticut.

The larva, feeds on the fir leaves. It is 22-footed; is five to six tenths of an inch long, thickest before the middle, tapering behind; the head and three anterior pair of legs are black; body pale green, yellowish beneath; a wide dark green stripe down the back, separated by a paler stripe and two dark green stripes on each side; hinder legs yellowish. It is social in its habits and feeds in companies until fully grown, It appears in June and July. The cocoons are oblong oval, rounded at ends, of a tough silk, whitish when new. Length 0.35 inch. They are generally made in August. They are formed on the leaves of the trees on which it feeds and often adhere to them until

the next season. Most of the insects come forth soon after the fourteenth day, but some are delayed and appear during the ensuing months. Several hundred specimens bred by myself in Farmington, Conn., came forth mostly in August. If there is a second brood in September, the numbers must be comparitively small, for I have not seen them nor any fresh cocoons late in the season. Dr. Harris states that the cocoons are mostly formed on the ground among the roots of plants. But in the above instances very few were found except upon the branches of trees. When the insect comes forth from the cocoon it cuts a circular piece from on one end as cleanly as with a knife. This sometimes remains as a sort of lid. This larva is very destructive, remaining for several years in a region and causing the foliage of the fir trees to appear brown as if burnt by fire.

From the cocoons of *L. abietis*, I have bred the following parasitical insects, viz:

1. *Ichneumon rubicundus*, Cresson.
2. *Ichneumon fungor*, Norton.
3. *Cryptus Lophyri*, n. sp. [1]
4. *Pimpla inquisitor*, Say.
5. *Hemiteles utilis*, n. sp. [2]

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1. **Cryptus Lophyri**, n. sp.—Length 0.30, with ovip. 0.35. Br. wings 0.50 inch.

♀—Color black, part of abdomen rufous. Antennæ three-fourths the length of body, about 30-jointed; color dark rufous, palest on 3rd and 4th joints, and darkest toward apex; semi-annulate with yellow from middle of 6th to middle of 11th joints (the annulus is almost complete). Head and thorax black, punctate: a pale narrow line, partly or wholly interrupted in middle down each inner orbit; tegulæ and points at the two sharp angulate corners of metathorax, sometimes also the scutel and post-scutel yellow; abdomen rufous upon the petiole, the 2nd and basal half of 3rd and sometimes all of 3rd segments and the apical edge of the following segments; the remaining segments black, except the apex, which is white; legs rufous, the hinder pair darkest; the apex of hinder femora, tibiæ and tarsi black, with a band at base of their tibiæ and base of first tarsal joint; wings hyaline.

♂—Antennæ black, without annulus, 2nd basal joint rufous beneath; the inner orbital line unbroken; nasus and mandibles yellow; tegulæ, edge of collar, scutel and post-scutel, the basin of metathorax, except a spot at reception of petiole, yellow; abdomen rufous, but darker or blackish toward the apex, with a more or less distinct whitish spot on the apical segment; hinder tarsi all yellow except a spot near the base of 1st joint and the claw-joint, which are black.

Connecticut. Fourteen ♀ and seven ♂ bred.

2. **Hemiteles utilis**, n. sp.—Length 0.15. Br. wings 0.25 inch.

♀—Color honey-yellow, apex of abdomen black, wings with two brown bands. Antennæ nearly as long as body, about 21-jointed, color of body, darker toward apex, base of each joint blackish; eyes slightly diverging below; head and body of one color as far as middle of 3rd abdominal segment, beyond which it

6. *Campoplex genuinis*, Norton.
7. *Aleiodes parasiticus*, n. sp. [3]
8. *Pteromalus verditer*, n. sp. [4]
9. *Cheiropachus nigro-cyaneus*, n. sp. [5]
10. *Musca carnaria.*

I first saw the *Lophyrus abietis* about ten years ago on the *Abies* in this region. For some years all of our trees were stripped of their leaves, while the progress of the insects southward was very slow. Two

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is blackish; ovipositor about two-fifths the length of abdomen; two blackish stripes, sometimes wanting, one on each side lobe of mesothorax, and a blackish spot behind scutel; legs the color of body, hinder tibiæ darkest but having their base pale, all the claw joints of tarsi black; upper wings white-hyaline, clear at tips, crossed by two wide bands, the first rising near base of stigma, the second beyond its middle and covering the whole marginal cell, with a whitish clear spot near the apex of stigma; stigma large, dark, whitish at base; under wings hyaline, iridescent, with more or less of whitish above.

Connecticut. Ten ♀ bred.

3. **Aleiodes parasiticus**, n. sp.—Length 0.25. Br. wings 0.50 inch.

Color honey yellow; the head, the metathorax and apex of abdomen black, with the form of *Chelonus*. Antennæ nearly as long as body, slender, color of body, blackish toward tip, the two basal joints ferruginous; thorax honey yellow, pleura and metathorax black, petiole and two next segments honey yellow, apex of third and all the remaining segments black with a band of whitish hair at the base of each; legs the color of body: the tips of femora, tibiæ and tarsi black, which is most distinct on the hinder legs; wings cloudy.

Connecticut. One ♀ bred. I have taken about one hundred of this species elsewhere. It seems to be very common.

4. **Pteromalus verditer**, n. sp.—Length 0.12—13. Br. wings 0.18—20 inch.

♀—Color blue green, apex of abdomen purple bronze. Antennæ 13-jointed, somewhat clavate; the four basal joints yellow, remainder dark, pilose; head and prothorax green, thorax and base of abdomen blue green; apical half of abdomen purple bronze; head and thorax coarsely pitted; abdomen polished, its form almost that of an inverted pyramid with the apical segments flattened: coxæ all green (sometimes the middle part of the femora also); remainder of legs yellow, the apical tarsal joints blackish.

♂—The color of the male is bright grass green; the antennæ are pale yellow except near apex; there is a yellow band about the middle of abdomen: legs pale yellow.

Connecticut. Sixteen ♀, eight ♂ bred.

5. **Cheiropachus nigro-cyaneus**, n. sp.—Length 0.10. Br. wings 0.16 inch.

♀—Color dark blue black, varying to purple. Antennæ 13-jointed, the two basal joints nearly as long as all the rest, yellow; scape blackish, 3rd joint not much shorter than 4th or 5th. Head transverse, wider than thorax, prothorax narrow and narrower than thorax transversely; abdomen polished, flattened, ovalo-triangular; legs yellow, coxæ black, the anterior and posterior thighs somewhat thickened.

Three specimens bred. I cannot feel sure of the genus of this insect.

years ago they had reached the trees of a friend one mile south, while my own trees were entirely deserted by them. Perhaps the crowds of parasites which follow them have destroyed all those left behind. Most of these parasites in leaving the cocoon, burst their way out at the side, cutting a rough passage with their jaws, not clean and sharp like the *Lophyrus*.

9. L. abdominalis.

Lophyrus abdominalis, Say, Long's 2nd Exp., II, 1824, 315. ♀.

"Antennæ 18-jointed, pale yellowish; thorax with black spots.

"♀.—Head reddish yellow; a large, transverse, black spot above the antennæ descending on each side between the antennæ and the eyes, to the sides of the mouth, and ascending by two distant narrow lines over the vertex to the occiput; mandibles piceous at tip; thorax with large black spots, occupying the greater portion of the surface; scutel pale yellow; wings hyaline, nervures and stigmata fuscous; thighs dusky at base; tergum yellow, tinged with rufous, whitish on the lateral margin; segments piceous on their posterior edges.

"North-west Territory."

One specimen bred by Mr. Akhurst of New York, on the pine, resembles this, except that the abdomen is dark rufous above, the serration of the antennæ is not prolonged and is shortest on the 3rd and 4th joints; head wide; hinder spurs as usual, claws with an obtuse tooth removed from the tip; there are two cross lines, one straight and one oblique on each lanceolate cell; head and thorax covered with sparse deep punctures. Length 0.28. Br. wings 0.58 inch.

10. Lophyrus pinetum, n. sp.

Female testaceous, spotted with black, wings hyaline. Male mostly black. ♀. Length 0.32. Br. wings 0.64 inch. ♂. Length 0.28. Br. wings 0.56 inch.

♀.—Color brownish yellow; antennæ 18-jointed, short, hardly longer than width of head, serrate, the teeth prolonged, (about as long as width of the joint), tooth of 3rd article as long as any; color black, most of 3rd article pale; head without black lines; a piceous stripe on each side-lobe of mesothorax; scutel pale; sutures of metathorax and most of tergum dark blackish brown, the latter with paler spots in middle; edges of tergum, body beneath and legs pale yellowish, femora darker; hinder spurs as usual, inner claw tooth large, obtuse, removed from tip; wings hyaline, stigma and costa yellowish; lanceolate cell with nearly straight cross-line.

♂.—Antennæ 19-jointed, shorter than in *L. abietis*, the rays much prolonged, tips of five apical rays enlarged, hair on rays long and coarse; head nearly as wide as thorax; head and thorax black; abdomen dark

piceous above, a little paler beneath; mouth, tegulæ and anterior angle and a spot on pleura piceous; legs yellow red; middle tibia with a cleft spur.

Cleveland, Ohio.

Six specimens (4 ♀, 2 ♂), received from Mr. J. Kirkpatrick, Cleveland O., taken from the pine in large numbers. The larvæ were described by him in the *Ohio Farmer*, Cleveland, Vol. IX, Nov. 24, 1860, but unfortunately I have not access to the paper.

11. L. americanus.

Lophyrus americanus, Leach, Zool. Misc. III, 1817.
Lepel., Mon. Tenth. 55, 158.
Fitch, Nox. Ins. iv, 59, 274.

"Antennæ black, head luteous. Thorax luteous spotted with black, abdomen deep luteous. Legs luteous. Wings hyaline, at base tending to sub-fulvous. Antennæ of the female 19-jointed.

Georgia. ♀ Long 5 lin. exp. wings 9 lin."

This is very much like *L. pinetum*, except in the number of joints of antennæ.

12. L. Lecontei.

Lophyrus Lecontei, Fitch. Nox. Ins. iv, 58, 273. Riley, Prairie Farmer, May 1868. Packard, Guide, p. 226.

Length, ♀ 0.40—0.50. Br. wings, 0.70—0.82 inch.

♀.—Antennæ 20-jointed, tapering, the processes at sides of the five or six basal joints of flagellum longer than width of joints; final joint as long as the preceding; nasus slightly concave; maxillary palpi with third joint short and globose, sixth joint longer than fourth or fifth; punctures coarse, separated, most distinct behind the scutel; color of body yellow-brown, antennæ blackish; metathorax and tergum and a stripe down each side of venter black; tips of palpi yellow; remainder of palpi, edges of anterior angle, pleura, outer edges of venter and knees, waxen-white; wings faintly clouded; lanceolate cell with oblique cross-nervure.

♂.—I have not seen the male. Mr. Riley describes it as follows: "Antennæ 24-jointed, having on one side seventeen large, and on the other seventeen small branches, the second joint furnishing but one stout branch and the terminal two also furnishing but one each. Thus one counts twenty large branches on one side and seventeen small on the other." Mr. Riley evidently is in some error here, as the antennæ are 22-jointed, as the second joint mentioned above is probably the first joint of flagellum on third joint of antennæ.

Larva.—About one inch long; color dirty or yellowish-white, and

void of any greenish hue. The dorsal black marks are wider anteriorly than posteriorly, and are usually broken transversely in the full grown individuals; also further apart than in *L. Abbotii*; lateral spots subquadrate, with an additional row of smaller black marks below them; head shining reddish-brown, with black eye spot; jaws tawny; anal segment entirely black above; venter, together with pro-legs (14 abd. and 2 anal), immaculate; feet black, with white joints. When young it is without marks.

Pupa.—A brown cocoon, larger than that of *L. Abbotii.*

New York, (Fitch). New Jersey, (Riley).

Found October, 1867, by Andrew S. Fuller, at Ridgewood, New Jersey, on the scotch and austrian pines in myriads, eating all the leaves as they go. Imago began to come forth February 15th; cocoon found between leaves and on ground.

13. **Lophyrus Edwardsi**, n. sp.

Long, 0.25. Br. wings. 0.50 inch.

♂.—Antennæ apparently 24-jointed, rather long, final joint slender, clubbed, the preceding joint with but one long ray, and the rays slender, that on third joint as long as any, first and second joints greatly enlarged; head and body polished; punctures coarse, separated; nasus with a shallow emargination; the three apical joints of palpi long and slender; middle tibiæ with a spur cleft at tip; claws with a large inner tooth near the middle; color black; the palpi, tegulæ, venter and legs yellow-red; wings hyaline, costa pale, nervures blackish; lanceolate cell with straight cross-line.

San Francisco, California. (Henry Edwards.) One specimen.

14. **L. insularis.**

Lophyrus insularis, Cresson, Proc. Ent. Soc. Phil., iv, 1865.

Cuba.

15. **L. interruptus.**

Hylotoma interrupta, Fab., Syst. Piez., 21. 4.

Lophyrus! interruptus, Lepel. Mon. Tenth. 57. 164. ♀.

South America.

Sub-genus II (*Monoctenus*), Dahlb.

Antennæ of the males with one row of pectinations. Lanceolate cell open at shoulder, without cross line, but contracted in middle. Tibial spurs sharp.

Europe.

57. **PTERYGOPHORUS**, Klug.

Wings with one marginal and three submarginal cells, the 2nd receiving two recurrent nervures.

Antennæ multiarticulate, the two basal joints straight, the remainder inserted obliquely; in the males pectinate, in the females serrate.

Australia.

58. **TARPA**, Fabr.

Tarpa, Fabr. Syst. Piez. 1804, 19.
Megalodontes, Latr. Hist. Nat. des Ins. 3, 302.
Cephaleia, Jurine.
Diprion, Schrank.

Wings with two marginal, and four submarginal cells; lanceolate cell with oblique cross-line.

Antennæ 15—18-jointed; generally the middle articles are prolonged obliquely and serried one against another.

Posterior tibiæ with two side spurs.

Europe, Asia.

59. **LYDA**, Fabr.

Lyda, Fabr. Syst. Piez. 1804, 43.
Pamphylius, Latr. Hist. Nat. des Ins. 3.
Cephaleia spec. Jurine, Hym. 1807, 65.
Pæn, Schrank.
Tenthredo spec. Panz. Lin. &c

Wings with two marginal, four submarginal and three discoidal cells; lanceolate cell with oblique cross-line, under wings with two inner cells.

Antennæ setaceous, slender, 19—36-jointed, the 1st and 3rd generally the longest.

Head generally as wide as thorax; body stout; abdomen much flattened; nasus rounded or slightly emarginate; labrum obtusely lance-shaped; mandibles lengthened, 3-toothed; maxillary palpi 6-jointed, the two basal joints short; labial palpi 4-jointed, the longest, thickened in the middle.

Anterior tibiæ with two or three spurs; posterior tibiæ with five spurs.

Larvæ with six pectoral and no abdominal legs; two 3-jointed antennæ-like organs at the side of the head; a horny appendage behind the after segments. These larvæ live in companies in webs upon pines and some fruit trees. Westwood enumerates several species which live upon leaves of the pear, the aspen and the rose. Hartig has figured a species upon the pine. Each larva spins for itself a separate case within the larger webs. It forms a cell in the ground, lined with silk, in which to pass the pupa state. They do not often appear in such numbers as to be very injurious to vegetation.

Table to assist in finding the species.

Sec. 1. Anterior tibiæ with one side spur. Second brachial cell without cross-nervure:

Testaceous. with paler spots, not clearly defined.....1. ochrocera.
Testaceous, with distinct paler spots.....2. brunnicans.
Black, pale spots:
Abdomen black, venter pale.....3. masculiventris.
Abdomen black, venter pale.....4. credita.
Abdomen rufous, pleura black.....5. bicolorata.
6. tesselata.
Abdomen rufous, pleura pale.....7. variegata.

Sec. 2. Anterior tibiæ without side spur:

***Tribe* 1. Third joint of antennæ sometimes twice or thrice as long as fourth; second brachial cell with incomplete cross-nervure, broken at lower tip:**
Black, abdomen black or with yellow bands:
Head mostly black, wings fasciate with black.....8, fasciata.
Head mostly pale, wings black.....9, plagiata.
Head mostly black, wings clear.....10, canadensis.
Black, abdomen with rufous bands.....11, excavatus.
Black, abdomen rufous:
Antennæ black.....12, pallimacula.
Antennæ rufous.....13, pacifica.

***Tribe* 2. Third joint of antennæ but little longer than fourth; second brachial cell with incomplete cross-nervure (not extending more than half across the cell):**
Testaceous.....14, cercata.
Black, abdomen rufous:
Antennæ yellow banded.....15, luteicornis.
Antennæ black, side lobes of mesothorax black.....16, scripta.
Antennæ black, side lobes of mesothorax yellow spotted.....17, multicincta.
Black, abdomen rufous banded, cheeks black, no oval spots above ocelli.....18, rufofasciata.
Black, tergum banded with white.....19, semicincta.
Black, tergum black, venter banded with white.....20, cavifrons.
Black, legs pale.....21, inconspicua.

Species not assigned.....22, circumcincta.
23, amplecta.

1. L. ochrocera.

Lyda ochrocera, Harris' Catalogue.

Testaceous, with spots on mesothorax; tergum black, sides edged with brown. Length 0.44. Br. wings 0.92 in.

♂. Testaceous; antennæ 28-jointed, long, 3rd joint one-half longer than 4th; color brown, blackish toward apex; head large, shining, coarsely punctured, with obsolete or indistinct yellow crescents about the ocelli and spots at base of antennæ; tegulæ and spots before V-spot, two stripes on side lobes of mesothorax, scutel and behind, indistinctly paler than rest of body; a spot on each side of mesothorax near tegu-

læ, dark brown; metathorax and tergum black; sides of tergum, pleura, breast and venter brown; tip of venter and base of each segment black; legs brown, tips of coxæ and of femora paler; wings faintly clouded, stigma dark, prolonged; marginal cross nervure nearly coinciding with nervure below; cross nervure of 2nd brachial cell wanting; a bulla in middle of 1st submarginal nervure, at base of 2nd and indistinctly at base of 3rd.

Var. a. ♂. The yellow markings less distinct, black spots about ocelli and antennæ, the tergum irregularly brownish. Mt. Washington summit (Baron Osten Sacken); ♀ antennæ 36 jointed, tergum brownish, beneath pale. Penn. (Coll. Am. Ent. Soc.).

Massachusetts, N. H.

This is much like *L. ocreata* Say, and were it not for the difference in form of antennæ and the inner spur on anterior legs, it might be thought the same, although larger.

2. L. brunnicans.

Lyda brunnicans, Norton, Proc. Ent. Soc. Phil. iii, 1864, 15, 31, ♀.

Ochre brown, with many yellow spots on head and body. Length 0.48. Br. wings 1.06 inch.

♀. Color dark testaceous; antennæ long, slender, about 36-jointed, color of body; head polished, with sparse punctures; edge of nasus irregular, two oval spots on occiput, enclosed by two semilunate marks which are enlarged at ends and touch the eyes; two obsolete spots above and two larger spots outside of antennæ, cheeks, edge of nasus, indistinct spots on collar, on anterior lobe and base of middle lobe of mesothorax, scutel, postscutel, prothorax beneath, most of pleura, a spot above posterior coxæ, and edges of abdominal segments beneath, straw white; legs color of body; wings ample, clouded, clearest at base, nervures brown; marginal cross nervure coinciding with nervure below; 2nd brachial cell without cross nervure.

Rocky Mts.—Colorado. (Coll. Am. Ent. Soc.). One ♀.

The abdomen is very long and wide.

3. L. maculiventris.

Lyda maculiventris, Harris' Catalogue. (Not described.)

Black, with pale bands on venter. Length 0.40. Br. wings 0.78 inch.

♂. Color black; antennæ with 3rd joint as long as the 4th and 5th, color luteous at base, darker toward tip, a black spot on basal joint above; a spot above eyes, a wide band about lower half of orbits, nasus, mandibles, tegulæ, sides of tergum and tips of five ventral segments, luteous; legs reddish luteous; coxæ and a spot on the four anterior femora beneath black; wings hyaline, nervures piceous.

Massachusetts, (Harris' Coll.); Lake Superior, (Cambridge Mus.). Two specimens.

4. Lyda ocellata, n. sp.

Black; spots at sides of antennæ, mouth and venter, yellow white; wings hyaline. Length 0.40. Br. wings 0.80 inch.

♂. Shining black; abdomen of equal width from base to apex. Antennæ black, the tip of each joint slenderly white, 3rd joint not enlarged, as long as 4th and 5th, (joints beyond the 12th wanting); head coarsely punctured, not pitted, tinted with blue; an indistinct dot at summit of eyes within; a large square inner orbital spot on each side of antennæ, cheeks, nasus and mouth beneath, white; venter white, with blackish spots at base of each segment; legs white, their coxæ, trochanters and femora above, black, the side spur on anterior tibiæ prostrate and so near the apex that its and reaches to it; tarsi long and slender; inner claw tooth short and obtuse and removed from the tip; wings faintly clouded, costa with a straight cross line back of the Y-nervure, 2nd brachial cell without cross nervure.

Mexico. One ♂.

5. Lyda bicolorata, n. sp.

Black; head brown with black spots, abdomen, except at tip, yellow brown, wings violaceous.

♀.—Color blue black; antennæ black, slender, 34-jointed; head brown, sparsely punctured, a spot at base of each antenna, a triangular spot above each eye, one about ocelli and a large spot on occiput, extending over back of head to neck, black; anterior angle brown; abdomen honey-yellow, except the two apical segments; legs black, anterior tibial spine not reaching to tips; inner claw tooth between middle and tip; wings violaceous.

Albany, N. Y. (Dr. Peck.) One ♀.

6. L. tesselata.

Lyda tesselata, Klug, Berl. Mag. ii, 1808, 276, Tab. 7, fig, 4, ♀. Lepel. Mon. Tenth. 10, 28.

Pamphilius tesselatus, Latr., Encyc. No. 14.

Lyda abdominalis, Norton, Proc. Ent. Soc. Phil. i. 1862, 199, ♀.

Black, with yellow crescents and spots on head and thorax; abdomen, except at tip, rufous. Length 0.50. Br. wings 0.96 inch.

♀.—Color black, the two basal joints of antennæ black, tipped with yellow, (remainder wanting. Klug says "antennæ luteous, the first article spotted with black"); two oval spots above ocelli, partly enclosed by two crescents, which join on the occiput, two lines extending downward on each outer edge of head to mandibles, two oval spots outside of antennæ, and a transverse line on clypeus, white; mandibles rufous,

palpi pale; tegulæ, a spot before and one beneath, V-spot, scutel, dot at base of metathorax and a spot on the pectus, before each of the coxæ straw-white; abdomen rufous, the apical segment above and a spot on the two apical segments beneath, black; legs at base black; ferruginous below, tips of the femora, tips of tibiæ and apical joints of tarsi blackish; tips of coxæ and a line on femora beneath, white; wings large. faintly smoky, stigma lengthened, not rounded, ferruginous.

Pennsylvania. (Coll. Am. Ent. Soc.)

A specimen from Massachusetts in the Harris Collection, varies in having these yellow dots above the antennæ and the legs below the knees, mostly black. The marginal dividing nervure nearly coincides with that below; the second brachial cross-nervure is wanting.

7. **Lyda variegata**, n. sp.

Black, antennæ luteous, head, thorax, and pleura with white spots, abdomen yellow red. Lenth 0.50. Br. wings 0.98 inch.

♀.—Black; large and stout; antennæ long (broken beyond 19th joint) third joint as long as 4th and 5th, color yellow, with the two basal joints, one-half the 3rd and all above the 10th black; head black. coarsely pitted, marked as in *L. tesselata*, viz: two oval spots above ocelli enclosed by two crescents, enlarged at both ends and joining a line on outer edge, extending to mandibles, an irregular spot on inner orbits, two smaller spots above antennæ and a cross line on labrum, white; edge of collar, V-spot, a spot on mesothorax on each side of scutel, a large irregular spot on pleura and a line behind, yellow-white; abdomen wholly reddish-yellow, wide at base; coxæ black, with a stripe above and spot beneath on the posterior pair; femora black, with a reddish line on each before; tibiæ and tarsi yellow-red; wings yellowish, stigma black, a faintly obscure spot beneath; marginal cross-nervure coinciding with that beneath, no Y in the costal space, but a shorter oblique cross-nervure, 2nd brachial with no inner cross-nervure.

Cordova, Mexico. One ♂. (H. de Saussure.)

This differs from *L. tesselata* in having the scutel black, a large whitish spot on pleura, the abdomen of one color &c.

8. **L. fasciata.**

Lyda fasciata, Norton, Proc. Ent. Soc. Phila., i. 1862, 200, ♀ ♂.

Black, thorax and abdomen spotted and banded with yellow; wings fasciate with black. Length 0.32. Br. wings 0.72 inch.

♂.—Black, antennæ 20-jointed, black, 1st and 3rd joints of equal length, the 3rd enlarged and as long as the two following; the head and the two basal joints of antennæ coarsely pitted; a minute dot over each eye, a spot from between antennæ to tip of clypeus, the middle of

mandibles and tip of palpi yellow; tegulæ, V-spot, scutel, a transverse line on base of metathorax, spots on the sides of the 3rd, 4th, 5th and 6th segments and the apex of tergum and four bands beneath on the same segments, yellow; legs yellow, varying to ferruginous; the coxæ, except at tip and a spot on the femora, black; a broad blackish band covers basal two-thirds of superior and most part of inferior wings; apex of wings hyaline, stigma large, rounded, black.

♂.—The male has no V-spot on mesothorax nor transverse line on metathorax, no yellow spot on 3rd segment of tergum and no black spots on femora. The basal joints of antennæ are yellow beneath.

Var. *a.* ♂.—No V-spot. The edge of fascia on wings is not clearly defined from the clear apex. The 2nd brachial has a complete cross-line.

United States (Smiths. Inst.).

Pennsylvania (Coll. Am. Ent. Soc.), New-York, Connecticut, 4 ♂, 2 ♀.

The female has in one case four discoidal cells, the first submarginal receiving two recurrent nervures.

9. **L. plagiata.**

Lyda plagiata, Klug, Berl. Mag. ii, 1808, 278, Tab. 7, fig 6, ♀. Lepel. Mon. Tenth. 5, 11.

Pamphilius plagiatus, Latr., Encyc. No. 6.

Black; middle of tergum black. Length 0.44. Br. wings, 0.80 inch.

"Antennæ black; head luteo-testaceous, vertex black; thorax black, anterior part luteo-testaceous; abdomen black, excepting the base of tergum, which is pale testaceous. Legs luteous; wings fuscous."

"Baltimore, N. Am."

♂.—Antennæ 26-jointed, 3rd joint one-half longer than 4th; head of one color, except a black spot extending from ocelli to occiput within sutures; tegulæ and prothorax pale; legs pale, the coxæ and apex of hinder tibiæ black, tarsi fuscous; wings violaceous, semi-obscure, marginal cross-nervure not coinciding with that below; the 2nd brachial cell with cross-line, broken at bottom; a round obscure spot in the contraction of lanceolate cell.

Tennessee, (Smiths. Inst.); Pennsylvania, (Coll. Am. Ent. Soc.). Two ♂.

10. **Lyda canadensis,** n. sp.

Color black; with slender orbital spots, mouth, tegulæ, scutels, pleura and venter straw yellow; a rufous band on tergum. Length 0.45; Br. wings 0.90 inch.

♂.—Antennæ black, sub-serrate, as long as to base of abdomen, slender, 22-jointed; 1st joint twice as long as 2nd, 3rd as long as 4th and 5th together, apical joint a little longer than the preceding; head

wide, extending back behind the eyes nearly as far as before, formed as in *L. plagiata* and *ochrocera*; margin of clypeus truncate, not rounded; a little protruded tooth on each side at the base of mandibles; nasus, base and outer side of mandibles, a slender spot from mandibles to eyes, a crescent shaped line extending from the inner summit of each eye over the back of head to neck, straw white; tegulæ, upper edge of anterior angle, scutel and postscutel, three spots on pleura, one over each of the coxæ, tip of anal segment, and the legs down the basal end of tibiæ, straw-white; tip of mandibles, a large spot covering most of the second, third and fourth segments of tergum and the legs below the knees, rufous or honey yellow; basal patches and first segment of tergum substriate laterally; wings faintly clouded; nervures brownish black.

11. **Lyda excavata**, n. sp.

Length 0.28. Br. wings, 0.62 inch.

♂.—Color black; the first and basal half of second joints of antennæ, face below ocelli, except a black line above each antenna, cheeks, tegulæ, spot on prothorax, scutel and postscutel, sides of basal plates, lower half of anterior angle, pleura, a spot above hinder coxæ, venter, legs behind the middle of femora, straw-white; a spot on the tip of the first and most of the second and third segments of tergum and the lower half of legs, yellow-red; antennæ slender, longer than thorax, setiform, the third joint as long as fourth and fifth. Head not unusually prolonged behind the eyes; a deep wide basin occupies the lower half of face, enclosing the antennæ, with a very irregular carina around all its borders, forming a sort of M above the antennæ and an inverted T below, on the nasus. A carina runs from between the antennæ down the nasus; wings as usual, hyaline, cross-nervure of third brachial nearly complete; claws stout.

Canada. Rev. L. Provancher.

12. **Lyda pallimacula**, n. sp.

Black, with yellow spots and crescents on head, thorax and pleura; abdomen rufescent. Length 0.44. Br. wings 0.90 inch.

♀.—Shining black; antennæ 26-jointed, the third more than one-half longer than fourth, the final joint longer than that preceding, the third, fourth and fifth joints slightly serrate and flattened, head rugose below ocelli, smooth above, and with the thorax, sparsely punctured; two oval spots above ocelli, enclosed by two crescents, enlarged at ends but not connected, which touch the occiput and eyes within the cheeks, edges of nasus and labrum, base of mandibles and palpi, yellow white; tegulæ, lower half of anterior angle, V-spot, scutel, post-scutel, line beneath,

ridges of metathorax, a broad transverse line on pleura from tegulæ to medial legs, spots above first and third pairs of legs, straw color; abdomen above reddish-brown, two or three basal segments at sides black; venter pale yellow, rufous toward apex; coxæ and femora yellow, the four anterior tibiæ and all the tarsi ferruginous; hinder tibiæ black; inner claw tooth large and so much on one side as to appear bifid; wings large, faintly clouded, nervures piceous, stigma darker, not lengthened, marginal cross-nervure not coinciding with that beneath; second brachial cell with nearly complete cross-nervure.

English River, 104° 58′ N. L. H. B. T. (Smiths, Inst. R. Kennicott). One ♀. Farmington, Connecticut. Two ♀.

This seems allied to *L. tesselata*. The third joint of antennæ is about twice the length of the fourth.

13. **Lyda pacifica**, n. sp.

Length 0.30. Br. wings 0.62 inch.

♀.—Color black, the flagellum of antennæ rufous; nasus, basal half of mandibles and palpi, lower half of cheeks, a crescent from the inner summit of each eye to upper edge of head (where it widens), two inner arcs, one on each side of ocelli, tegulæ and edge of collar, summit of the two scutels, and the basal half of legs, straw-white; the abdomen, except the first and tip of final segment, and the legs below the tips of femora, rufous; claws black, cleft at tips; antennæ short, not extending to base of metathorax, about 21-jointed (tips broken off), third joint one-half longer than fourth; edge of nasus convex, mandibles with two inner teeth, the first very obtuse, the second prominent; body polished; wings, clear, apical one-third clouded.

California (San Francisco, April 1869, H. Edwards). One ♀.

Resembles *L. pallimacula*, but is smaller, the antennæ are much shorter, the second submarginal nervure joins the marginal nerve in this at some distance from the marginal cross-nervure.

14. **Lyda ocreata**.

Lyda ocreata, Say, Bost. Jour. i. 1835, 222, ♀.

Yellowish-green, antennæ and spots blackish. Length 0.36. Br. wings 0.76 inch.

♀.—Greenish-yellow, shining, head wider than thorax; eyes small, widely separated; head deep back of eyes; antennæ 28-jointed, blackish, lower half of basal joint pale, first joint three times as long as second; third not so long as first, scarcely longer than fourth; a spot on vertex enclosing ocelli and two lines in sutures from base of antennæ to occiput, black; head quite transparent, with three or four brownish crescents from outer orbits to back of head; labrum wide,

piceous; a transverse blackish line on neck, a spot on each side of collar near tegulæ, connected through the suture back of anterior lobe, a larger spot on each side of scutel and spots on metathorax black; four brown spots on mesothorax, two on anterior lobe and one on each side lobe; tergum blackish at sides, paler in middle; legs yellowish; tips of femora, the tibiæ and tarsi brownish; wings hyaline, large, nervures obscure; stigma pale; marginal cross-nervure coinciding with second cross-nervure; third brachial cell with incomplete cross-nervure.

Canada, Mass., Conn, Ia. (Say.).

15. **Lyda luteicornis**, n. sp.

Black; the apex of antennæ, spots and crescents on head and thorax yellow, abdomen rufous. Length 0.40. Br. wings 0.76 inch.

♀.—Shining black; antennæ 28-jointed, black, the last 16 joints white; third joint one-half longer than fourth, head polished, with shallow punctures; two oval dots above ocelli, enclosed by two crescents, (touching summit and eyes, widened at ends, the lower bent away from the eyes and deeply cleft) two dots above antennæ, inner orbits up to crescent, cheeks, edge of clypeus, and mouth below, yellow; mandibles tipped with black, with a strong inner tooth; tegulæ and a spot beneath, V-spot, scutel and a transverse line behind, pale yellow; abdomen rufous, paler in middle beneath; basal segment blackish; legs pale yellow, coxæ and apical three fourths of hinder tibiæ black; hinder tarsi ferrugiuous, claws apparently bifid; wings hyaline, costa blackish, second brachial cell with incomplete cross-nervure.

Farmington, Connecticut. Three ♀.

In one case the lower end of the crescent upon the face is enlarged into a square and not cleft.

16. **L. scripta.**

Turpa scripta, Say, Long's 2nd .Exp., ii, 1824, 312.

Lyda scripta, Harris Catalogue. Norton, Bost. Proc. viii, 223.

"Black, with white lines and spots; abdomen rufous." Length 0.44. Br. wings 0.92 inch.

"Hypostoma on its anterior margin, mandibles and palpi whitish; line upon the orbits extending from near the antennæ to the occiput and together with an insulated spot each side on the vertex, when viewed from behind presenting the form of the figure 3, white; a white slightly oblique spot above the base of each antenna; inferior orbits white: thorax with an abbreviated, transverse, angulated line before, slightly interrupted in the middle, a line before each wing and three small spots on the middle placed triangularly, white; wings hyaline,

nervures fuscous; feet yellowish-white; abdomen rufous, first segment, and sometimes the tip, black.

"North West Territory and Arkansa.."

Two imperfect specimens in the Harris Collection from New Hampshire, said to have been identified by Say, have the antennæ wanting so that I cannot be certain of the tribe. They have the ends of the third, above mentioned, on the face, split like a V; the hinder tibiæ and all the coxæ black, the claws apparently cleft of equal size, the teeth near each other, marginal cross nervure not coinciding with that beneath, second brachial cross-nervure incomplete.

17. **L. multisignata.**

Lyda multisignatus, Norton, Proc. Ent. Soc. Phil., iii. 1864, 15, 32.

Black; many yellow spots on head and thorax; abdomen rufous. Length 0.32. Br. wings 0.72 inch.

♀.—Shining black; antennæ 24-jointed, black, mandibles bidentate, one mandible with a small tooth between the others, which is wanting on the other; two lunate spots above ocelli, enclosed by larger crescents, which connect with a short inner orbital line, four oval parallel spots above antennæ, a large spot on cheeks, nasus (with two inner black dots) and mouth beneath, straw-white; tegulæ, collar, V-spot on anterior lobe, a triangular apot on each middle lobe of mesothorax at base and summit of scutel, straw white; abdomen yellow rufous; legs of three colors; coxæ and trochanters black, femora white, tibiæ and tarsi dark waxen; each of the four posterior tibiæ with two side spurs; wings slightly clouded at apex, third brachial cell with incomplete cross-nervure, marginal cross-nervure not connecting with that below.

Rocky Mts., Colorado. (Coll. Am. Ent. Soc.). One female.

18. **L. rufo-fasciata.**

Lyda rufofasciata, Harris Catalogue.

Black, with yellow spots and a rufous band on abdomen. Length 0.32. Br. wings 0.64 inch.

♀.—Black, antennæ black, 25-jointed, third joint one-half longer than fourth; two slender crescents from occiput to inner orbit opposite antennæ, an oval dot above antennæ on outer side, sometimes joined to crescent, two angular lines forming a diamond above antennæ, edge of nasus and mouth below, pale yellow; tegulæ, scutel and spot behind, yellow; a broad rufous band on abdomen, covering the second, third fourth and fifth segments; legs pale, almost white; coxæ black, tarsi ferruginous; hinder tibiæ blackish toward apex; wings hyaline, stigma, black, second brachial cell with incomplete cross-nervure.

New Hampshire. (Harris Coll.) Connecticut. Four specimens.

19. **L. semicincta.**

Lyda semicinctus, Norton, Proc. Ent. Soc. Phil. i. 1862, 144. ♀.

Color black, with white spots and bands on tergum. Length 3.04. Br. wings 0.74 inch.

♀.—Black; antennæ white, third joint hardly longer than fourth, apical half of the two basal articles blackish; orbits and back of head white, except at summit; two dots back of ocelli and one beneath; two interrupted lines from orbits to ocelli, nasus and tip of labrum, white; tegulæ, edge of collar, V-spot, scutellum and behind, edge of three apical seguments and sides of tergum white; legs white; middle of femora and tips of tibiæ and tarsi black; wings faintly clouded, a smoky spot on upper pair below lanceolate cell.

Virginia. (Coll. Am. Ent. Soc.) One female.

20. **L. cavifrons.**

Lyda cavifrons, Cresson, Proc. Ent. Soc. Phil. iv. 1865, 246, 3. ♀.

"Black; face, mouth, outer orbits, tegulæ and legs pale luteous; wings fusco-hyaline; face concave. Length 4 lines. Br. wings 8 lines."

♀.—Shining black; head with a deep longitudinal furrow on each side of the ocelli; extending from the base of the antennæ to the occiput, connected by a cross furrow behind the ocelli; face concave, the margins prominent, subcarinate, with a longitudinal ridge in the middle of the clypeus; the face, two spots above the base of antennæ, clypeus, labrum, mandibles, palpi, lower inner orbits, the outer orbits, interrupted in the middle and extending on each side behind the eyes to the occiput, yellowish or pale luteous; antennæ dull black, 27-jointed, the scape beneath luteous, first joint stout, nearly four times longer than the second. Thorax polished; tegulæ and a spot before it, pale luteous. Wings ample, stained with pale fuscous, clearer at base, with a brassy and iridescent reflection; nervures black, pale at base, as well as the costal nervure; marginal dividing nervure not coinciding with the second submarginal nervure, the third brachial cell with an incomplete cross nervure; legs pale luteous; the coxæ and the trochanters except tips, black; tarsi dusky at tips; anterior tibiæ without side spur, each of the four posterior tibiæ with three side spurs. Abdomen shining black; the extreme lateral margins of the dorsal segments and the apical margins of the ventral segments pale luteous; extreme apical segment testaceous.

Colorado. (Coll. Am. Ent. Soc.) One female.

21. **Lyda inconspicua**, n. sp.

Black, legs luteous, wings hyaline. Length 0.32. Br. wings 0.56 inch.

♀.—Dull black; antennæ black, third joint one-half longer than fourth, (joints beyond the sixth wanting) head black, coarsely pitted,

mandibles yellow red; tegulæ testaceous; body black; legs yellow red, coxæ black, tarsi fuscous; wings hyaline, nervures and stigma blackish, second brachial cell with incomplete cross-line.

Pennsylvania (Smithsonian Inst.) One ♀.

Species not seen and position not assigned.

22. L. circumcincta.

Lyda circumcincta, Klug, Ber. Mag, ii. 1808, 279. Lepel. Mon. Tenth. 8, 21.
Pamphilius circumcinctus. Latr. Encyc. No. 10.

"Antennæ black; head and thorax black varied with white; abdomen black, broadly white at sides, beneath white or luteous; legs luteous, wings hyaline.

"Georgia."

Not seen. This is likely to be the same with *L. cavifrons* or *L. semicincta.* It only differs from the first in its white venter.

23. L. amplecta.

Lyda amplecta, Fab. Syst. Piez. 1804, 46. 16. Klug, Berl. Mag. ii. 1808, 282. Lepel. Mon. Tenth. 5, 9.
Pamphilius amplectus, Latr. Encyc. No. 3.

"Antennæ setaceous black, head luteous, with a broad black line on vertex; thorax blue-black, dotted with yellow on each side before; abdomen blue-black, depressed, smooth; legs luteous; wings hyaline and as in others of this genus, enclosing the body.

"Carolina."

Much like *L. plagiata*, Fabr.

Sub-family 5, CEPHIDES, Westw.

Antennæ multi-articulate, 21—28-jointed, clavate or filiform; labrum divided into three elongated lobes; labial palpi 4-jointed, maxillæ bilobed, outer lobes largest, pilose; maxillary palpi 6-jointed, the four basal joints gradually increasing in length, the fifth very minute, the sixth as long as the third. The neck is elongated and the anterior tibiæ have but one spur as in the Uroceridæ. The ovipositor is not exserted and consists of two compressed plates, nearly straight and serrated, but formed as in the true saw flies, defended by two external 2-jointed sheaths. (Westw. Mod. Class, ii, 110.)

CEPHUS,* Latr.

Trachelus, Jurine, Hym. 1807, 70.
Astatus, Jurine, Hym. 1807, 60.

Wings with two marginal cells (the first small) and four submargi-

* Hartig includes *Cephus* in Uroceridæ, from the single anterior tibial spur, form of saws and form of collar. Curtis and Westwood place it among the Tenthredinidæ, from the form of its labium, elongated palpi, spurred posterior tibiæ and form of its larva particularly in relation to *Lyda.*

nal cells, the second and third each with a recurrent nervure. *Antennæ* about 21-jointed, toward the apex sub-clavate. *Anterior tibiæ* with one apical spur; middle tibiæ with one, hinder tibiæ with two side spurs; the tarsi have little membraneous plates beneath. The abdomen is more or less compressed, somewhat as in *Ophion*.

The larva is fleshy, with a scaly head and six minute thoracic legs; the apical segment is attenuated and terminated by two minute points, with a conical lobe on each side.

Their habits are not much known; Mr. Westwood notes one species which deposits its eggs in the young stems of the pear, spirally, the larva feeding within the shoots; another species resides in the stems of wheat and occasionally commits much injury. Curtis refers to a species (*C. abdominalis*) which lives upon the flowering buds of fruit trees. But few species, which are rare, are as yet known in this country.

1. C. abbreviatus.

Cephus abbreviatus, Say, Long's. 2nd Exp. ii. 1824, 314, 2, ♀.

Black, abdomen rufous, at base. Length 0.28 inch.

♀.—"Body black, polished; labrum white, with a dilated, longitudinal fuscous line; thorax with an oblique, white, abbreviated line at the base of the superior wings; scutel with a transverse, white line; mesothorax with a longitudinal white spot; wings hyaline, nervures fuscous; the small nervure which divides the first submarginal cellule is abbreviated and does not reach the margin; feet pale rufous; tibiæ with a white abbreviated line on the exterior side near the knees; posterior tibiæ and tarsia black; abdomen compressed, acutely edged above beyond the middle; first and second segments rufous."

"Pennsylvania."

Not seen. Mr. Walsh writes me that the antennæ of *Cephus abbreviatus* are 29-jointed, the last joints subequal. Probably a *Phyllotoma*.

2. C. heteropterus.

Cephus heteropterus, Harris, Catalogue. Norton, Bost. Proc. viii, 1861, 224, 1, ♂. Length 0.24. Br. wings 0.60 inch.

♂.—Resembles *C. abbreviatus*, except that the basal segments of the abdomen are obscure ferruginous above, and rufous beneath. There are two pale dots on the mesothorax and all the legs are pale honey yellow, posterior tarsi blackish. The small marginal areolet of upper wing is either wanting or incomplete.

Massachusetts, New Hampshire. (Harris' Coll.).

This is probably the male of *C. abbreviatus*.

3. **C. mexicanus.**

Cephus mexicanus, Guér. Icon. Reg. Anim, iii, 403.

"Black; mandibles having a large longitudinal yellow spot in middle of their length; two very small yellow spots in the middle of their front, below the antennæ; more spots of the same color on the border of the eyes near their superior border and on the sides of the head, behind the eyes. There are two yellow spots upon the scutellum; the exterior side of the posterior haunches is yellow, and the knees and the tarsi are of a yellowish brown. Wings transparent, lightly smoky toward the extremity and the nervures brown. Abdomen black, with the second, third, and fifth segments largely bordered with yellow above; this band indented anteriorly and interrupted in the middle (female). Long. 15. Br. wings 22 mill.

"Mexico.

"This species is of the size of *C. latyrus*, and resembles it very much."

61. **JANUS**, Steph.

Janus, Stephens, Brit. Ent. Mand. vii. 1835, 107.

Cephus, Curtis.

Wings as in *Cephus*; areolets of different shape. *Antennæ* multiarticulate, filiform. *Abdomen* short, narrow at the base and dilated at the tip, which is obtuse and rounded in the males, slightly compressed and acute in the females.

Stephens founds the difference between this and *Cephus*, on the long filiform antennæ, the difference in the structure of trophi, and in the areolets of wings and the abbreviated subclavate abdomen.

I. **J. flaviventris.**

Janus flaviventris, Fitch, 7th Rep. Nox. Ins. No. 12.

"Shining black, hind body yellow except at its base, its mouth being straw colored and also the hind margin of its collar, the base of its wings, a small spot above their sockets and the fore and hind margins of the metathorax. The hind body is narrower than the fore body and more narrow and long than in the typical species of this genus, forming almost two-thirds of the length of the insect. Its basal segment is black, edged anteriorly with straw yellow and with a slender line of this color along its middle, ending in a large triangular spot. The second segment is also black at its hinder end and on the sides is a blackish cloud on the sutures of each of the remaining segments. The wings are hyaline and glassy, their stigma sooty brown, which color extends inward occupying most of the anterior marginal cell. A faint smoky cloud may also be perceived near the middle of the poste-

rior apical cell and another along the margin of the anterior one. The hind feet are dusky."

New York. Not seen.

62. PHYLLŒCUS, Newm.

Phyllœcus, Newm. Westw. Mod. Class. ii. 1840, 111. App. 55.

Antennæ slightly thickened beyond the middle, 27-or 28-jointed; filiform. Remainder as in *Cephus*.

2.—Final joint of maxillary palpi inserted at the end of preceding joint. Antennæ subclavate beyond the ninth joint.

1. **Phyllœcus clavata**, n. sp.

Black, with two bands on the tergum and the apex, yellow. Length 0.36—40 inch; br. wings 0.74—80 inch.

♀.—Antennæ as long as to second segment of abdomen, slender as far as ninth joint, beyond which they are subclavate and the joints as wide as long; first and second joints globose. Final joint of maxillary palpi inserted into the end of that preceding. Head quite concave behind. Prothorax concave before, somewhat depressed, nearly angulate at corners, its anterior margin upturned; surface of head and thorax rather dull; mesothorax with scattered punctures; abdomen deeper than wide, rugose, almost shagreened at sides toward the end. Spur of anterior tibiæ short and stout. Inner claw tooth stout. Color black, a spot beneath the upper wings, the second, third, fifth, sides of sixth and tip and sides of apical segments of tergum and tip of second ventral segment, yellow; legs black, with all the femora below their basal third and the four anterior tibiæ yellow; the four anterior tarsi yellow red. Wings smoky hyaline, nervures brown, costal margin yellow. First marginal cell one-third wider at stigma. Lanceolate cell with straight cross nervure. Lanceolate cell about one-half as long as the brachial cell above, the bounding nerve of which does not coincide with the recurrent nervure above.

Var.—A yellow spot on the mandibles; hinder tibiæ obscurely yellow above.

San Francisco, California, (H. Edwards), April and May 1869, 3 ♀.

5.—Final joint of maxillary palpi inserted upon the side of preceding joint.

1.—*Antennæ subclavate beyond the 5th joint.*

2. **P. trimaculatus.**

Cephus trimaculatus, Say, Long's 2nd. Exp. ii. 1824, 313. 1. ♀ ♂.

"Black; abdomen with a yellowish white spot on each side at the middle." Length, 0.50—60. Br. wings 0.84—92 inch.

♀.—Shining black; antennæ 27-jointed, filiform, thickened in middle, "orbits before, two longitudinal spots on the hypostoma and base of the mandibles yellowish white; wings brown black; meta-

thorax with a pale membranaceous, triangular spot behind; abdomen on the middle with a transverse oval, pale yellow spot on each side," on fourth segment.

"Var *a*.—Head immaculate."

"Var *b*.—A very small indistinct spot on each side beyond the middle"

Ct., Penn., N. Y., Mass., Fla.

In the specimens examined, I find a dot (in one case two dots) on each side at summit of orbit within and an oval dot on inner orbits below antennæ. In a specimen from Florida, two oval dots below antennæ. The apical joint of labial palpi is long and large, pear shaped.

The apical joint of maxillary palpi, as in all the succeeding species, is inserted on the side, near the middle of preceding joint. First marginal cell one-half widest at stigma. Lanceolate cell of under wing about one-half the length of brachial cell above. A single male has the antennæ quite short, an oval white spot on the side of third segment and a more slender one at apex on each side of fifth. The anterior tibiæ and the basal third of intermediate pair are white; wings of different specimens vary from subhyaline with clouded tips to obscure blackish.

2.—*Antennæ filiform, scarcely clavate.*

3. P. integer.

Cephus integer, Harris Catalogue, ♀. Norton, Bost. Proc. viii, 1861, 224, 2, ♀ ♂.
Cephus filicornis, Harris Catalogue, ♂.

Black; collar white; a rufous band on abdomen. Length 0.32. Br. wings, 0.62 inch.

♀.—Shining black; antennæ (28-jointed as long as to 2nd segment of tergum), black, filiform; mandibles and palpi yellow, the former strongly bidentate, with a small inner tooth between; tegulæ, wide edge of collar connecting tegulæ and lower edge of metathorax white; the three basal segments of abdomen rufous; legs pale rufous; posterior tibiæ and tarsi blackish, basal third of the tibiæ white, claws bifid; wings hyaline, a fuscous spot beneath stigma on its marginal cell; costa yellowish; first marginal cell shorter than wide, both the nervures received in stigma. Lanceolate cell of underwing nearly as long as that above.

Massachusetts, New York.

4. P. bimaculatus, n. sp.

Black, the four basal segments of tergum venter and legs, yellow red; wings clear with two black apical spots. Length 0.37 inch; br. wings 0.65 inch.

♀.—Antennæ filiform, about 24-jointed, joints beyond the fifth as wide as long. Head and thorax polished, the latter delicately punctured. Head slightly concave behind. Final joint of maxillary palpi

inserted on the side below the middle of preceding joint. Prothorax narrowed before, sloping down to neck, its margin slightly rimmed. Color black; a large spot on mandibles, palpi, hinder edge of prothorax, a stripe along the pleura, a spot on coxæ and the trochanters, straw-white; the four basal segments of abdomen, coxæ and legs below trochanters, yellow red; wings iridescent, perfectly clear, with a large round black spot at the outer end of fourth submarginal cell and a smaller round spot in middle of outer discoidal cell; first marginal cell not wide at stigma. Lanceolate cell of under wing more than two thirds the length of that above, the bounding nerve of brachial cell above not coinciding with recurrent nervure above, but received in discoidal cell.

♂.—The male has the antennæ ferruginous beneath. The four basal segments of tergum are mostly black above. The inner nerve of first marginal cell is broken near stigma.

Farmington, Conn, June. 1 ♀, 3 ♂.

Sub-family 6. XYELIDES, Westw.

Xyelides, Westw. Mod. Class. ii. 1840, App. 55.
Xyelides, Halliday.

Antennæ about 13-jointed, the third joint very much elongated; ovipositor exserted, nearly as long as the abdomen.

63. XYELA, Dalm.

Xyela, Dalmann, Ins. Nov. Gen. Stockholm, 1819.
Analecta Ent. " 1823, p. 27.
Pinicola, Latr. Dict. d'Hist. Nat. 2nd Edition.
Mastigocerus, Klug.

Wings with three marginal cells, the first smallest, and four submarginals, the second and third each with a recurrent nervure; three discoidal cells; the second brachial small, pentagonal; the lanceolate cell with oblique cross line, under wings with two middle cells. *Antennæ* nine to 12-jointed, the third very long. *Clypeus* whole, labrum in form of a long crescent, entire; mandibles unequal, three and four toothed; maxillary palpi, 7-jointed (Hartig 6-jointed! Westw.), elongated and elbowed, the fourth joint being terminated by three minute, fleshy joints; labium 3-lobed, labial palpi 3-jointed. *Ovipositor* exserted, nearly as long as body, enclosed by two compressed pilose sheaths. It is membranous; of two plates (Westwood, Mod, Class ii. 111, from which he argues its agreement with *Tenthredinidæ*) slightly serrated. *Anterior tibiæ* with two apical spurs; hinder tibiæ with two side spurs (Westwood), three side spurs, Hartig.

Larvæ little known. Latreille states that they live "in the interior of vegetables or in old wood."

A.—Antennæ 9-jointed; third submarginal cell with two recurrent nervures.

1. X. ferruginea.

Xyela ferruginea, Say, Long's 2nd. Exp. ii. 1824, 310.

"Ferruginous; thoracic spots and base of the abdomen blackish. Length to tip of oviduct seven-twentieths of an inch.

"Antennæ fuscous, basal joint ferruginous; above the antennæ and extending between the eyes is a transverse black spot; thorax each side above the base of the superior wings with a longitudinal blackish spot, connected behind with a transverse, almost indefinite one; metathorax blackish behind; wings hyaline, slightly tinged with yellowish; nervures brown; tergum, the three basal segments black, remaining segments obsoletely blackish on their posterior margins; posterior pairs of the tibiæ 6-spined, one pair on the middle, one pair beyond the middle, and one at tip.

"Arkansa."

Not seen. The neuration of this and the three following species differs from that of European species, and as Mr. Say remarks, will warrant a separation into another section. "The first radial (marginal) cell receives one recurrent nervure, the second none and the third two. The first is nearly square, slightly oblong, nearly two-thirds the size of the second, which receives no recurrent nervure and is somewhat smaller than the third, which receives two. The maxillary palpi are much shorter than in the Swedish genus.

2. X. tricolor.

Xyela tricolor, Norton. Proc. Ent. Soc. Phil. i. 1862, 144, ♂.

Color steel blue, rufous and black. Length 0.30. Br. wings 0.72 inch.

♂.—Antennæ black, 9-jointed, body steel blue; spots at insertion of antennæ, nasus, labrum, mandibles, palpi and edges of ventral segments, white; nasus edged with black, emarginate; mandibles tridentate, inner edge rufous; legs rufous; tips of posterior femora, the tibiæ and tarsi black; intermediate tibiæ with five, posterior with six spurs; wings hyaline, stigma black, nervures as in *X. infuscata* except the costal space, which is widened and divided by a slender longitudinal nerve, which opens into a Y near the stigma. The underwings have three inner cells, two of which are submarginal.

Kansas. One specimen (Coll. Am. Ent. Soc.).

3. **X. infuscata.**

Xyela infuscata, Harris Catalogue. Norton, Bost. Proc. viii. 1861, 224, ♂.

Fuscous brown, venter and legs reddish yellow. Length 0.24. Br. wings 0.52 inch.

♂.—Fuscous brown, almost black; antennæ black, basal joint almost covered with pale hair; nasus, labrum, base of mandibles, tegulæ, most of abdomen beneath and the legs, dull reddish yellow; posterior tarsi blackish; five spurs on each of the four hinder tibiæ; wings smoky hyaline, cells as in *X. ferruginea;* lanceolate cell large, with oblique cross-line; hinder wings with three inner cells, two submarginal and one beneath.

Massachusetts (Harris Coll.). One ♂.

B.—Antennæ 12-jointed; second and third submarginal cell, each with a recurrent nervure.

4. **Xyela minor**, n. sp.

Blackish piceous, with ferruginous venter and legs, wings very large. Length 0.10, with ovipositor 0.14. Br. wings 0.32 inch.

♀.—Color, variable shades of piceous; antennæ 12-articulate, the third joint nearly as long as remainder of flagellum, the remaining nine articles covered with coarse spiky hair; head and thorax shining, cancellate, mandibles 3-toothed, the teeth much smaller on one of them; mouth and anterior part of scutel white, a spot about ocelli, a line on occiput on each side of ocelli and two others (sometimes obsolete) running from outer ocelli to antennæ and spots on back of head, brownish black; a wide dark line on each side lobe of mesothorax; two slender ones along sutures and another above scutel; tergum more or less black, body beneath pale, legs yellowish; four hinder tibiæ with five spurs; wings faintly clouded, nervures and stigma yellowish, cells as in previous species, but two inner cells in underwings.

Washington, D. C. (Baron Osten Sacken); Pennsylvania, (Smiths. Inst.). Mass. (Coll. Am. Ent. Soc.) 6 ♀.

In one specimen, on one wing the second and third submarginal cells each receives a recurrent nervure as in the European species, while on the other wing the third submarginal receives both nervures.

———o———

Family UROCERIDÆ, Leach.

Abdomen in its whole width soldered to the breast.

Ovipositor filiform, exserted, long, inclosed in a groove beneath the abdomen or arising from a deep cleft beneath the sixth segment and extending backward beyond the apex of the abdomen.

Anterior tibiæ with one spur.

Prothorax and *collar* elongate.

Labrum entire, not lobate; *maxillary palpi* long and 5-jointed or short with one or two joints; *labial palpi* short, with one to four joints.

Larvæ—wood-eaters. The eggs are deposited in holes bored in trees or bushes, and the pupæ undergo their tranformation within the wood.

1. ORYSSUS, Fabr.

Oryssus, Fabr. Suppl. 1798; Syst. Piez. 47.
Sirex Fabr. Ent. Syst. 1775.
Sphex, Scopoli, Ent. Car. 1763.

Wings with one marginal and two submarginal cells, the first with two recurrent nervures; lanceolate cell closed; under wings without inner cell.

Antennæ inserted at the nasus, 10-jointed in female, 11-jointed in male, (Hartig says: ♀ 11-jointed, ♂, 12-jointed); the third and sixth longest, the joint before the last thickened.

Head large, rounded, wider than thorax. *Mandibles* short; *labrum* entire, with two slight lateral impressions; *maxillary palpi* long, 5-jointed, *labial palpi* 3-jointed.

Ovipositor concealed in a groove beneath, springing from the last segment, long and very slender.

It is ordinarily concealed in a channel beneath the abdomen, but is capable of being extended, for which purpose it can be curved at the base. The *terebra* is formed like that of *Urocerus*.

The anterior lobe of the mesothorax is wide and extended back to the scutellum, while the side lobes are very small. The scutellum is widened and large.

Anterior tibiæ with one end spur, simple in the males, dilated and incised in females. *Tarsi* 5-jointed in males, 3-jointed in females.

Little is known of the larva. Latreille and Klug suppose that they subsist upon the wood of standing trees. Scopoli found them upon fir-trees and Latreille upon old house beams.

Westwood has separated this genus into a subfamily *Oryssides*, following Dahlbom, who named it *Oryssini*, and Halliday *Oryssidæ*.

1. O. hæmorrhoidalis.

Oryssus hæmorrhoidalis, Harris, Cat. and Inj. Ins. 1835, ♀.
Oryssus terminalis, Newman, Ent. Mag. v. 486.

"Black, rough before and smooth behind, with the three last segments of a blood-red color; the outer side of the fourth and fifth joints of her antennæ, her knees and a line on the outer edge of her shins are white; her feet are dull red. Her wings are clear and transparent, with a broad, smoky-brown, transverse band beyond the middle of the

first pair. Her body measures nearly six-tenths of an inch in length."

"Massachusetts." Not seen.

2. O. maurus.

Oryssus maurus, Harris, Cat. and Inj. Ins. 1835, ♀.

Oryssus Sayi, Westwood, Zool. Jour. 1835, 440.

"It is of a deep black color, rough before and smooth behind and is marked with white on the antennæ and legs, like *O. hemorrhoidalis*, with the addition of two short white lines on the forehead, between the lower corners of the eyes. The feet are black. The wings have a smoky band beyond middle which, however, fades away toward the inner margin. They measure four to five-tenths of an inch in length."

"Massachusetts." Not seen.

3. O. affinis.

Oryssus affinis, Harris, Cat. and Inj. Ins. 1835, ♂.

"♂.—Differs from *O. maurus* in having reddish feet, and in wanting the two white spots on the forehead. It measures four-tenths of an inch in length."

"Massachusetts."

Dr. Harris thinks that this may be the male of *O. maurus*.

2. **DERECYRTA**, Smith.

Derecyrta, Smith, Am. Mag. Nat. Hist. iv. 1860, 255.

Wings with one marginal, elongate, appendiculate, and four submarginals, the first small, second oblong, widest at apex, third subquadate, fourth extending to the apex of wing, the second and third each with a recurrent nervure, a little within, near their base.

Antennæ setaceous, 23-jointed, the third joint one-half the length of the scape, the fourth as long as the scape, five following joints as long as the third, remainder gradually diminishing in length.

Head subglobose, vertex convex, ocelli prominent, in a triangle between the eyes.

Thorax as wide as the head, oblong, the sides parallel; the prothorax narrowed before into a short neck; scutellum elevated.

Abdomen cylindrical, about twice the length of head and thorax; the ovipositor short and slightly exserted.

Tibiæ bispinose at their apex.

1. D. pictipennis.

Derecyrta pictipennis, Smith, Ann. Mag. Nat. Hist. iv. 1860, 255.

Ega, Brazil.

3. XYPHYDRIA, Latr.

Xiphydria, Latr. Dict. d'Hist. Nat. 1802.
Hybonatus, Klug, Mon. Sir. Germ. 1803.
Urocerus, Jurine, Nouv. Meth. 1807.
Astatus, Panz.
Sirex, Spec. Linn. Fabr. Rossi. DeVill, Lesk, &c.
Ichneumon, Linn.

Wings large, with two marginal and four submarginal cells, the first second and third each with a recurrent nervure; lanceolate cell with oblique cross-line. Under wings with two middle cells.

Antennæ as usual in position, setaceous, 17—22-articulate, first and third longest, terminal joints indistinct.

Head large, orbicular, mandibles broad, with two strong inner teeth, maxillæ terminated by two lobes, maxillary palpi long, 5-jointed, the three terminal joints short; labial palpi stronger than maxillary, 3-jointed (Westwood), (4-jointed, Hartig).

Prothorax elongated into a neck, the collar elevated; thorax broader than the head; ovipositor exserted, extending beyond body, sub-serrate, formed as in *Urocerus*.

Legs slender, anterior pair longest, their tibiæ with one enlarged curved spur, the four basal tarsal joints with two small pulvillæ beneath.

Larva with six small exarticulate thoracic legs, and a horny point at tail.

The larva of *X. dromedarius* is stated by Westwood to be found in willow trees.

Writers differ as to the position of this genus, some placing it with the Tenthredinidæ as a terminal section, leading to Uroceridæ; others in a sub-family, *Xyphidriadæ*, (*Xyela* and *Xiphydria*, Steph.), but Lepel., Westwood and Hartig place it with *Urocerus*, where it seems to belong.

1. **X. albicornis.**

Sirex albicornis, Harris, Catalogue, 1835.
Xiphydria albicornis, Harris, Inj. Ins., 1841, 2nd. Ed. 428.

Black; flagellum of antennæ, spots on head and thorax and six spots on each side of abdomen, white. Length 0.56, with ovipositor 0.62. Br. wings 0.88 inch.

♀.—Shining black; antennæ 18-jointed, white, the two basal joints and tip of apical joint black; head rugose below ocelli, smooth on occiput; thorax rugose, a smooth stripe in middle of each side lobe of mesothorax; terminal joint of labial palpi much enlarged and truncate, thorax abrupt, rounded before; abdomen polished, basal segments roughened; four parallel stripes, the inner two largest, from ocelli to

back of head, two bands (not connected) from mandibles outside of orbits and continued upward on inner orbit to above antennæ and two inner oval dots above base of antennæ, yellow white; mandibles and palpi ferruginous; tegulæ, broad edges of anterior angle (with a brown spot in centre) a slender line on prothorax back of neck, a dot on each side of scutel before, two spots on neck beneath, a dot on middle of pleura, six spots on the sides of the six basal segments of abdomen and a minute apical dot near ovipositor, white; legs dark reddish yellow, tarsi blackish; wings hyaline; apical half faintly clouded, a small obscure spot on upper wings beyond lanceolate cell; under wings with two middle cells.

Conn., Mass., N. Y. August.

A specimen from Canada has but two white lines on vertex, no dot on apical segment of abdomen and the lower middle cell of under wings with incomplete cross nervure, (Coll. Am. Ent. Soc.).

Dr. Harris, states that they are found on the trunks of trees of soft wood, in August.

2. X maculata.

Xiphydria maculata, Say, Bost. Jour. i. 1835, 221, ♂.

"Abdomen black, with seven lateral white spots. Length over two-fifths of an inch."

"♂.—Black; head punctured on the front; with two small spots above the antennæ; anterior and inferior orbits extending in a line behind the eye, base of the mandibles and two lines upon the vertex, white; thorax confluently punctured; about four short white line upon the disk; a white spot before the wings, wings immaculate; tergum with seven lateral, emarginate white dots; beneath, on the neck and pectus with a few white spots; feet honey yellow."

This is probably the male of *X. albicornis*. A specimen from Rev. L. Provancher, Canada, has the antennæ 19-jointed; all but the basal and apical joints whitish on the basal half; thorax coriaceous; scutel large, triangular, the angles acute, with side-edges sharp, hinder angle nearly bidentate; the inner orbital line terminating at about the middle of eye; a white dot at summit of each eye; no white lines on mesothorax; seven lateral spots on tergum.

3. X. tibialis.

Xiphydria tibialis, Say, Long's, 2nd. Exp. ii. 1824, 312, 2.

Xiphydria mellipes, Harris, Cat. 1835. Inj. Ins. 2nd. Ed. 429.

"Black, four lateral spots of the abdomen, first tarsal joints and base of the tibiæ, white. Length more than two-fifths of an inch.

Stethidium rough with confluent punctures, immaculate; wings hyaline, nervures dark fuscous; feet black; tibiæ white, fuscous at

tip; tarsi, first joint white; abdomen black, three middle segments and the penultimate segment, each with a white spot on each side."

Pennsylvania.

Dr. Harris in mentioning his *X. mellipes* only states that it differs chiefly from *X. albicornis* in having only four white spots on each side of the abdomen. It is four-tenths of an inch long.

4. **X. basalis.**

Xiphydria basalis, Say, Bost. Jour. i. 1835, 222, 2.

"Black; abdomen fasciate at base. Length seven-twentieths of an inch.

"♀.—Body black, polished; mandibles and palpi white; thorax, anterior segments glaucous on the posterior margin; wings hyaline, first cubital cellule confluent with the first radial, having only a rudiment of the dividing nervure; abdomen, the two basal segments honey yellow, more or less intermixed with black; feet honey yellow; posterior tibiæ and tarsi black, the former white at base."

Indiana. Not seen.

5. **X. abdominalis.**

Xiphydria abdominalis, Say, Long's, 2nd. Exp. ii. 1824, 311, 1.

Black, abdomen rufous. Length more than half an inch.

"Head confluently punctured, antennæ short; vertex with two distant, longitudinal yellow spots back of antennæ, and another transverse one on each cheek above, from summit to mandibles or on outer orbit; thorax confluently punctured, margined, and with three longitudinal impressed lines, distant before; wings fuliginous; abdomen bright rufous, first segment above blackish; feet piceous black."

Pennsylvania. Not seen. Sex not given. ♀ in collection of Mr. Stephen Calverley.

6. **X. attenuatus.**

Xiphydria attenuatus, Norton, Proc. Ent. Soc. Phil. i. 1862, 144 ♂.

Color pale honey-yellow; body very slender. ♂, Long. 0.26. Br. wings 0.46 inch.

♂.—Pale honey-yellow, antennæ 16-jointed, blackish, two or three basal articles yellowish; a spot inclosing ocelli, tip of mandibles, sides of neck, of meso- and metathorax blackish, tergum irregularly dark, pectus brown piceous; body beneath and legs whitish; wings hyaline, nervures and stigma pale; under wings with two middle cells.

Pennsylvania. (Coll. Am. Ent. Soc.) Four specimens.

4. UROCERUS, Geoffr.

Urocerus, Geoffroy, Hist. des Ins. 1762.

Sirex, Linn. Syst. Nat. 12th Ed. 1766.

Ichneumon, Linn.

Wings with two marginal and four submarginal cells, the first small,

ovate, the lower end pointed, the second and third each with a recurrent nervure; a broad lanceolate cell with oblique cross line; under wings with two inner cells.

Antennæ setaceous, as long or longer than thorax, from 17—25-jointed, first and third longest.

Head moderate, semiglobose, generally narrower than thorax, eyes somewhat kidney shaped; labrum minute, elongate; maxillæ with two lengthened setose lobes, palpi 1-jointed; labrum produced, its palpi 3-jointed.

The *prothorax* is produced into a short neck, the collar wide, abruptly elevated and angulate before. The *metathorax* is of two parts, the hinder portion of which has been regarded by some as the basal segment of abdomen. The *abdomen* long, wide, generally a little thickened toward end, terminating in an elongate point or horn; in the female also with an ovipositor coming from beneath the sixth segment and extending beyond the apex of abdomen. The borer which is inclosed between two horny sheaths, is hollow and nearly cylindical, with lateral grooves and with a separate piece in its lower side, composed of smaller pieces so arranged as to assist the upper part both as a support and an addition of power. This apparatus has sufficient strength to enable the female to deposit the eggs at some depth in solid timber. It is described and figured fully by Westwood, Hartig and others.

Westwood shows an analogy between the saws of the Tenthredinidæ and the borers of *Urocerus*, their general principle being alike, only one is fitted for depositing eggs in tender leaves and stems and the other in solid wood.

The larvæ are long, cylindical, fleshy grubs, six footed, the terminal segment furnished with a short spine. These larvæ bore large holes within the trees, often causing great destruction, especially in pine forests. Mr. Westwood quotes the following statement:

Mr. Raddon forwarded to the Entomological Society specimens of *U. Juvencus*, accompanied by specimens of the wood of a fir tree from Beadley Forest, Worcestershire, perforated by this insect. Of this tree, twenty feet were so intersected by the burrows, that it was fit for nothing but firewood; and being placed in an out house, the perfect insects came out every morning, five, six, or more each day. The females averaged one in twelve for the first six weeks, but afterwards became more plentiful and continued to make their appearance until the end of November, females only being produced during the last two or three weeks. (Trans. Ent. Soc. Vol. i, 85, App.)

When full grown, the larvæ are said to form a slender silken cocoon mixed with chips at the end of their burrows. The pupa greatly re-

sembles the imago, having the limbs laid along the side of the body and breast. When the transformation of the insect take place in the summer the imago is produced in the space of a month, but if the larvæ are not full grown until autumn, the fly does not appear until the following summer.

These insects are among the largest of the order and from their powerful flight, range over a wide extent of country, some of our species being found both on the Atlantic and Pacific coasts. As the larvæ remain a long time in the wood many of our species have been exported in timber and are now common in Europe.

The sexes vary much in color and size and it is difficult to decide which belong to the same species, unless they are taken together.

Much of interest about the structure of habits of European species may be found in the writings of Klug, Dahlbom, Westwood, Hartig, &c.

Table to assist in determining species.

A. Ovipositor not longer than the whole of abdomen:
  1. Antennæ of one color:
    a. Apical cornus of ♀ triangular, not spear-shaped:
      Legs black, abdomen black.....1. **Edwardsii.**
      4. **areolatus.**
      Legs black, abdomen yellow banded.....2. **zonatus.**
      Legs rufous, abdomen cyaneus.....3. **cyaneus.**
      Legs rufous, abdomen banded.....5. **nigricornis.**
  2. Antennæ banded with white or yellow:
    b. Apical cornus spear-shaped:
      Base of all the tibiæ yellow.....6. **albicornis.**
      7. **abdominalis.**
      9. **tricolor.**
      Base of hinder tibiæ yellow.....8. **Cressoni.**
      All the tibiæ and tarsi yellow.....10. **flavicornis.**
B. Ovipositor longer than the whole body.....11. **caudatus.**

A. *Ovipositor not longer than the whole of abdomen.*

A.—Apical cornus of abdomen in female not spear-shaped.

1. **U. Edwardsii.**

Sirex Edwardsii, Brullè, Hist. Nat. Hym. iv, 645. Pl. 45, fig. 1, ♀.

Cyaneus; wings subviolaceous. Largest specimen, Length 1.32, with ovip. 1.44. Br. wings 2.20 inch. Smallest specimen, Length 0.56, with ovip. 0.62. Br. wings 0.96 inch.

Steel-blue, antennæ, 20-, 22-, 23-, 25-jointed (in different specimens) the first and third joints of equal length; head below vertex coarsely pitted, vertex punctured and shining; thorax closely pitted at sides, with a velvety appearance; segments of abdomen velvety, very finely punctured in middle; anal horn shining, coarsely punctured and serrate, its form short, almost triangular; ovipositor the length

of abdomen without cornus; legs sparsely punctured; tint of head and thorax greenish blue, of the abdomen steel blue, sometimes purple; hinder legs purple; anterior legs below knees dark ferruginous; femora short, hinder tibiæ lengthened; first joint of their tarsi more than one-half the length of the tibiæ, the tarsi somewhat flattened; claws large, with a strong inner tooth, removed from the tip; wings shining sub-violaceous, darkest at base and along upper margin; second brachial cell with incomplete cross nervure.

Var.—Most part of legs below the knees ferruginous.

N. Y., Kansas, Chilyunk Depot, Wash. Terr.; Pac. R. R. Survey, 38 N. Lat.° (Smiths. Inst.).

In some cases the second marginal cell is open at the outer end, the nerves being obsolete. A specimen from Washington Territory has the wings almost hyaline.

In all the succeeding species, the punctures are as above unless otherwise mentioned.

2. **Urocerus sonatus**, n. sp,

Cyaneous, with a yellowish red band on the fifth and sixth segments of abdomen, wings yellow hyaline. Length 0.48—1.00. Br. wings 0.84—1.76 inch.

♂.—Color steel-blue with a greenish tint on head and thorax, antennæ 19—21-jointed, black, the third, fourth and fifth joints rufous; a yellow red band on the fifth and most of the sixth segments of abdomen, the other segments with a violet hue, the cornus dark ferruginous, short, shouldered in middle, at apex suddenly compressed and acute; the four anterior legs yellow red below middle of femora, blue above; posterior pair dark ferruginous, the tibiæ and tarsi much flattened; tibiæ fluted, claws as in *U. Edwardsii;* wings hyaline, all the margins clouded with yellowish, nervures ferruginous; second brachial cell with incomplete cross line.

New York, Maryland. (J. Akhurst, T. Glover.)

Six specimens. This seems likely to be the male of *U. Edwardsii.*

3. **U. cyaneus.**

Sirex cyaneus, Fabr. Spec. Ins. i, 1731, 419, 8, ♀; Mant. 258, 10; Ent. Syst. ii. 127, 11, ♀; Syst. Piez. 50, 11.

Sirex juvencus, Klug, Mon. Su. Ger. Pt. iv, fig. 1, ♀, Var. iv, p. 38, fig 3. ♂. Kirby, Faun. Bor. Am. 257, 356, 2, ♀.

Urocerus nitidus, Harris, Inj. Ins. 1835, 3rd. Ed. 1861, 540. ♀.

Sirex duplex, Shuckard, Mag. Nat. Hist. i. 1837, 630. ♀ ♂.

Head and thorax greenish-blue; abdomen ♀ cyaneus, legs yellow ferruginous; abdomen ♂, except at base, ferruginous, legs yellow ferruginous, hinder tibiæ and tarsi blue black. Length, ♀ 0.80—1.24, with ovip. 0.92—1.44. Br. wings 1.36—1.84 inch. Length, ♂ 0.45—1.30. Br. wings 0.90—1.90 inch.

♀.—Shining, antennæ 18-, 19-, 20-, 22-jointed, black; color of head

and thorax greenish blue, of abdomen blue or violet; the whole body, except abdomen, rather closely covered with blackish hair; anal mucro lengthened, pointed, not shouldered at base, but diminishing equally in size; edges serrate, surface rugose; ovipositor nearly or quite the length of abdomen including mucro; base of ovipositor ferruginous; legs yellowish ferruginous; their coxæ and trochanters blue; wings hyaline, obscure at apex, nerves yellowish; second brachial cell with complete cross nervure. ♂. The male has the antennæ 18-jointed; the abdomen ferruginous, with a violet reflection, except the two or three basal segments, which are cyaneous; the hinder femora yellow ferruginous, but their tibiæ and tarsi cyaneous, with the two apical joints rufous; the anal mucro shorter, but presenting the same general shape, seen from beneath; wings as in female.

Var.—A specimen from Canada has four inner under wing cells.

N. H., Conn., N. Y., Colorado, Chilyunk Depot, Wash. Territory, (Smiths, Inst.). Europe.

This may be considered as the American representative of *Urocerus juvencus* of Europe, if it is not actually the same species. Mr. Shuckard however, (Mag. Nat. Hist. New. Ser. i, 1837, 630) thinks it a separate species, because in the *U. cyaneus* the terminal mucro in both sexes is more acuminate, and the ovipositor of the female longer; because it inhabits in plantations side by side, only the American spruce fir (Pinus nigra), while the time of its coming forth is in May and June, after which it is rarely found. The *juvencus* attacks only the Scotch fir (Pinus sylvestris), and appears toward the end of July and never earlier. Mr. Ingpen (*Trans. Ent. Soc. Lond.* ii, 1838, p. lxxxvii) speaks of immense numbers of *Sirex duplex*, being bred from lumber which is supposed to have come from Canada, and gives remarks at length on the habit of the insect. Mr. Shuckard names it *Sirex duplex*, on the ground that Fabricius description is not fully determinate, and yet it seems hardly possible, after referring to the original description, to consider this anything else, as there is no other American species at all like it.

4. Urocerus areolatus.

Urocerus areolatus, Cresson, Trans. Am. Ent. Soc. i, 375, 1, ♀.

"♀.—Black, with a bluish-green reflection; head clothed with black hairs; vertex with large, deep, confluent punctures, and three rather deep, longitudinal furrows; the surface around and about the ocelli rugose; cheeks polished, sparsely punctured; clypeus longitudinally striated; antennæ black, shining, punctured, as long as the head and

thorax, 24-jointed; thorax above coarsely rugose, except middle of mesothorax, which is almost smooth; sides of prothorax above more coarsely rugose than rest of thorax; pleura coarsely punctured; wings violaceous-black, darker at base and along costa; legs slender, entirely shining black, tinged with blue-green, femora deeply punctured, first joint of posterior tarsus three-fourths the length of the tibia; claws rufo-piceous, with a strong inner tooth, removed from the tip; abdomen above steel-blue, with a slight velvety appearance, very finely sculptured; the venter and sides of dorsal segments shining and tinged with greenish, the former sparsely punctured; terminal dorsal impression deep and rounded; anal horn (cornus) shaped much as in *U. cyaneus*, being acutely conical, not at all shouldered, much flattened at base above, apex tuberculate, serrate on the sides; ninth segment convex on the sides, smooth and polished, with a few scattered punctures; ovipositor longer than the abdomen, piceous. Length 14 lines; with ovipositor 17 lines."

New Mexico. One specimen. Not seen.

5. **U. nigricornis.**

Sirex nigricornis, Fabr. Spec. Inst, i, 1781, 418, 3, ♀; Mant. Ins. 257, 4; Ent. Syst. ii. 425, 5. ♀; Syst. Piez. 49, 5.

"Thorax blue black, hairy; abdomen ferruginous, at base cyaneous." Length ♀, 0.56—1.02, with ovip. 0.64—1.16. Br. wings 1.06—1.80 inch. Length ♂, 0.48 0.80. Br. wings 0.80—1.24 inch.

Shining blue-black, antennæ black, about 22-jointed; head and thorax with an æneous tinge; two or three basal segments of abdomen and edges of each segment beneath, blue or violet; remainder of abdomen yellow ferruginous, including cornus and ovipositor sheath; anal cornus shorter than in *U. cyaneus*, somewhat convex in the middle, although not so abruptly shouldered as in *U. Edwardsii*, and serrate; ovipositor darker, not longer than abdomen without cornus; coxæ, trochanters and femora blue-black, sometimes dark ferruginous; remainder of legs yellow red, the last tarsal joint blackish; claws large, inner tooth separated; wings violaceous, sub-opaque, obscurity equally diffused, slightly darker on upper margin; second brachial cell with incomplete cross-nervure.

♂.—The male has the antennæ 18—20-jointed, the third and fourth articles ferruginous; abdomen like the female, but shorter and stouter; the cornus short and shouldered, with an acute point, the posterior tibiæ and tarsi blackish piceous, the two apical joints of tarsi rufous, with a blackish mark on the apical joint; wings yellow hyaline, their margins

Penn., N. J., (Coll. Am. Ent. Soc.). Albany, N. Y. (Dr. Peck.)

Var. *b*.—♀. Antennæ 22-jointed, the ten basal joints black, the next eleven yellow white, apical joint very small, brown black; a spot behind each eye, and the basal one-fourth of hinder tibiæ and of their first tarsal joint, yellow-white; a band across most part of segments one, five and six of tergum, and all the remaining apical segments of abdomen including cornus, ruby-red; second, third and fourth segments and terebra black; wings dark violaceous.—(New Jersey.)

This fine species is allied to *U. albicornis*, which it resembles in form, in having part of the antennæ, a spot behind each eye and the basal part of certain tibiæ and tarsi, white. It differs in having the ten basal joints of antennæ black, the tergum more or less banded with rufous and only the hinder tibiæ and tarsi white-banded. The velvety appearance of the tergum is owing to the numerous delicate punctures upon its upper surface.

9. U. tricolor.

Urocerus tricolor, Provancher, Nat. Canadien, 1868, p. 17.

"Black, on the vertex two luteous maculæ; antennæ black at base, at apex white; wings deeply obscure; abdomen at base luteous, in the middle purple-brown, at the apex red. Female."

"Black; two yellow spots behind the eyes; antennæ 21-articulate, the 6 basal articles (8 on one side) black, remainder white, the apical article brown at tip; abdomen with the two first and the last segments yellow, the third, fourth and fifth of a deep violet, the remainder of a velvety-red; cornus lance-shaped; venter black at base, an orange yellow at summit, polished; the two first pairs of legs with the knees, summit of thighs, base of tibiæ and of tarsi yellow; posterior legs with the tibiæ and first articles of tarsi, except at their apex, base of second and fifth article also yellow. Long 13 lines.

"Three Rivers, Canada." (Rev. L. Provancher) Not seen. Described from one specimen. This seems allied to *U. Cressoni* and may prove to be a variety of it.

10. U. flavicornis.

Sirex flavicornis, Fabr. Spec. Ins. i, 1981, 419, 4, ♀; Mant. Ins. 257, 5; Ent. Syst. ii, 125, 6; Syst. Piez. 49, 6.

Sirex bizonatus, Stephens, Cat. 1829, 342, 3998; Brit. Ins. Mand. vii, 114, 2, pl. xxxvi, 1. Kirby, Faun. Bor. Am. iv, 256, 355, 1.

Urocerus flavicornis, Cresson, Proc. Ent. Soc. Phil. iv, 1865, 247.

"Head black, with the antennæ and eyes yellow; thorax villose, black, immaculate; abdomen with segments one, two, seven and eight, above yellow, beneath immaculate; cornus clavate, acuminate, serrate, yellow; aculeus black; legs yellow, with the femora black." (Fab. Ent. Syst. ii, 125, 6.) Length 0.88—1.40, with ovip. 1.04—1.56. Br. wings 1.60—2.00 inch.

♀.—Black, antennæ 23—25-jointed, yellow; head and thorax rather densely covered with blackish hair; abdomen wide and stouter than in other species, cornus long, constricted, lance shaped, serrate, ovipositor not as long as abdomen with cornus, sheath polished, roughened at tip; a large oval spot outside of each eye, a band on the second, seventh and half of eighth segments of tergum, cornus and base of ovipositor reddish yellow; legs at base black; tips of femora, the tibiæ and tarsi yellowish, apex of posterior tibiæ and tips of claws blackish; wings yellow hyaline, nervures yellowish; cross-nervure of second brachial cell wanting.

Labrador, Can., Conn., N. Y., Colorado, Mackenzie River, Gt. Lake, Wash. Terr. Yukon River, Arct. Am. (Smiths. Inst.).

Well known in England by the name of *S. bizonatus*. Taken near London. Supposed by Mr. Kirby to have been imported in timber from Canada.

It is difficult to see how Mr. Stephens could give it this name, if he had looked at the description by Fabricius above quoted.

B.—*Ovipositor longer than the whole body.*

11. U. caudatus.

Urocerus caudatus, Cresson, Proc. Ent. Soc. Phil. iv, 1865, 247, 2, ♀.

Black, prothorax narrow, rugose, with a stripe on each side and a spot on each side of occiput whitish; legs obscure luteous; ovipositor longer than abdomen. Long ♀, 0.60—1.00, with ovip. 0.92—1.56. Br. wings, 1.00—1.56 inch. Long ♂, 0.72. Br. wings, 1 inch.

♀.—Black, rather slender, sericeous, head as wide as thorax; antennæ long, 23-jointed, basal article pitted; head and thorax sparsely pubescent, closely pitted, summit and sides of head polished; collar produced, not stout; cornus constricted, sub-lanceolate, scarcely enlarged, polished, serrate (not so slender as in *U. flavicornis*), ovipositor longer than body from head to tip of cornus, obliquely channeled, piceous, about the base rufous; a round dot on each side of occiput, a wide stripe from tegulæ over forward angles of prothorax to neck, white; legs yellow red, all of one color; first joint of posterior tarsi nearly as long as tibiæ; wings hyaline, apical margins clouded, a small clouded spot near end of lanceolate cell; second brachial cell without second cross-nervure.

♂.—The male is quite slender, shining, with long abdomen; antennæ 21-jointed; no white spots on sides of head; a white stripe on collar as in female; abdomen with the half of each segment polished; cornus long, not constricted, granulated, a serrated ridge around the sides;

legs dark ferruginous; coxæ and base of hinder pair blackish; wings as in female.

Canada, Colorado (Coll. Am. Ent. Soc.) H. B. T., Youkon River, Arct. Am. (Smith. Inst.). 5 ♀, 1 ♂.

This is either the *U. Spectrum* of Europe or closely allied to it. Klug separates *U. Spectrum* from other species by the palpi: maxillary uni-articulate; labial tri-articulate. I have not examined the palpi of this species, which are retracted.

5. **TREMEX**, Jurine.

Tremex Jurine.
Xyloterus, Harting.
Sirex, Linn., Fabr. &c.

Wings with two marginal cells, the second incomplete, and three submarginals, the second large, receiving two recurrent nervures; lanceolate cell with oblique cross-line; under wings with two inner cells.

Antennæ filiform, shorter than to base of thorax, 13 or 14-jointed.

Maxillary palpi 1-articulate, labial palpi, 2-articulate, the second thick and hairy, body and ovipositor like that of *Urocerus;* anterior tibiæ and tarsi depressed, the posterior pair long and flattened, the first tarsal joint of females as long as tibiae, and of males much flattened and wide.

Habits like *Urocerus.*

1. **T. columba.**

Sirex columba, Fabr. Syst. Ent. 1775, 325, 2; Spec. Ins. i, 1781, 418, 2; Mant. Ins. 1787, 257, 2; Ent. Syst. ii, 1795, 105, 3; Syst. Piez. 1804, 49, 3. Linn. Syst. Nat. ii, 929, 2; Amœn. Acad. vi, 412, 88.

Sirex cinctus, Drury, Exot. Ins. ii, App.

Sirex pensylvanicus, DeGeer, Ins. iii, 393, 1, tab. 30, fig. 13.

Tremex columba, Drury, Exot. Ins. 2nd. Ed. ii, 78, pl. xxxviii, fig. 2, ♀. Say, Am. Ent. ii, 74, pl. xxxii, 3, ♀. Harris, N. E. Farmer, v, 165, 211; Inj. Ins. 536.

Tremex obsoletus, Say, West. Quar. Rep. ii, 1823, 73; Am. Ent. ii, 1825, 74, pl. 32, fig. 2, ♂.

♀.—Head ferruginous, body black, with six yellow bands on abdomen. ♂. Color ferruginous, irregularly varied with black. Length 1.08—1.46; with ovip. 1.28—1.78. Br. wings 1.72—2.36 inch. Length ♂ 0.76—0.92. Br. wings 1.36, —1.46 inch.

♀.—Antennæ 14—15-jointed, filiform, not as long as to base of thorax, yellowish, with a black band (sometimes obsolete) on from three to six of the middle articles; head and prothorax apparently granulated, mesothorax closely punctured; head ferruginous, with a blackish line through ocelli; prothorax, a broad stripe to scutel, scutel and most of pleura ferruginous (the two last sometimes darker); remainder of thorax and most of abdomen black; sides of basal plates (more or

less distinctly), second and a band interrupted in middle, on the third, fourth, fifth, sixth, seventh and eighth segments of abdomen, a dot at apex, and generally the cornus and the enclosed space at its base yellow; venter yellow or yellow banded; remainder of spine and the valves of oviduct dark ferruginous; ovipositor black; cornus short, serrate acuminate; ovipositor as long as abdomen and cornus combined; legs reddish yellow; coxæ and trochanters black; femora above and at base blackish; all the tarsi flattened, the posterior pair most, the first posterior tarsal joint longer than tibiæ, concave within; wings sub-opaque, varying from black to yellowish, most obscure about the base and upper margin; second brachial cell without additional cross line.

♂.—The colors of the male are obscure, varying between ferruginous and black, the yellow spots and bands wanting; antennæ 14-jointed, color as in female; thorax obscure, sometimes wholly black; abdomen polished, blackish, with bands more or less ferruginous on the fourth, fifth, sixth, seventh and eighth segments and the cornus (abdomen sometimes wholly black with a fine punctuation and striation visible); cornus rather longer than with female, serrate, rough beneath; legs pale ferruginous; coxæ, trochanters, basal half of four anterior femora, posterior femora, a line down anterior tibiæ, apical two-thirds of four hinder tibiæ and of first joint of their tarsi and the two next joints of tarsi, black (the black is sometimes wanting below the femora), first joint of posterior tarsi not so long as tibiæ or as the remaining tarsi taken together, the tibiæ and tarsi much flattened and concave within; wings less obscure, yellowish, nervures red yellow.

Canada, Northern and Middle States, Missouri.

The male does not look at all like the female. The larvæ are like those of *Urocerus*. The eggs are deposited in several kinds of trees. It is known to attack the pear, elm, sycamore and maple, but is not often so common as to be injurious to more than isolated trees. It seems probable also that it does not begin upon trees which are entirely sound.

Tremex obsoletus, Say, may possibly be the male of *T. sericeus*, but it is almost precisely like a male of *T. columba* from New York.

Dr. Harris states that the larvæ are destroyed by *Rhyssa atrata* and *R. lunator*.

This is much like the *T. fuscicornis* of Europe.

2. T. sericeus.

Tremex sericeus, Say, West. Quart. Rep. ii, 1823, 13; Am. Ent. ii, 1825, 73, ♀, pl. 32, 1.

Tremex Servillei, Brullé, Hist. Nat. Ins. Hym. iv, 645, pl. 45 fig. 2, ♀.

"Ferruginous, wings subviolaceous, prothorax tuberculate." Length 1.20—1.48; with ovip. 1.36—1.92. Br. wings 1.72—2.36 inch.

♀.—Reddish or yellowish ferruginous; antennæ 15-jointed, generally of one color, sometimes with a blackish band; mouth blackish; a black spot at times about the ocelli, two spots on sides of mesothorax, sutures of metathorax and the breast black (all of these spots sometimes wanting); tergum sericeous, paler, second segment yellowish; cornus short, serrate, acuminate; ovipositor black, as long as abdomen with cornus; sheath pale, legs darkest at base, changes of color not sharply defined; wings sub-opaque, sub-violaceous, nervures yellowish.

Tennessee, Maryland, Missouri.

This seems more common in the Western States. In form it is precisely like *T. columba*, but the difference in color and marking seems to be distinct. It is probable that the male will not differ much from the male of *T. columba*.

Mr. Say has described a female but figured what appears to be a male.

6. TEREDON, nov. gen.

Wings with two marginal and four submarginal cells, the second and third each with a recurrent nervure, lanceolate cell with straight or slightly oblique cross-line, under wings with two middle cells.

Antennæ fusiform, five or six-articulate; labial palpi apparently as in *Tremex*, the second joint enlarged and truncate. Body as in *Tremex*, ovipositor exserted, the first joint of hinder tarsi in both sexes longer than tibiæ, wide, much flattened as in *Cræsus*, but produced, at one side beyond the two next tarsal joints, remaining joints short, the second third and fourth, not longer together than the fifth.

This may be considered a subgenus of *Tremex*, which it resembles precisely in appearance of head and body, but from which the form of the antennæ and the dilated tarsi serve to distinguish it. The wings are like those of *Urocerus*. The form of the antennæ is very singular, the third being shorter than the fourth, and the fifth longest, unless it is composed of two joints closely soldered, of which there is some appearance.

1. T. cubensis.

Tremex cubensis, Cresson, Proc. Ent. Soc. Phil. iv, 1865, 2, ♀.

"Length 10 lines, Br. wings 16 lines."

"♀. — Yellowish, mesothorax, scutelli, pleura, anterior portion

of metathorax, femora and several uneven bands on abdomen, brown or blackish; apical segment of abdomen dull ferruginous; wings deep yellowish, hyaline, dusky at tips."

Cuba. (Coll. Am. Ent. Soc.)

The appearance of this fine insect is very much like that of *Tremex columba*, for which it might readily be taken at first sight.

2. T. latitarsis.

Tremex latitarsis, Cresson, Proc. Ent. Soc. Phil. iv, 1865, 3, ♂.

"♂.—Head, thorax and legs blue-black; abdomen ferruginous; wings fusco-hyaline; hind legs broad and flat."

Cuba. (Coll. Am. Ent. Soc.)

ADDENDA.

Ptilia, Sec. 2.—2nd submarginal cell receiving two recurrent nervures.

Ptilia texana, n. sp.

Length 0.25. Breadth of wings, 0.45 inch.

♀.—Color black; a spot on mandibles near the tip, the prothorax except a black spot on its front, mesothorax, tegulæ, anterior angle and scutellum honey-yellow; legs black, with the tips of knees and parts below, white, except the anterior tarsal joint, the tips of four hinder tibiæ and most part of their tarsi, which are black; second joint of antennæ half as long as first; third joint about the length of thorax, diminishing in size to tip, not extremely slender, ciliate; lower ocellus in a deep basin extending to base of antennæ, a high carina between antennæ prolonged down the nasus; a curved notch at tip of nasus. Abdomen stout as in *Selandria*; tibiæ without side spurs; wings subhyaline, clearer toward apex, marginal cell of only the upper wings appendiculate; first submarginal cell long, angulate at base, second longer, receiving two recurrent nervures, the second near apical end, third cell wider than long, the two cross nervures curved outward; lanceolate cell petiolate, short, stout; underwings with two inner cells, the lanceolate cell wanting.

♂.—Exactly resembles the female, except that the antennæ are bifurcate, about one fourth longer, more slender, ciliæ about twice as long as width of joint.

Texas. (Coll. Am. Ent. Soc.)

Cladius simplicornis, n. sp.

Black, legs below the knees pale, apical tarsi blackish. Length 0.25. Br. wings 0.50 inch.

♂.—Shining black; antennæ pilose with stiff black hair; joints stout, enlarged at tips but not globose, simple, no spine at base of third

joint within, third joint shorter than fourth; body wholly black, basal half of all the tibiæ white; apical half of four anterior tibiæ and first joint of their tarsi waxen white; apical half of hinder tibiæ and remainder of all the tarsi blackish; wings hyaline, their basal half faintly clouded; the lower inner cell of hinder wing not reaching as far as the apex of the cell above it.

Maine (A. S. Packard. Jr.); Norway, Me.(S. I. Smith).

Two ♂. In *C. isomera*, the lower inner cell of under wing either coincides with that above it at its apical end or extends beyond it. The antennæ are longer. This is somewhat like *Priophorus pilosicornis*, sent me from England by Francis Walker, Esq.

Euura salicis-nodus. Walsh, ♂.

I have received from Mr. Walsh the female, which differs from the male in having the pale inner orbital lines distinct throughout. The wing scales, anterior angle, a round spot in middle of each of basal plates, and the whole of abdomen, above and below, honey-yellow. Each segment of abdomen tipped with black, above aud below, most distinctly upon the tergum. The anal styles are tipped with black. Both ♂ and ♀ bred by Mr. Walsh from galls received from New York.

Cræsus laticulus, n. sp.

Length 0.48 inch.

♀.—Black; tegulæ, a spot on sides of basal plates and of second and third segments of abdomen whitish; apex of mandibles and the legs, ferruginous, with the apex of hinder femora, the apical two-thirds of their tibiæ and the most part of the first tarsal joint blackish; antennæ very long (0.36), quite slender; each ocellus at the head of a pentagonal basin; a protuberance between antennæ, nasus incurved; some scattered sub-obsolete oval punctures on the head and mesothorax; scutel polished, pleura dull, but not punctured; tergum with delicate cross striæ; abdomen slender, cylindrical; hinder tibiæ one-half longer than first and second, somewhat enlarged, twice as wide as the others, with a deep channel down the upper side; all the joints of their tarsi enlarged and flattened, the first joint widest, but not as wide as tibiæ, the patellæ long and white, the claws with a strong inner tooth; wings ample, hyaline, nervures piceous, stigma black; first transverse submarginal nervure obsolete, except its rudiments near the nerves; second recurrent nervure received near the transverse nervure.

Massachusetts, (Coll. Am. Ent. Soc.); Virginia, (Peabody Institute, Salem). Two ♀.

Descriptions of new species of DIURNAL LEPIDOPTERA found within the United States.

BY WM. H. EDWARDS.

ANTHOCARIS REAKIRTII, n. sp.

Male. Expands 1.3 to 1.5 inch. Upper side soiled white, blackish at base; primaries have a large bright orange apical patch, as in *Sara*, edged on the apex by black as in that species, with serrated black spots also upon the hind margin; a narrow, slightly bent bar from costa across the arc where it connects with a brown, curved bar from inner angle; costal edge much specked with black scales; fringe alternate white and black.

Secondaries have three or four patches of black at tips of upper nervules; fringe white, black at ends of nervules.

Under side white; the orange spots reduced and paler; costa of primaries and the whole space on apex and margin outside the orange, densely covered with green patches; on the arc a bent bar; secondaries densely and uniformly covered from base to margin by large green patches.

Female. Expands 1.7 inch. Same color as male; costal margin slightly specked; the orange spots paler and narrower, reaching from costa to hind margin, not edged by black on inner side, but on outer by a sinuous band, between which and the apical border is a white patch; the band connected with the triangular marginal spots by black nervures; on the arc a tortuous bar, in most cases starting from costal edge; beneath as in the male, except that costa, margins and secondaries are much less spotted with green.

California. From specimens in my own collection and those of Messrs. Reakirt and Henry Edwards, and Dr. Behr.

This species has been regarded as a form of *Sara*. Its distinctness was first pointed out to me by Mr. Reakirt and I have since learned that our Californian lepidopterists had assured themselves of the same thing.

The males of the two species much resemble each other on the upper side except in size, *Sara* expanding more by three or four tenths. But on the under side the present species is much more and differently marked with green. The females differ upon the upper side. I am informed by Mr. Edwards that the yellow form is wholly wanting in the smaller species, while of *Sara*, at least one-half are decidedly yellow.

PIERIS HULDA, n. sp.

Male. Expands 1.7 inch. Upper side white with a faint yellow tinge; base of wings largely covered with blackish scales which extend along the costa of primaries and the principal nervures of both wings; apex of primaries gray, with white lines in the middle of the interspaces; the nervules all more or less edged by gray scales.

Under side of primaries white, the costa, apex, and upper part of hind margin, greenish-yellow; the nervures largely edged by gray scales; secondaries greenish-yellow, covered with gray except generally in the middle of the marginal interspaces.

Body above black, the thorax covered with buff hairs; beneath, abdomen yellow, thorax grayish-yellow; palpi same; antennæ brown above, whitish below; club brown tipped with pale ferruginous.

From Kodiak, 1 ♂. Coll. of Henry Edwards, Esq., of San Francisco.

ARGYNNIS BEHRENSII, n. sp.

Male. Expands 2.2 inches. Upper side dull fulvous, much obscured at base; primaries bordered by two fine parallel lines enclosing very narrow fulvous spaces between the nervules; resting on these a series of small black crescents, each enclosing a fulvous spot; the round submarginal spots of medium size; other markings as in allied species, but lighter than in most.

Secondaries have a double marginal line enclosing large fulvous spaces; the lunules large, crescent, not quite touching each other or the line; the rounded spots small; the median row confluent, forming an unusually narrow band, much like that of *A. Hesperis;* on the arc a recurved black spot enclosing a narrow fulvous space; between the submarginal spots and median line a row of pale fulvous spots corresponding to the second silvered series beneath.

Under side: primaries light buff, at base and along the nervules pale ferruginous; on hind margin and at apex dark brown; the marginal spots sagittate, black next inner angle, deep brown above and near apex lost in the ground color; the upper five enclosing silver spaces; on the sub-apical patch three silver spots; other markings as above.

Secondaries of a deep, dense ferruginous, (much as in female *Aphrodite*) which occupies the whole wing except a narrow violet-brown space between the outer rows of spots; these are twenty-one or twenty two in number, all silvered, viz: seven submarginal, narrow, elongated, edged above by broad ferruginous crescents; a second row of seven mostly oval or pyriform; a third of five, of which the first and third are

semi-oval, the second a point, fourth and fifth streaks on the margin; both the two last rows narrowly edged with black; in the cell a round spot and a point; an oval at base of median, another at base of costal; shoulder and abdominal margin lightly silvered.

Body above fulvous; beneath, abdomen buff, thorax covered with gray-fulvous hairs; palpi fulvous; antennæ black above, fulvous below; club black, tip ferruginous.

Female. Expands 2.4 inches. Upper side of a duller shade; the marginal borders of primaries broad, black, with no fulvous spaces; the submarginal crescents heavy, enclosing very small pale fulvous spots; other markings heavier than in male.

Under side similar to male, except that primaries have the base and hind margin deep fulvous; secondaries have the same ferruginous tint with a similar violet-brown space near margin.

Taken at Mendocino, California. From 1 ♂, 1 ♀, in the Collection of James Behrens, Esq., San Francisco, to whom I take pleasure in dedicating this fine and distinct species.

MELITÆA VESTA, n. sp.

Male. Expands one inch. Upper side dull fulvous; both wings edged by broad black margins, which on primaries enclose a partly obsolete series of fulvous crescents and on secondaries a distinct series of paler color and very narrow; primaries have a submarginal row of rounded fulvous spots a little bent and met on middle of disk by a second short row from costa; beyond to base reticulated with black.

Secondaries have a submarginal series of small round or oval black spots within large fulvous spots; above these two narrow tortuous parallel lines enclosing, with the black nervures, large angular fulvous spots; thence to base as on primaries; fringes black and white.

Under side: primaries fulvous, at apex and on upper part of hind margin brownish-yellow; margin bordered by a fine, wavy brown line forming a series of narrow crescents; towards costa a second similar parallel line; the central crescent large, buff; markings of upper side repeated, the black lines near base being replaced by ferruginous.

Secondaries clouded on hind margin, costa and disk, with brown; a series of submarginal crescents enclosed between two faint brown lines; a row of brown points and beyond, the whole space reticulated by brown lines, which across the disk enclose a series of pale colored spots.

Body black above, beneath buff; palpi buff; antennæ black above buff below; club black, tip ferruginous.

Female. Expands 1.2 inch. Upper side similar to male; beneath,

primaries have the entire margin yellowish and the whole of secondaries of a lighter hue than in male, the central row of spots and those next base more white and slightly margaritaceous, as is also the central marginal crescent and two or three next outer angle.

From Texas. 2 ♂, 2 ♀. Collection of James Ridings, Esq.

MELITÆA ARACHNE, n. sp.

Female. Expands 1.6 inch. Upper side fulvous inclining to ochrey yellow, crossed by common black lines; hind margin edged by a crenated line on which rests a series of large spots, of paler shade than the ground color, edged above by a second crenated line; on primaries, these spots are somewhat indistinct; crossing the disks are two heavy, tortuous lines, enclosing with the black nervures, pale spots; on arc of primaries a subovate spot enclosed by black; in cell a wavy line and two near base; secondaries have the base and abdominal margin black; in the upper part of cell a deep fulvous sinus.

Under side of primaries yellow fulvous; the margins edged by a crenated line on which is a complete series of large white crescent spots, edged anteriorly by black, beyond these a row of indistinct whitish patches followed by a double curved line of black spots and faint lines indicating the spots and marks in the cell above.

Secondaries have also a marginal line and a series of large yellow crescents, above which is an ochrey band and a second of whitish, the latter broad, edged on both sides by broken black lines, and enclosing in the middle at either extremity parts of a third similar line; beyond this another band of ochrey yellow which projects a broad dentation into the next or third white band; this latter is heavily edged on both sides by black, and is followed by the third band of yellow; next base a white patch.

Palpi ochrey yellow; antennæ brown above, yellow beneath; club black, tip ochrey.

From Colorado, 1 ♀. Collection of Tryon Reakirt, Esq.

This species is closely allied to *M. minuta*, Edwards, of which a single male was described in Proc. Acad. Nat. Sci. Phila., 1861, and I am not certain that it may not prove to be the female of that species. Unfortunately the original specimen is not in this country nor accessible. I preserved a coarsely executed lithograph of it, from which the female above described differs somewhat, but perhaps not materially.

This, or these two species differ from any other North American Melitæas with which I am acquainted, and belong to the group of which *Cinxia* (*European*) is the type.

GRAPTA OREAS, n. sp.

Form of *Faunus*. Primaries deeply incised and emarginated; secondaries with a prominent rounded tail and a second shorter between this and anal angle.

Male. Expands 1.5 inch. Upper side deep red fulvous, color of *Faunus*, spotted with black. Primaries have a black-brown border on which rests a series of rather large yellowish lunules; a yellowish subapical patch beyond which is another of red-brown connecting costa with hind margin; a dark elongated patch from costa covers the arc; in cell two rounded spots and three at right angles to these, on the disk, as in *Faunus*; near inner angle a red-brown patch.

Secondaries have the border diffuse, enclosing a row of yellowish lunules; a black patch on costa and two on disk; fringes dark brown, yellow in the emarginations.

Under side very like *Progne*, in color dark brown, varied with shades of paler brown or black, slightly grey near apex; the whole surface covered with fine, abbreviated streaks of darker color; the basal space scarcely darker than disk and but partially limited on outer edge by a black line; in cell of primaries two elongated dark spots; an extra discal common row of black points; in the incision of primaries and along hind margin of secondaries faint traces of lunules such as characterise the allied species; silver spots small, narrow, bent at right angle and pointed at either end.

Body brown-fulvous; palpi black below, buff on sides, fulvous above; antennæ brown; club brown, tip ferruginous.

California, from Dr. Behr.

This species seems to me sufficiently distinct from our eastern Graptas. It connects the two groups, having the form of *Faunus* and the under surface of *Progne*. Under the name *C-album*, Dr. Behr, in his paper on Californian Lepidoptera, No. IV (Cal. Acad. Nat. Sci., 1864), describes the larva as having "a dimidiate coloration, like that of the European *C-album*, the fore part being white, the abdominal part yellow," and as feeding on Urtica. I only know the larva of *C-album* from published descriptions. Westwood, in Humphrey's Brit. But., says it is "red in front with the hinder part white" and the figure given corresponds. Chenu. p. 99, says it is "reddish-brown with a white dorsal band not covering the four anterior segments, which are sometimes yellow." By which it would appear that although the coloring of the Californian species is "dimidiate," there is a difference between it and *C-album*.

The larva of *Progne* is described by Fitch, 3rd N. Y. Report, 1856, Sect. 142, as grey, "with a whitish band on the fore part of each abdominal segment."

GRAPTA SATYRUS, n. sp.

Form and size of *Comma*.

Male. Expands 2 inches. Upper side yellow fulvous; primaries have a black brown marginal border, narrower than in *Faunus*, dilated at apex; a large subapical brown spot on costa and a second covering the arc; two rounded spots in cell, a third of larger size, near inner margin, and two in median interspaces at right angles with the first; on inner margin near angle a brown patch.

Secondaries have the hind margin narrowly bordered by brown, anterior to which is an incomplete line of brown patches; two black spots at origin of median nervules; a large spot on middle of costal margin and another in the disk; fringes dark brown, white in the emarginations.

Under side marbled in shades of brown, sometimes suffused with vinous; the basal area, occupying half the wings, limited by a common flexuous line, next inside which the color is darkest; in cell of primaries two long dark spots and some patches of same hue near base of secondaries; the extra-basal space more or less tinted with yellow, much covered with fine, abbreviated, ferruginous streaks; apex of primaries yellow brown, sometimes olivaceous, enclosing three ferruginous points and limited below by a ferruginous line running back from the angle of margin; subapical patch grey, inclining to white; the marginal incision bordered by a band which is edged without by a black line, and within by a black bar which encloses a row of narrow olivaceous spots, or lunules; a submarginal row of black points, distinct at the extremities.

Secondaries have apex as in primaries; a submarginal ferruginous arc from tail to anal angle; on the margin above the tail a short border as in the incision of primaries; and below to angle a row of olivaceous lunules between which and the ferruginous arc is a yellow stripe; a row of black points as on primaries; the silver mark shaped like the letter C or G, large, open, angular below, the lower limb extended and sometimes barbed.

Body fulvous above, beneath vinous; legs pale buff, pro-legs vinous; palpi buff below, fulvous at tip and on upper side; antennæ dark brown above, buff below; club black, buff at tip.

Female. Expands 2.1 inches. Same form and on upper side same color and markings. Beneath nearly a uniform wood or olivaceous

brown, with the markings as in male but indistinct and often obsolete; silver mark more open and more slight.

Hab.—Rocky Mountains, Colorado. From several males and females in collection of Mr. Reakirt.

This species resembles *C-album* in color and markings of upper surface; being more spotted, noticeably so, on secondaries, and of a much paler color, than *Comma*, while it more resembles this last in markings of under side. *C-album* is however a Protean species, sometimes even in all respects coming very near *Faunus*. But in a series of specimens, in my possession, part of which were sent me by Mr. H. W. Bates as exhibiting variations, most differ decidedly from any American form known to me. Our several species of *Grapta*, though closely allied to each other, keep up their distinctive characters. The series including *C-album* would run thus: *Interrogationis*, *Umbrosa* (Lintner), *Comma*, *Satyrus*, *C-album*, *Faunus*, and with an interval, that is, in another group, *Oreas*, *Progne*, *Gracilis*. I have never seen reason to believe *C-album* to be an American species. Authors have applied that name to *Comma* and to *Faunus*. As to the Californian species (*Oreas*) above described, if the larva did not appear to be dissimilar, I do not think such a form could be included among the aberrations of even so variable a species as *C-album*.

CÆNONYMPHA KODIAK, n. sp.

Male. Expands 1.5 inch. Upper side light brown with a grey shade, the whole surface having a silky gloss and appearing either brown or grey according to the point of view; a common whitish bar, caused by the transparency of the wings.

Beneath, from base to beyond middle of wings brown with grey scales on primaries and blue-grey on secondaries; this space edged by a common band of pure white; thence to margin pale brown with a whitish or bluish grey tint as viewed.

Body above brown; beneath, thorax covered with blue-grey hairs; palpi blue grey; antennæ annulated brown and white.

From Kodiak. 1 ♂. From collection of Henry Edwards, Esq.

CÆNONYMPHA BRENDA, n. sp.

Male. Expands 1.4 inch. Upper side light buff, immaculate. Under side a shade more yellow; primaries have a faint, transverse, reddish line beyond the cell, commencing at sub-costal, thence straight to upper median, after which it is tortuous and disappears near lower median. Secondaries have a similar line angular to end of cell thence tortuous to abdominal margin; primaries have a large sub-apical round

black spot and a point in lower median interspace; secondaries have a submarginal row more or less complete of small spots or points.

Body and legs light buff; antennæ buff, club pale ferruginous.

Female. Expands 1.5 inch. Upper side like male; beneath the apex of primaries and space within the discal lines much obscured by grey; the sub-apical spot large, enclosing a white point; spots on secondaries partly wanting.

Var. a, Male. The under side showing no trace of spots except the sub-apical, which is faint.

From Los Angelos, Cala., 2 ♂, 1 ♀. Collection of Tryon Reakirt, Esq.

THECLA CHALCIS, n. sp. Behr in lit.

Male. Expands 1.2 inch. Upper side castaneous; stigma small, black, sub-ovate; secondaries have a short black tail; fringes brown, black at anal angle and between this and the tail whitish.

Under side dead leaf brown, greyish next base; both wings have a submarginal row of obsolete points, the three next anal angle alone being clearly visible without a glass; the first from angle surmounting a faint grey space; across the disks a row of faint brown spots indistinctly edged without by whitish; thorax beneath grey; antennæ black annulated with white; club black above, ferruginous below, tip ferruginous.

Female not known.

California. From a single specimen in collection of Dr. H. Behr.

LYCÆNA ORCUS, n. sp.

Male. Expands 1.1 inch. Upper side pruinose blue, paler on costa of primaries; hind margins broadly fuscous; fringes long, cinereous.

Under side grey cinereous, bluish at base; on arc of primaries a narrow black bar bent outwards, and faintly edged without by white: on secondaries a faint discal streak; both wings have a submarginal line of points, scarcely discernible.

Beneath, thorax covered with blue grey-hairs, abdomen grey; palpi white above at base, black at tip, and cinereous below; antennæ black annulated with white; club black, tipped with cinereous.

From a single specimen in the collection of Henry Edwards, Esq., of San Francisco. This species differs from all other American Lycænidæ that I have seen by the absence of decided markings on the underside, the usual discal row being wanting, and the submarginal scarcely to be distinguished without a glass.

List of the North American species of the Genus ALEIODES, Wesmael.

BY E. T. CRESSON.

The following table will assist in determining the species.

Wings fuliginous:

Black; metathorax and abdomen ferruginous:

Legs black, posterior coxæ ferruginous.....1. **texanus.**

Legs black, posterior coxæ and base of femora ferruginous...2. **fumipennis.**

Yellow; head, collar, antennæ and legs black.....3. **mexicanus.**

Wings fasciate with blackish:

Whitish; head dusky; mesothorax, tips of posterior femora and tibiæ and apex of abdomen more or less tinged with honey-yellow...4. **fascipennis.**

Yellow; head, antennæ and apical half of four hinder legs black.....5. **pedalis.**

Wings yellow, apex fuscous; body pale honey-yellow; antennæ, apical half of posterior tibiæ and whole of their tarsi black.....6. **flavidus.**

Wings hyaline:

Red, or yellow, and black species:

Black; four anterior legs, posterior coxæ, trochanters and femora, except tips, and two basal segments of abdomen ferruginous; antennæ fuscous, posterior tibiæ with a whitish annulus at base.....7. **terminalis.**

Black; legs and abdomen ferruginous, apex of latter generally more or less blackish.....8. **abdominalis.**

Black; legs and three basal segments of abdomen ferruginous; apex of abdomen black, covered with a dense changeable silvery pile.....9. **lectus.**

Ferruginous; head, metathorax, apex of abdomen, and tips of posterior femora and tibiæ black.....10. **parasiticus.**

Ferruginous; head and antennæ black.....11. **atriceps.**

Yellowish, varied with fusco-ferruginous; metathorax, part of pleura, first abdominal segment, except tip, and sides of second and third segments, black.....12. **intermedius.**

Dull luteous; head above, collar, spot beneath wings, mesothorax, metathorax, first abdominal segment, except tip, and broad lateral margin of second and third segments, black.....13. **canadensis.**

Yellowish-white; spot covering scutellums and base of metathorax, spot beneath wings and a large mark on abdomen above, covering second, third and apex of first segments, black; wings with a faint fuscous cloud about the middle, stigma large, black.....14. **discoideus.**

Yellowish-white; collar, three lines on mesothorax, large transverse mark on metathorax, large spot on pleura, base of posterior coxæ, tips of their femora, tips of all the tarsi, and abdomen above, except large whitish spot at base of second segment, black.....15. **ornatus.**

Ferruginous, or honey-yellow species:

Dull ferruginous; thorax more or less stained with fuscous: antennæ of both sexes fuscous or black; whole of third abdominal segment aciculate; eyes short, ovate, scarcely emarginate within.....16. **fulvus.**

Dull honey-yellow, more or less varied with fuscous; whole of third and fourth abdominal segments above aciculate: eyes short, almost circular, not emarginate.....17. **aciculatus.**

Dull ferruginous; thorax sometimes varied with fuscous; antennæ of ♀ pale honey-yellow, of ♂ black, with a broad yellowish annulus; base only of third abdominal segment aciculate; eyes as in *fulvus*..18. **burrus.**

Bright ferruginous; antennæ dusky; third abdominal segment not aciculate; eyes elongate, distinctly emarginate within.....19. **Rileyi.**
Luteous; abdomen above tinged with fulvous; most of posterior femora blackish; eyes large, ovate, black.....20. **femoratus.**
Entirely pale honey-yellow; form long and slender; eyes large, ovate, black.....21. **melleus.**
Pale yellow; head fuscous above; eyes very large and prominent; basal third of antennæ black; abdomen subpetiolate.....22. **fasciceps.**

1. **Aleiodes texanus**, n. sp.

♀.—Black; antennæ fuscous; metathorax, hind coxæ, and abdomen ferruginous; wings uniformly fuliginous; metathorax rugose, with short pale pubescence; two basal segments of abdomen opaque, coarsely rugose, with the central longitudinal carina entire and well defined; second segment longitudinally rugose; remaining segments shining, finely sculptured. Length 4 lines.

Hab.—Texas. E. T. Cresson.

Where not otherwise mentioned, the 2nd cubital cell is subquadrate.

2. **Aleiodes fumipennis**, n. sp.

♀.—Black, shining; antennæ blackish; metathorax, hind coxæ, basal half of their femora, and the abdomen ferruginous; wings uniformly fuliginous; metathorax finely punctured and sparsely pubescent; abdomen with a short, sparse, pale pubescence; two basal segments subopaque, longitudinally rugose, the central carina entire; remaining segments shining, finely sculptured. Length 4 lines.

Hab.—Illinois. Dr. Samuel Lewis.

3. **Aleiodes mexicanus**, n. sp.

♂.—Elongate, yellow; head, antennæ, collar, and legs, including coxæ, black; wings uniformly fuliginous; metathorax rugose; two basal segments of abdomen opaque, longitudinally rugose, with prominent lateral and central carinæ; apex polished. Length 4½ lines.

Hab.—Mexico. Prof. Sumichrast.

4. **Aleiodes fascipennis**, n. sp.

♀.—Pale luteous, almost whitish; back of head and base of flagellum pale fuscous; antennæ very long and slender; thorax above darker yellow; wings pale yellowish-hyaline, iridescent, nervures luteous, stigma black, except base and apex, a band beneath stigma and a cloud between it and base of wing, fuliginous; second cubital cell about twice longer than broad; legs very pale, apex of posterior femora darker yellow; third, fourth and fifth abdominal segments above fulvous, remainder very pale luteous; two basal segments flat, longitudinally aciculate. Length 3½ lines.

Hab.—Mexico. Prof. Sumichrast.

5. **Aleiodes pedalis**, n. sp.

♀—Pale yellow or luteous; head, antennæ, four posterior tibiæ except base, and their tarsi, black; wings yellow-hyaline, nervures luteous, the apex and a faint cloud beneath stigma fuliginous; metathorax subrugose; abdomen finely sculptured, the two basal segments hairy, the central and lateral carinæ sharply defined. Length 4¾ lines.

Hab.—Mexico. Prof. Sumichrast.

6. **Aleiodes flavidus.**

Rogas flavidus, Cresson, Proc. Ent. Soc. Phil. 1865. p. 83. ♂.

Hab.—Cuba. Prof. Poey.

7. **Aleiodes terminalis**, n. sp.

♂ ♀.—Black, shining; mandibles, palpi, antennæ except extreme base, and tegulæ, brown; thorax finely sculptured; metathorax rugose, clothed with pale pubescence, and with a well defined central carina; wings hyaline, iridescent, nervures testaceous, stigma brown; legs honey-yellow or ferruginous, tips of posterior femora, their tibiæ, except a more or less broad whitish annulus near base, and their tarsi black; abdomen sparsely pubescent; two basal segments honey-yellow or ferruginous, longitudnially rugose, with central carina entire and well defined; remaining segments black, smooth, shining. Length 3—4 lines.

Hab.—Eastern, Middle, Southern and Western States. Common.

8. **Aleiodes abdominalis**, n. sp.

♀—Black, shining, sparsely pubescent; clypeus, mandibles, palpi and antennæ, rufo-testaceous; tegulæ pale luteous; metathorax rugose; wings hyaline, iridescent, nervures fuscous; legs and abdomen honey-yellow or ferruginous, tibiæ and tarsi sometimes yellow; apical joint of tarsi black; two basal segments of abdomen opaque, longitudinally rugose, central and lateral carinæ sharply defined; base of third segment aciculate, remainder smooth and shining; sometimes the two or three apical segments are more or less blackish. Length 4 lines.

Hab.—Eastern and Middle States.

9. **Aleiodes lectus**, n. sp.

♂—Differs from *abdominalis* by the fourth and following segments of abdomen being black and densely clothed with a beautiful silvery sericeous pile; in one specimen most of the basal segment is black. Length 3½—4 lines.

Hab.—Illinois. This may be the ♂ of *abdominalis*.

10. **Aleiodes parasiticus.**

Aleiodes parasiticus, Norton, Trans. Am. Ent. Soc. ii, p. 327, ♂ ♀.

Hab.—Eastern, Middle and Western States. This is parasitic upon *Lophyrus abietis*, Leach.

11. Alciodes atriceps, n. sp.

♀.—Honey-yellow, subopaque; head and antennæ black; palpi fuscous; mandibles honey-yellow; tips of tarsi dusky; wings hyaline, iridescent, nervures fuscous, stigma yellow; metathorax rugulose; first, second and base of third segment of abdomen longitudinally aciculate, remainder smooth and shining. Length 3½ lines.

Hab.—Mexico. Prof. Sumichrast.

12. Alciodes intermedius, n. sp.

♂ ♀.—Small, slender, luteous or dull honey-yellow; spot on vertex about ocelli, metathorax, patch beneath wings, and most of first abdominal segment, black or fuscous; metathorax finely sculptured, with sharply defined central carina; wings hyaline, iridescent, nervures fuscous, stigma whitish, varied with fuscous; first, second, and third (except tip) abdominal segments finely longitudinally aciculate. Length 2—2½ lines.

Hab.—Eastern, Middle, Southern and Western States. Sometimes the blackish markings of thorax and abdomen are entirely wanting.

13. Alciodes canadensis, n. sp.

♀.—Blackish-fuscous, opaque; face, mouth, palpi and orbits, dull rufo-testaceous; antennæ fuscous; middle lobe of mesothorax, scutellum, most of pleura, spot on each extreme side of metathorax (sometimes wanting), legs, except tibiæ and tarsi, and the abdomen beneath, rufo-testaceous; tibiæ and tarsi, semicircular spot at tip of first abdominal segment, and the second and third segments except sides, luteous; apical segment pale fuscous; wings ample, hyaline, iridescent, nervures fuscous, stigma whitish varied with fuscous; metathorax and abdomen finely sculptured. Length 3 lines.

Hab.—Canada. Pettit and Couper.

14. Alciodes discoideus, n. sp.

♀.—Pale luteous, head and thorax above tinged with honey-yellow; spot within ocelli, scutellum, spot on pleura, another on side of metathorax and a large discoidal patch on abdomen above, occupying apex of first, and the whole of second and third segments, except lateral margins, black; wings pale yellowish-hyaline, iridescent, finely pubescent; stigma large, black, with a large fuliginous cloud beneath, occupying the middle third of the wing; these basal segments of abdomen finely, longitudinally rugose. Length 2 lines.

Hab.—Illinois. Dr. Samuel Lewis.

15. Alciodes ornatus, n. sp.

♀.—(Head wanting); pale luteous; most of prothorax, three longitudinal marks on mesothorax, a large, irregular patch on pleura, the

whole of metathorax except lateral and apical margins, most of posterior coxæ, tips of tarsi, first segment of abdomen except extreme base, the second except large spot at base, and the third, fourth and fifth segments except lateral spot, black; metathorax rugose; wings hyaline, iridescent, nervures fuscous, base and apex of stigma luteous; second cubital cell twice longer than broad; apex of femora fuscous; first, second, and base of third segments of abdomen coarsely, longitudinal aciculate, the remainder finely so. Length 2½ lines.

Hab.—Mexico. Prof. Sumichrast.

16. Aleiodes fulvus, n. sp.

♀ ♂.—Fulvo-ferruginous, opaque, rugulose; eyes short, ovate, scarcely emarginate within; tips of mandibles, triangular spot covering ocelli, antennæ except basal joint, sutures of thorax, space around scutellum, lateral margin of metathorax, and most of pleura beneath, black; wings subhyaline, iridescent, nervures fuscous; metathorax reticulated and pubescent; two basal segments of abdomen longitudinally rugose, the third aciculate; the three following segments shining, and more or less tinged with fuscous; antennæ of ♀ rather short. The thorax of ♂ is almost entirely black. Length 4 lines.

Hab.—Canada. J. Pettit.

17. Aleiodes aciculatus, n. sp.

♀.—Small, fulvo-testaceous or dull honey-yellow, opaque; thorax more or less varied with fuscous; eyes short, almost circular, not emarginate; wings hyaline, iridescent, nervures pale, stigma fuscous; metathorax rugulose; abdomen above longitudinally aciculate, very finely so at tip; legs pale luteous, especially at tips. The ♂ is honey-yellow, with apex of abdomen more or less fuscous. Length 3 lines.

Hab.—Eastern, Middle and Western States. In size and color this species closely resembles *intermedius*, but is at once distinguished by the sculpture of upper surface of abdomen.

18. Aleiodes burrus, n. sp.

♀.—Dull ferruginous, opaque; thorax more or less varied with blackish; antennæ very long and slender, sometimes fuscous; eyes as in *fulvus;* wings pale yellowish-hyaline, nervures sometimes testaceous, sometimes fuscous; metathorax rugulose; first, second and base of third segments of abdomen longitudinally rugose or aciculate; the third and following segments shining, and sometimes tinged with fuscous; apex of tarsi black. Antennæ of ♂ black, with a yellowish-white annulus at about the middle, basal joint ferruginous. Length 3½—4½ lin.

Hab.—Conn., Ills., Mexico. The ♀ of this species closely resembles that of *fulvus*, but the antennæ is longer and more slender.

19. Aleiodes Rileyi, n. sp.

♀.—Robust; fulvo-ferruginous; tip of mandibles, and spot within ocelli, black; antennæ fuscous, with a broad yellowish annulus at about the middle, basal joint honey-yellow; eyes elongate, distinctly emarginate within; metathorax rugulose and pubescent, central carina sharply defined and with a short, prominent carina on each side; wings hyaline, iridescent; tips of tarsi black; two basal segments of abdomen longitudinally rugose, central carina sharply defined, the remaining segments smooth and shining. The ♂ is more slender; antennæ entirely black; lateral carinæ of first abdominal segment sharply defined and base of third segment slightly longitudinally aciculate. Length 3½ lines.

Hab.—Missouri. C. V. Riley.

20. Aleiodes femoratus, n. sp.

♀.—Small, slender; opaque luteous, paler beneath; spot within ocelli, base of antennæ, stripe on each side of prothorax, patch beneath wings, basal margin of metathorax, two spots at its apex, and the posterior femora except base and apex, fuscous; antennæ pale, slender, much longer than body, scape robust; eyes large, ovate, black; wings narrow, hyaline, iridescent, faintly clouded, nervures pale, stigma and middle veins pale fuscous; abdomen narrow, fulvous above, the first, second and third except apex, longitudinally aciculate. Length 3½ lines.

Hab.—West Virginia. James Ridings.

21. Aleiodes melleus, n. sp.

♂.—Elongate, slender; entirely pale honey-yellow; legs paler; antennæ long and very slender; eyes large, ovate, black; wings narrow, hyaline, faintly yellowish, nervures pale; abdomen opaque above, the four basal segments indistinctly longitudinally aciculate, with the central carina sharply defined on first three segments. Length 3½ lines.

Hab.—Massachusetts. James Ridings.

22. Aleiodes fusciceps, n. sp.

♀.—Slender; head fuscous, face pale; eyes very large and prominent, black; antennæ luteous, the eight basal joints of flagellum black, (apex wanting); thorax yellowish-white, finely pubescent; lobes of mesothorax prominent; wings hyaline, iridescent, faintly yellowish, nervures pale yellow; legs and abdomen pale honey-yellow, the latter subpetiolate, first and second segments longitudinally aciculate; a prominence at apical middle of first segment; basal suture of third segment crenulated; ovipositor nearly as long as first segment. Length 3½ lines.

Hab.—Mexico. Prof. Sumichrast.

NOTES ON CHERMES* PINICORTICIS.

("White-Pine Louse.")

BY HENRY SHIMER, M. D.

For several years past, especially since 1864, I have made careful observations and study of the Homopterous insects infesting the White Pine (*Pinus strobus*, L.) and now submit the following results for the consideration of those who may be studying the same subject.

At the early opening of Spring, there appears on the trunk and branches of the White Pine an insect covered with a wooly-down. This white substance alone attracts the attention, for the insect producing it in such great abundance is quite a minute creature and is not readily seen without the aid of a lens. This downy substance appears most abundantly on young pines, near the ground, early in the spring, just as the frost leaves the earth, indicating that the insect passes the winter on the ground in the egg-state, and that it is developed by the small amount of heat of early spring. It is now seen more especially on the trunk; some also appear in the axils of the branches. They multiply rapidly and at length, as the summer appears, they become numerous on the young shoots, feasting upon the resinous matter; they may be found more or less abundant during the season.

Within the downy substance this coccus-like insect is found. The pregnant female is of a reddish-brown color, the head not distinct from the body, the back round, much humped, the belly flat, the proboscis carried between the forelegs; the young are pale yellow, quite small, scarcely visible to the naked eye.

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* For the present the synonymy of this species may be given thus:

Chermes ? pinicorticis.

Coccus pinicorticis, Fitch, Trans. N. Y. Reports, ii, § 254; N. Y. Agric. Soc. 1859, 871.

Chermes pinifoliæ, Fitch, N. Y. Reports, ii, § 267, 1858.

As this insect belongs to my family *Dactylosphæridæ*, it is quite probable that, after a more careful study of its relationship with *Chermes* in Aphidæ, it will be found to be distinct from that genus. Should such prove to be the case, the following genus is proposed.

PINEUS.

Front wing with three simple oblique veins; hind wing with subcostal or rib-vein forked; wings roofed in repose. Antennæ 4—5-jointed. Tarsi one-jointed, claws two, with two digituli. Honey-tubes none. The female secretes a mass of wooly down in which she lays her eggs.

A SUMMERS STUDY OF HICKORY GALLS,
with descriptions of supposed new insects bred therefrom.

BY HENRY SHIMER, M. D.

Having observed, in the early part of June 1868, countless numbers of galls on the varieties of Hickory trees in the vicinity of Mt. Carroll, Ills., I was induced to make a careful study of them with a view of settling in my mind, as far as possible, their true relationship. Deeming the results attained thereby sufficiently important to science, I herewith present them to the entomological public.

Synoptical Table of Galls.

1. Galls opening with an elongated slit; containing translucent, whitish eggs.....Nos. 1, 3, 6 and 12.
2. Galls with a rounded opening in an elongate nipple-like tube:
   a.—Containing translucent, whitish eggs.....Nos. 2, 4, 5, 7, 9 and 11.
   b.—Containing yellow eggs.....Nos. 8 and 10.

Galls on the Shell-bark Hickory (Carya alba).

No. 1.—Large, hemispherical, opening beneath, ...Imago, length .06 in.
2.—Flattened, partitioned; opening above and beneath " " .06 in.
3.—Large, nut-like; on leaf-stem....." " .085 in.
4.—Flat; opening beneath,....." " .06 in.
5.—Like No. 1, except that the lower part is conical, " " .055 in.

Galls on the Bitter-nut Hickory (Carya amara).

No. 6.—Very large; opening beneath.....Imago, length .08 in.
7.—Small; opening beneath, round,....." " .045 in.
8.—Small, leathery; opening beneath, winged imago unknown.
9.—Medium; opening beneath; a dimpled depression above, ...Imago, length .06 in.
10.—Large, leathery; opening beneath....." " .07 in.
11.—Flat, almost like No. 4 but very thick....." " .045 in.
12.—Spiny, pubescent, irregular, opening beneath elongate sinuate. .....Imago length .06 in.

Galls on the Shell-bark Hickory (C. alba).

GALL No. 1. *—This is a large, subhemispherical gall, situate in the parenchyma of the leaf, generally projecting above the plane of the latter. Structure somewhat thick, tough and dense, the average thickness of the walls being about .05 inch. Color pale whitish-green, much paler than the leaf, the upper surface frequently tinged with red and often quite purple-red. Size: diameter in the plane of the leaf, ¼ to ½ inch; vertical diameter one-half.

* The description of this and the following galls were made from specimens in their most perfect state of development, and before the maturity of the insect that produced them.

These galls open beneath with a slit, the length of which is about one-third of the diameter of the gall; its direction is usually in, or somewhat oblique to, that of the veins of the leaf, and when oblique, more nearly parallel with the longitudinal axis of the leaf. The lips of these slits are pinched so tightly together as to project out and their margins are either smooth or slightly hairy. Sometimes a leaf contains but a single gall, others two or more. The galls may be scattered irregularly on the leaf, or placed in one or two rows along and near the mid-rib, and one or two dozen may be found in a single row, placed so closely together as to be contiguous.

Upon opening one of these galls, I found the mother insect and her eggs, the latter in great abundance, one hundred or more, studded all over the concave surface; but very few eggs had then (June 7th) hatched. But on opening one of the largest galls, which seemed to be in a much more advanced state, I found the mother insect in the midst of a very numerous brood of newly hatched larvæ, and also many eggs still unhatched; the new-born larvæ were pale greenish-white, while those more advanced were of a deeper color and of all shades approaching to orange; many were already in the pupa state, having short wing-cases. The mother insect moved in a stately manner among her numerous offspring, apparently proud of her queenly position.

On June 18th, the galls were in prime condition for examining the inhabitants; many were opening at the slit beneath and the winged imagos escaping in great numbers. The following is a description of the species. *

Dactylosphæra hemisphericum, n. sp?

? *Phylloxera caryæ-globuli*, Walsh, Proc. Ent. Soc. i, 309.

Winged Imago.—Light orange yellow, head, antennæ, legs, and a band around middle of thorax blackish; abdomen pointed; wings delicate, hyaline; antennæ (viewed with a simple lens, apparently 3-jointed. Length of body .04; to tip of wings .06 inch.

Microscopic view.—Antennæ 5-jointed, the first two, as usual, short and thick; third longer; fourth slender, shorter than third; fifth clavate, longer than third and fourth and about as thick as the third; these joints do not appear so evident in all specimens, as sometimes only four are discernable, and sometimes the microscope separates the antenna on one side into four joints, and that on the other into five. Promuscus slightly hairy, 3-jointed, the middle

* The description of this and the following species were taken from living specimens. In making microscopical examinations, especially of the feet, I find it best to place the *living* insect upon the glass slide, for, when it is anesthised it rests with the claws contracted under the foot and they cannot, therefore, be seen; whereas, when the insect is in motion, the claws and digituli are clearly observable.

joint shortest and thickest, and the third longest. Legs slightly hairy; femora very thick above, slender in the middle, being not half the upper diameter, then swelling out and clavate toward the lower end; feet with one joint, two claws and two digituli, which have clavate ends.

MOTHER INSECT.—Pale greenish-yellow, orange-yellow about the head; antennæ, proboscis and legs black; abdomen pointed, very versatile.

Microscopic view.—A few very short, fine, black hairs scattered over the body; three spiracles are seen along each side; surrounding the femur, there is an inverted conical or bell-shaped cup, bordered with black, within which the limb has room to work freely, and outwardly a frænum or skin attaches the side of this cup to the body, its lower margin black and about as large as the diameter of the cup. Proboscis projecting downwards between the fore legs. Eyes black. Tarsi with one joint, two claws, two long globe-ended digituli, and several hair-like spines. Antennæ 3-jointed, first two joints short and thick, subglobular, the last long and clavate.

PUPA.—Pale orange, wing-pads lighter; eyes brown; ocelli red; feet plainly showing two digituli.

Of the winged imago thousands were observed, each gall containing from thirty to forty specimens. On June 18th, I found no eggs, only a few larvæ and many pupæ.

I am rather suspicious that this *may* be the *Phylloxera caryæ-globuli* of Walsh; but he says (*ibid.*) that the gall of his species is "spherical," and also that the size of the insect is ".07 to .08 inch in length;" and that the abdomen is blackish. But unless described from living specimens, the color is of no value, as they all turn black after death.

GALL No. 2.—On the same leaves with the galls described above (No. 1) I found (June 7th) many presenting the following characters: Flattish, opening both above and below, in nipple-like projections, both surrounded by a downy substance, the upper opening being smaller and closer.

On opening the gall by a vertical cut, I observed a partly broken septum in the plane of the leaf, the border of the partition remaining, but the centre gone. A flat, dense, rim-like border extended around this septum into the parenchyma of the leaf, beyond the gall, so that the margins of the cut gall presented quite an acute angle. The greater part of the gall was above the leaf and its cavity was somewhat like two cones, with their bases together at the septum, the upper being much the larger. I opened one gall in which the inhabitants had perished when it was about one-fourth grown; in this the partition was complete. Diameter ¼ inch; inside diameter .08 inch; distance between the vertical orifices .15 inch.

Phylloxera caryæ-foliæ, Fitch (*2d. N. Y. Rep.* § 166), has a somewhat similar gall, but that opens only above, while the one under con-

sideration opens both above and below, the principal opening being beneath.

Dactylosphæra caryæ-septum, n. sp.

WINGED IMAGO.—Light orange-yellow, with a black band around the thorax; the general resemblance being quite similar to the species from gall No. 1. Length of body .04; to tip of wings .06 inch.

MOTHER INSECT—Pale greenish, slightly yellowish anteriorly; legs, antennæ and some spots on the back, blackish; apex of abdomen obtuse, terminated by a small central point, somewhat emarginate; otherwise like the mother insect from gall No. 1. Length .25 inch; breadth .15 inch.

GALL No. 3.—On June 7th, I observed, placed in the common petiole of the leaf, large, elongate, subelipsoidal, nut-like galls, of a deep leaf-green color, mottled with paler green, and somewhat nodulated; some were irregular, being on the side of the stem; but most of them are quite regular in form, and completely surrounding the stem; in these latter the leaves are very much dwarfed. The opening is on the middle of the side, slightly elongate, but at this date so close as to be scarcely apparent. These galls contain capacious cavities, in which were found vast colonies of larvæ, and an abundance of eggs. Transverse diameter $\frac{5}{8}$ inch; conjugate diameter $\frac{3}{8}$ inch.

By June 20th, these galls had considerably changed in appearance, being contorted into different shapes; they had began to crack open, having transverse fissues on their outer surface. The first one opened contained many hundred winged imagos, all dead, and in the midst of them was a large syrphidian larva. I found only one gall that contained perfect living imagos, the inhabitants of all the other galls that were examined, having been destroyed by various enemies.

Dactylosphæra subellipticum, n. sp.

WINGED IMAGO.—Large and robust, blackish, with abdomen light yellow; antennæ and legs blackish; wings hyaline. Length of body .06—.07; to tip of wings .08—.09 inch.

MOTHER INSECT.—Rugose, greenish-yellow; antennæ and legs black; otherwise like that from gall No. 1. Length .06; breadth .04; thickness .03 inch.

The winged imago of this species is the largest yet observed, and the eggs are more nearly globular than those found in other species of galls.

GALL No. 4.—These galls were found to be exceedingly numerous on some trees. On June 20th, they were smooth, slightly rounded above, pale yellowish-green; beneath somewhat whiter, and having in the centre a nipple-like projection; opening round, surrounded with a burr-like fringe composed of many filiments, the cavity like an inverted cone, the wall above being quite thin and translucent, so that the inmates

may be seen moving about. This apparently very flat gall was placed as much below as above the plane of the leaf. Diameter .15—.25 inch; vertical thickness .125 inch.

Dactylosphæra depressum, n. sp.

WINGED IMAGO.—Yellow; head, antennæ, legs and a band around the thorax, black; antennæ 3-jointed; otherwise as in specimens from gall No. 1. Length of body .04; to tip of wings .06 inch.

GALL No. 5.—A subhemispherical gall, projecting beneath into a conoidal point, with a round opening. On June 21st, these contained a great number of pupæ, and a few winged imagos. The walls are very thick and the opening below quite close, so that little or no light gains access to the cavity. This gall matures its inhabitants about one week or ten days later than does gall No. 1, which were at this time almost all gone, while these are only just commencing to develope the perfect insect.

Dactylosphæra conicum, n. sp.

WINGED IMAGO.—Yellowish-white; head yellow, with a blackish line between the eyes; a dusky band around the thorax; antennæ and legs pale; wings whitish-hyaline, lying flat on the back in repose; antennæ 3-jointed, the last joint long, subclavate, terminated by two minute points; tarsi with one joint, two claws and two digituli, the latter having fine subglobular ends; abdomen slender, pointed. Length .05—.06 inch.

Galls on the Bitter-nut Hickory (C. amara).

GALL No. 6.—Subglobular galls, varying in size from a quarter of an inch to one inch in diameter, the average being about half an inch, situate on leaf or its stems or mid-ribs; color greenish-white, sometimes with a blush of red on one side. The opening is beneath, in the shape of a small, elongate slit, which at length cracks open, like a chestnut burr, in three or four long slits running up the sides; after this the gall soon turns black and dries away. The cavity within is capacious, the walls being about ⅛ in thickness.

On June 17th I observed thousands of these galls and took home a large botanical box full for study. They were so numerous as to injure the growth of the trees. Those galls that had not yet began to open, and within which no parasites had gained access, were so thickly studded with young lice, that their abdomens pointed directly inward towards the centre, resembling the crystals in a geode, being wedged in as densely as mosaic work, while the whole central cavity was crowded with winged imagos; the former held on with great tenacity, while the latter were easily shaken out. In one gall I counted as many as one thousand inhabitants. At this time (June 17th) many of the galls had cracked open and the winged imagos were escaping in immense num-

bers. No eggs were found.* The larvæ were pale greenish-yellow. On June 25th the galls were all dry, black and deserted.

Dactylosphæra caryæ-magnum, n. sp?

? *Pemphigus caryæ-caulis*, Fitch, 1st N. Y. Rep. p. 155.

WINGED IMAGO.—Head and thorax brownish or black; abdomen pale lemon-yellow; prothorax, sometimes the whole thorax, yellow; antennæ and legs dark gray; wings hyaline, iridescent, lying flat on the back in repose; under a high magnifying power the antennæ appear slightly rugose, hairless, 4-jointed, the last joint terminated by two minute spines; and the legs appear corrugated, showing minute rings, and are slightly hairy; tarsi with one joint and two claws; stigma dark and conspicuous. Length of body .06; to tip of wings .08 inch.

GALL No. 7.—Small round galls, generally very numerous in the leaves, and in some cases almost entirely covering them, a single leaf sometimes containing upwards of 250 galls; the average size larger than those of No. 8, although often quite as small, the larger ones measuring three-sixteenths of an inch in diameter. They were (June 25th) quite hard and smooth, and present, especially above, a bright shining appearance; They were quite thick and plump, the vertical diameter compared with the horizontal diameter being as 2 to 3, and were much more plump and elevated above the leaf than those of No. 8. The portions of the leaf between the galls had in some cases turned crimson. I found from three to twenty-five inhabitants in a gall; the round opening beneath was so close as to be pretty safe against enemies, as I found none in the galls opened thus far. Larvæ and pupæ whitish, with red eyes; mother insect cinnamon color and smaller than the pupa.

On July 5th, I found winged imagos in all the galls, large and small, that were opened, the smallest galls not much exceeding .05 inch in diameter; when opened, the young insects eagerly ran out, and all presented the same pale, translucent appearance, with minute dark spots on the anterior part of the body, which is in contrast with the inhabitants of gall No. 8. The winged imago was first observed on June 30th.

Dactylosphæra minimum, n. sp.

WINGED IMAGO.—Body, antennæ and legs, pale yellowish-white; the head and a band round the thorax, dusky; wings on the back in repose, translucent, neuration obsolete, the stigma scarcely perceptible. Length of body .025—.03; to end of wings .045—.05 inch.

These insects are much smaller, paler in color and less disposed to fly than any of the other species noticed in this paper. From a gall

* The eggs were found in 1869; see Note below, p. 396.

.05 inch in diameter, I took a single winged imago with body .025 inch in length; with it there were a few eggs, but no other insect. I verified this same circumstance in several other small galls of this species, and it therefore appears probable that the winged imago was the mother-insect, developed into the winged state, although we have heretofore considered them as males.

On the surface of the leaves bearing these galls, were observed numerous, small unknown acarians, in all stages of development, from the egg to the perfect insect. They somewhat resemble a species found abundantly on the White Maple.

GALL No. 8.—Resembles gall No. 7, but generally smaller, less firm, more leathery and pliable, less rounded above, and some yellow in color. They are very numerous, having counted as many as eight hundred on a single leaf; where they are thus crowded together, they are very small, say from .025—.10 inch, in diameter.

On June 9th the eggs were hatching and the young could be seen running about on the leaves as well as in the galls. The mother insect was then a pale yellowish, subglobular mass, length .02 inch.

On July 23rd, I found the galls still containing both eggs and larvæ, the older galls becoming uninhabited, while up on the top limbs and young shoots, the new galls were becoming so numerous as to interfere with the growth of the leaves, and it appeared impossible for the galls to develop.

Although I have never succeeded in finding a winged imago, after having examined hundreds of galls, I presume it to be identical with the species mentioned by Mr. Walsh, (*Proc. Ent. Soc. Phil.* vi, 283), as *caryæ-semen*. Should it not prove to be a variety of *D. globosum*, the name will be as follows:

Dactylosphæra caryæ-semen.

caryæ-semen, Walsh, MS. Proc. Ent. Soc. Phil. vi, p. 283.

For a description of the gall, egg, larva, and mother insect, see my paper in *Proc. Acad. Nat. Sci.* Jan. 1867, where I included it under *D. globosum*; because, although the galls were of different size, I could not detect any difference in the eggs, larvæ and mother insect, and for other reasons there assigned. It must be admitted, however, that the similarity of the inhabitants, same color of eggs, and lateness of development of both galls are characters of great weight; and Mr. Walsh, in his First Report on the Noxious Insects of Illinois, says that the anatomical differences between the galls of his *caryæ-globuli* and *caryæ-*

semen are quite well marked, the former opening with a slit and the latter with a round nipple-like projection, &c. &c.

GALL No. 9.—On the same leaves containing the small galls, Nos. 7 and 8, I observed a number of larger ones with a dimpled depression above (which may be caused by the collapse of the thin paper-like centre), an opening beneath by a rounded, downy orifice, and having a diameter of .06—.33 inch, and a vertical depth of .12—.16 inch; all contained the female and her eggs, and some larvæ.

Dactylosphæra foreatum, n. sp.

WINGED IMAGO.—Abdomen and prothorax pale orange, with a dark band or ring around the mesothorax; wings carried flat on the back in repose, hyaline, veins small, stigma very faint, smoky; antennæ 3-jointed, the last joint long, subcylindrical and on a very long pedicle; abdomen quite pointed. Length to tip of wings .06; of antennæ .005 inch.

MOTHER INSECT.—Pale yellow, palest posteriorly. Length .04; width .02 inch.

On June 20th the winged imagos were very plenty, but no eggs could be found.

GALL No. 10.—This is the gall of my *D. globosum*, described at length in *Proc. Acad. Nat. Sci. Phil.*, Jan. 1867, and, with No. 8, are the only known Hickory galls that have the character of being soft and leathery in structure. The perfect insect was found between Sept. 20th, and Oct. 20th 1866, since which time I have not seen it. I then described it as being found on what I supposed to be *Carya glabra*, but which now proves to be *C. amara*. See below.

This is so manifestly distinct from *caryæ-globuli*, Walsh, that a comparison is uncalled for; the latter is said to mature in June, while *globosum* matures in October; and the opening of the galls are quite different in shape, that of *globosum* being rounded and on a nipple-like projection, while that of *caryæ-globuli* is an elongated slit.

I am not at all certain that Gall No. 8, is specifically distinct from this.

I found all the above mentioned galls, excepting Nos. 7, 8 and 9, dry and depopulated on July 6th; and on July 21st, 22nd and 23rd, I made a careful examination of all the species of galls here enumerated while yet on the trees, and found them all dry and depopulated except No. 8 and a few of No. 9, which although entirely free from their legitimate inhabitants, were yet green and quite firm, and in each of them I found a pupa of some unknown parasite. This is quite an interesting circumstance and shows how admirably nature provides for the life of all things, in the instance of this gall maintaining its integrity so much beyond the normal time, for the preservation of an intruder!

I have made the foregoing descriptions of the several species of *Dactylosphæra*, excepting No. 1, quite brief, because of the general similarity of the perfect insect; yet, the difference in the anatomical structure of the galls, the season of their development, the different sizes and shades of color of their inhabitants when in the living state—for they all become black and undistinguishable when dry—constitute a sufficient reason for assigning them to different species. That there really is more than one species there is probably no doubt, certainly not with those naturalists who even go so far as to name galls without knowing their legitimate inhabitants.

During the period of my studies of the Hickory galls, I was the constant observer of the various parasites connected with both the gall itself and the inhabitants thereof. The following brief observations I will make:

Parasites of the galls.—1st. In many galls I observed an unknown species of *Thrips*, quite abundant, with red bodies, and antennæ, legs, and tip of tail black. Length .01 inch.—2nd. *Conotrachelus posticatus*, Schönh., the larva of which lives in the galls, chiefly of No 6, often consuming its entire substance; it is a yellowish-white, slightly hairy, footless worm, with head and collar light brown. They had finished feeding and entered the ground about last of June, and the imagos appeared on July 21st. This is probably the same species with Dr. Fitch's *C. elegans* (1st N. Y. Report, p. 156.)—3rd. The larva of *Anthonomus erythropus*, Say, was also found within some of the galls; it is a white, rugose, footless, quick-motioned worm about .20 inch in length; it transforms within the gall; the pupa is white, back much curved, tail sharply pointed, and has a number of short reddish bristles about the head and tail; it wriggles about very rapidly when disturbed. 4th. Larvæ of the following new species of *Grapholitha* were found in August and September living in the nut of *Carya amara* (Bitternut Hickory); they destroy the interior of the nut, causing it to fall to the ground; the imago appeared in the latter part of November, it therefore hibernates in this state and continues to live in the spring until sometime in June, when the nut is sufficiently developed to receive the egg.

Grapholitha caryae, n. sp.

Palpi whitish except the minute third joint which is blackish. Head ashy grey, scales long, especially on the occiput. Thorax and abdomen blackish; patagia with a bluish tinge and a few pale scales posteriorly. Anterior wings dark brown, with numerous ferruginous scales, most prominent on and beyond

the middle. Anterior margin with short whitish streaks from near the base to the apex where they are most distinct. A diffuse rounded dark brown patch in the outer third of the wing is filled in with blackish scales. Fringes dark, blackish. Posterior wings above grey anteriorly, posteriorly bluish-black; beneath blackish with a greyish center. Under surface of thorax and legs clothed with whitish scales. Expanse .52 inch; length of body .23 inch. Two male specimens bred.

Parasites of the gall-lice.—The larvæ of certain Syrphidæ were frequently found especially in the larger galls; none were bred to maturity. The larvæ of two species of *Leucopis* were also found feeding upon the young lice; one species, which was white or yellowish-white, sometimes as many as fifty were found in one gall; the other species was red and quite similar to the new species of *Leucopis* I bred from the "grape-leaf louse" (*Pract. Entom.* ii, 17), and which has since been described by Dr. Loew, under the name of *simplex*. Two unknown species of Chalcis-flies were also bred.

From the inmates of some of the galls I also bred a species of *Cecidomyia*, having the following characters:—Body fuscous, pubescent; anterior part of abdomen imperfectly banded with black; antennæ reddish, covered with grey hairs; wings light fawn color, spotted with dusky, the spots arranged in little arcs, forming three broken bands; femora reddish; tibiæ banded with black and white; halteres reddish, on a white pedicel. Length of body one-sixteenth of an inch. Should this species prove to be new, it may be called *C. cossæ*.

In support of the assertion made on page 393, concerning *Carya glabra* and *amara*, the following observations are here added:

In October, 1868, after examining with great care, the fruit of the hickories in the region of Mt. Carroll, I became convinced that besides *Carya alba*, we only have in this place *C. amara*. I have had an opportunity of examining these hickories in this and some adjoining counties, and find no nut that agrees with *glabra*. I had been long aware, both from reports of mechanics and from personal observation, that the young hickory sapling here is not so tough for hoops and withes as those in Pennsylvania, where the true pignut hickory is abundant; but the nut itself is the best guide to correct determination.

The kernel of the nut of *C. amara* is always quite bitter, and much corrugated, shell so thin that it is easily broken with the teeth, and I have broken the whole nut with my hand; any of them can easily be cut in halves with a knife, and then readily crushed in pieces with the fingers. The stigmatic extremity usually projects into a long sharp spine; husk thin and leathery-like, soft, split from the apex only about half way to the base; 3 to 5, usually only 4, prominent hinged sutures at the upper end; this last character is not persistent, but gradually disappears in a series of specimens, so as to be entirely absent in the nuts of some trees. The form of the nut varies between cordate and oblong-elipsoidal; leaflets 7—9—11; bark at first smooth, but as the tree grows older it

becomes rough and corrugated. The trees seldom attain more than a foot in diameter. Winter bud small, slender, not smooth, yellowish. Abundant in the prairie groves and copses on the low bank of water courses.

There appears to be two varieties of the *C. amara*. In the usually described variety, the leaf is immaculate, and to this the gall No. 6 is entirely confined. In the other, the leaf is sprinkled with small, grey, glandular dots beneath, which remain persistent during the summer, and to this the galls No. 7 and 8 are exclusively confined.

The peculiar choice of these insects, would lead us to believe that the tree with the dotted leaf may be a new and distinct variety; but I have not yet made a sufficient examination of the fruit to decide this point. Nuts found on the trees bearing gall No. 7, do not materially differ however from those of the tree bearing gall No. 6.

I have never yet found the fruit of a tree bearing gall No. 8, but judging from the leaf, bud and bush, I know it to be identical with the trees bearing gall No. 7. Neither did I find galls Nos. 7 and 8 on one and the same tree. The locality of gall No. 7 was a mile from that of gall No. 8. The trees are in all respects similar, both having the small dots under the leaf, and very probably the galls will be found together.

This tree, with the thick sprinkling of small grey dust-like glands beneath the leaf, may be designated as *Carya amara-glandula*, by way of distinction, at least to answer the purposes of entomological research.

I spent the 4th of November 1868, at Rock Island—a portion of the morning on the Island, and the afternoon among the bluffs to the eastward of the city—examining the hickory trees and their fruit. I found, *C. alba*, *C. amara*, and a solitary tree of *C. tomentosa*, I did not see a single tree of *C. glabra*.

To render my determination of *C. amara* more certain, I carried with me to Columbia College, New York City, a number of the nuts for comparison with the specimens in the collections there; and through the kind assistance of Dr. Torrey, Professor of Botany at the college, and Mr. LeRoy of Peekskill, it becomes entirely positive that the nuts gathered, both in the vicinity of Rock Island and of Mt. Carroll, are those of *C. amara*; and that there are no fruit bearing trees, and therefore probably none of the *C. glabra*, in either of those localities.

Mt. Carroll, Ills., April, 1869.

NOTE.

During the summer of 1869 I made the following observations on Hickory Galls in the vicinity of Mt. Carroll:

June 18th.—Gall No. 6 already had winged imagos and eggs, the latter were not found last year. They were translucent-whitish, abundant, length .005 inch. The first gall observed contained two mother insects.

June 20th.—Gall No. 9 was far more abundant than last year and

some of them twice as large, their width being from 3-16th to 6-16ths of an inch. Gall No. 8 were found to be very numerous on the same trees as last year.

June 29th.—I confirmed the observations I made on the various galls last year, and discovered two new species, described below under Nos. 11 and 12. Gall No. 6 were very numerous and much more abundant than last year, sometimes a dozen was found on a single leaf, destroying it and often much injuring the tender branches. The weather was entirely too wet for the health of the inhabitants, and they were also found to be greatly afflicted with parasites as well as disease, and comparatively few reached the perfect state, compared with the millions of last year. Even the curculio larvæ, so abundant in these galls, were found to be much preyed upon by a species of chalcis-fly, and at this date I found plenty of eggs in some of the latest developed galls.

In the early part of the gall-season I observed many specimens of the *Thrips*, that infest them, on the leaves and some in the act of forcing an entrance into the galls. I also observed specimens of *Anthonomus erythropus*, Say, on the leaves seeking the galls, and even found one with its abdomen inserted into the opening of a gall, evidently in the act of ovipositing. Some pale amber colored eggs, half the size of those of the plant-lice (evidently deposited by some intruder) were also observed.

Gall No. 11.—Very thick, depressed, slightly elevated above the leaf, conical below; contained many larvæ and yellow pupa, but at this date (June 18th) too late to find the eggs. This gall is almost like No. 4, with the walls much thicker.

Dactylosphæra coniferum, n. sp.

Body brownish; abdomen, and in some specimens the mesothorax, pale yellow; antennæ three-jointed, the last joint very long and on a slender pedicel; tarsi very long, with the two digituli almost as long: claws two, as usual; wings ample, carried flat in repose, neuration nearly undefinable, stigma slightly clouded. Length of body .025; to tip of wings .05—.04 inch.

Many specimens observed.

GALL No. 12.—Yellowish, pubescent, covered with spines, quite irregular; opening beneath elongate, sinuate. This gall, from its being spinose and irregular, is quite in contrast with all the others of the series.

Dactylosphæra spinosum, n. sp.

WINGED IMAGO.—Head and thorax black or brownish; abdomen yellow; antennæ four-jointed, the third joint much shorter than fourth, tipped with a hairy spine; tarsi long; wings carried flat in repose. Length of body .03; to tip of wing .06 inch.

PUPA.—Color, light orange; back covered with long spines—quite in contrast with the pupæ of the other species which are all smooth.

LARVA.—Pale yellowish, abdomen covered with spines.

EGG.—Elongate-ovate, twice as long as wide, pale translucent greenish. Length .008 inch.

This is an interesting example among this series of galls, wherein the gall and young differ much more evidently than does the imago. The spiny gall and prominent spiny tubercles covering the body of the young, widely separates it from the preceding species, and yet the imago has much the appearance of that inhabiting the other galls. This is a strong, if not conclusive, argument in favor of the validity of the several species proposed.

Mt. Carroll, Ills., October, 1869.

ERRATA.

Page 103, line 31, for *nastutus* read *nasutus*.
128, line 1, for *an* read *and*.
224, line 41, for *verticalis* read *ventralis*.
280, line 34, for *Tears* read *Teras*.
385, line 11, for *Chrypsopa* read *Chrysopa*.
385, lines 21 and 22, for *terinatus* read *terminatus*.

INDEX.

The names of new genera and of new species are followed by the name of the Author.

PROCEEDINGS OF MEETINGS.

MARCH 9, 1868.

President HORN in the Chair.

Ten members present.

The following donations to the *Library* were announced :—

The American Naturalist, Vol. 1, Nos. 11 and 12. From the *Editors.*

The Entomologist's Monthly Magazine for December, 1867, January and February, 1868. From the *Conductors.*

Proceedings of the Boston Society of Natural History, Vol. 11, pp. 209—272. From the *Society.*

Proceedings of the Essex Institute, Vol. 5, No. 5. From the *Institute.*

The American Journal of Science and Arts for January, 1868. From the *Conductors.*

Entomologische Zeitung. 28 Jahr. 1867. From the *Entomologische Vereine, Stettin.*

Mittheilungen der Schweizerischen Entomologischen Gesellschaft. Vol. 2, Nr. 6, 1867. From the *Society.*

Essai Monographie sur les Nysson du Bassin du Léman (Insectes Hyménopteres), par Frédéric Chevrier, 1867. From the *Author.*

Notice sur Michel Faraday sa vie et ses travaux par Prof. A. de la Rive. From the *Author.*

Geotrupes of Boreal America, by G. H. Horn, M. D., 1868. From the *Author.*

Eight plates of Lepidoptera, drawn and engraved from rare species contained in the Society's Collection, by Prof. Townend Glover. From the *Department of Agriculture.*

The following works were presented by *Dr. H. de Saussure :*—

Mémoires pour servir a l'Histoire Naturelle du Mexique des Antilles et des États-Unis, par H. de Saussure. Livr. III et IV. Orthoptères—Blattides. 1864—65. 4to.

Mélanges Hyménoptèrologiques, par H. de Saussure. IIme Fascicule, 1863. 4to.

Reise der Österreichischen Fregatte Novara um die erde in den Jahren 1857—59. Zoologische Theil. Zweiter Band; Hymenoptera. Von H. de Saussure. 1867. 4to.

Portrait of Alexandre Yersin. 4to.

Note sur un Orthoptères Nouveau, par Alex. Yersin. 1857, 8vo.

Note sur quelques Orthoptères Nouveaux on peu connus d'Europe, par A. Yersin. 1859, 8vo.

Note sur le Pachytylus migratorius, Fisch., par A. Yersin. 1858, 8vo.

Note sur la dernière mue des Orthoptères, par A. Yersin. 1855, 8vo.

Recherches sur les fonctions du Système nerveux dans les Animaux Articulés, par A. Yersin. Two pamphlets, 8vo.

Note sur les mues du grillon champêtre, par A. Yersin. 8vo.

Mémoire sur quelques faits relatifs à la stridulation des Orthoptères et à leur distribution géographique en Europe, par A. Yersin. 8vo.

Bericht über das Leben und Wirken der Schweizerischen entomologischen Gesellschaft innert der Zeit von Mitte 1858 bis Eude 1859, von Adolph Ott. 8vo.

The following were presented by *Francis Walker*:—

Monographia Chalciditum, by Francis Walker. Vols. 1 and 2. 8vo.

Characters of undescribed species of Smiera (Chalcidites), by Francis Walker. 1864. 8vo.

Characters of a new Genus and Species of Chalcidites, by Francis Walker. 1865. 8vo.

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April 13, 1868.

President Horn in the Chair.

Nine members present.

The following donations to the *Library* was announced:—

Transactions of the Entomological Society of London, 3rd Series, Vol. 4, parts 2 and 3, and Vol. 5, part 7. From the *Society*.

Proceedings of the Zoological Society of London, 1867, Part 2. From the *Society*.

Proceedings of the Boston Society of Natural History, Vol. 11, pp. 273—288. From the *Society*.

The American Naturalist, Vol. 2, Nos. 1 and 2. From the *Editors*.

The American Journal of Science and Arts for March 1868. From the *Conductors*.

The Entomologist's Monthly Magazine for March and April, 1868. From the *Conductors*.

California Silk Grower's Manual, by L. Prevost. 1867. 8vo. From the *Dept. of Agriculture*.

First Annual Report on the Noxious Insects of the State of Illinois, by Benj. D. Walsh, M. A., Acting State Entomologist. 1868. 8vo. From the *Author*.

Supplement to the descriptions and figures of the Aranéides of the United States, by N. M. Hentz. Edited by S. H. Scudder. 1868. 8vo. From the *Editor*.

The following were presented by *Dr. H. Hagen*:—

Anatomisch-physiologische Untersuchungen über den Athmungsprozess der Insekten. Von H. Rathke. 4to.

Monographie des Gomphines, par E. de Selys Longchamps, avec la collaboration de Dr. H. A. Hagen. 1858. 1 vol. 8vo.

Synopsis des Agrionines; legion 2—5, par E. de Selys Longchamps. 1862—65. 8vo.

Synopsis des Gomphines, par E. de Selys Longchamps. 1854. 8vo.

Synopsis des Caloptérygines, par E. de Selys Longchamps. 1853. 8vo.

Révision critique des Phryganides décrites par M. Rambur d'après l'examen des individus types par Dr. H. A. Hagen. 1860. 8vo.

Catologue raisonné des Orthoptères de Belgique, par E. de Selys Longchamps. 1862. 8vo.

Notes on the Genus Raphidia, by Dr. H. A. Hagen. 1867. 8vo.

Description of a genus of Caddis-flies, of which the larvæ construct cases known as Helicopsyche, by Dr. H. A. Hagen. 1865. 8vo.

On some aberrant genera of Psocina, by Dr. H. A. Hagen. 1865. 8vo.

Psocinorum et Embidinorum Synopsis synonymica, von H. Hagen. 1866. 8vo.

Hemerobidarum Synopsis synonymica, von Dr. H. Hagen. 8vo.

Synopsis der Neuroptera Ceylons, von Dr. Hagen. 1858—59. 8vo.

Phryganidarum Synopsis synonymica, von H. Hagen. 1864. 8vo.

Synonymia Libellularum Europæarum, auctor H. A. Hagen. 8vo.

Beiträge zur Kenntniss der Verwandlung der Neuropteren, von Friedrich Brauer. 1855. 8vo.

Notizen beim Studium von Brauer's Novara-Neuropteren, von Dr. H. Hagen. 1866. 8vo.

Die Neuroptera der Insel Cuba, von Dr. H. Hagen. 8vo.

Rathmell Wilson was elected a *Life Member* and Benj. H. Smith, of Chester Co., Pa., a *Corresponding Member*.

MAY 11, 1868.

President HORN in the Chair.

Eleven members present.

The following donations to the *Cabinet* were announced:—

A very fine collection of Mexican FORMICIDÆ, collected and presented by Prof. F. Sumichrast.

A large collection of Mexican COLEOPTERA, collected and presented by Dr. Chas. Sartorius.

The following donations to the *Library* were announced:—

Verhandlungen des naturforschenden Vereines in Brünn. Band. V. 1866. From the *Society*.

Proceedings of the Academy of Natural Sciences of Philadelphia. 1867, No. 4. From the *Academy*.

Proceedings of the Essex Institute. Vol. 5, No. 6. 1867. From the *Institute*.

The American Naturalist for May, 1868. From the *Editors*.

The American Journal of Science and Art for May, 1868. From the *Conductors*.

On the Orthoptera of the State of Maine, by Sidney I. Smith. From the *Author*.

The characters of the Lepidopterous family Noctuidæ, by A. S. Packard, Jr., M. D. From the *Author*.

Six plates of Lepidoptera, engraved on copper by Prof. T. Glover. From the *Dept. of Agriculture*.

The following paper was presented for publication in the *Transactions*:—

"Notes on the Habits of Mexican Hymenoptera, No. 1, by F. Sumichrast."

JUNE 8, 1868.

Vice President PINE in the Chair.

Ten members present.

The following donations to the *Library* were announced :—

The Butterflies of North America, with colored drawings and descriptions, by Wm. H. Edwards. Part 1, 1868. 4to. From the *Author.*

Descriptions of American Lepidoptera, No. 3, by A. R. Grote and C. T. Robinson. 8vo. From the *Authors.*

Transactions of the American Entomological Society, Vol. 1, No. 4. 8vo. From the *Publication Committee.*

Proceedings of the Academy of Natural Sciences of Philadelphia, for January and February, 1868. 8vo. From the *Academy.*

The Entomologist's Monthly Magazine for May, 1868. From the *Conductors.*

The American Naturalist for June, 1868. From the *Editors.*

Verhandlungen der Kaiserlich-Königlichen zoologisch-botanischen Gesellschaft in Wien. Jahrgang 1867. Band xvii. From the *Society.*

Beitrag zu einer Monographie der Sciarinen, von Joh. Winnertz. Wien, 1867. 8vo. From the *Zool.-botan. Gesellschaft in Wien.*

The following papers were presented for publication in the *Transactions* :—

"New Coleoptera collected on the Survey for the extension of the Union Pacific Railway, E. D., from Kansas to Fort Craig, New Mexico, by Jno. L. LeConte, M. D."

"Coleoptera of the U. S. Coast Survey Expedition to Alaska, under charge of Mr. George Davidson, by Jno. L. LeConte, M. D."

"Description of a new species of N. A. Culicidæ, by Baron R. Osten Sacken."

"On the N. A. Platypteryginæ, by Aug. R. Grote."

"Notes on the N. A. Lepidoptera contained in the British Museum and described by Mr. Francis Walker, by A. R. Grote and C. T. Robinson."

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JULY 13, 1868.

President HORN in the Chair.

Eight members present.

The following donations to the *Library* were announced :—

Annales de la Société Entomologique de France. Tome 7, Trim. 1—4. 1867. From the *Society.*

Tijdschrift voor Entomologie. Nr. 1—6. 1867. From the *Soc. Ent. des Pays-bas.*

Transactions of the Chicago Academy of Sciences. Vol. 1, Part 1. From the *Academy.*

Transactions of the American Entomological Society. Vol. 2, No. 1. From the *Publication Committee.*

Proceedings of the Essex Institute. Vol. 5, No. 4. From the *Institute.*

Proceedings of the Boston Society of Natural History. Vol. 11, pp. 289—486. From the *Society.*

Condition and Doings of the Boston Society of Natural History. May 1868. From the *Society.*

Annual of the Boston Society of Natural History. 1868—69. No. 1. From the *Society.*

Entomologist's Monthly Magazine. June and July, 1868. From the *Conductors.*

American Naturalist, Vol. 2, No. 5. From the *Editors.*

Catalogue de la collection de Cicindéletes de M. LeBaron de Chaudoir. From *Jno. L. LeConte, M. D.*

A Guide to the Study of Insects, by A. S. Packard, Jr., M. D. Part 1. From the *Author.*

The Classification of Animals based on the Principle of Cephalization, by Jas. D. Dana. Nos. 1—3. From the *Author.*

On two American species of the genus Hydrachna, by J. D. Dana and J. Whelpley. From the *Authors.*

On the Homologies of Insects aud Crustaceans, by Jas. D. Dana. From the *Author.*

A Review of the Classification of Crustacea, with reference to certain Principles of Cephalization. By Jas. D. Dana. From the *Author.*

Description of a new species of Culicidæ, by Baron R. Osten Sacken. From the *Author.*

On the N. A. Platypteryginæ, by Aug. R. Grote. From the *Author.*

Descriptions of new N. A. Coleoptera, by Jno. L. LeConte, M. D. From the *Author.*

Catalogue of a collection of Mexican Hymenoptera, made by Prof. F. Sumichrast, by E. T. Cresson. From the *Author.*

Notes on the Habits of certain species of Mexican Hymenoptera, by Prof. F. Sumichrast. From the *Author.*

The following papers were presented for publication in the *Transactions :—*

"On the Synonymy of certain species of N. A. Lepidoptera, by Aug. R. Grote."

"Descriptions of N. A. Lepidoptera, No. 4, by Aug. R. Grote and C. T. Robinson."

"Descriptions of New Diurnal Lepidoptera, by Wm. H. Edwards."

"Catalogue of the Mutillidæ of North America, by Chas. A. Blake."

"Catalogue of Coleoptera from South Western Virginia, by Geo. H. Horn, M. D."

"Descriptions of new Coleoptera from the Pacific District of the United States, by Geo. H. Horn, M. D."

August 10, 1868.

President Horn in the Chair.

Seven members present.

The following paper was presented for publication in the *Transactions*:—

"Description of *Ennomos subsignaria*, Hübner, with notes on its habits, by Geo. Garrett Wise, M. D."

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September 14, 1868.

President Horn in the Chair.

Ten members present.

The following donations to the *Library* were announced:—

Proceedings of the Essex Institute, Vol. 5, No. 7. From the *Institute.*

Transactions of the Academy of Sciences of St. Louis, Mo. Vol. 2, No. 3. From the *Academy.*

Proceedings of the Boston Society of Natural History. Vol. 12, pp. 17—80. From the *Society.*

Proceedings of the Zoological Society of London for 1867; and a report of its Council and Auditors. From the *Society.*

Memoirs of the Boston Society of Natural History. Vol. 1, parts 1 and 3. From the *Society.*

Abhandlungen herausgegeben vom naturwissen-schaftleichen Vereine zu Bremen. Bd. 1, Heft 3. 1868. From the *Society.*

Entomologist's Monthly Magazine for August and September, 1868. From the *Conductors.*

American Journal of Science and Arts for September, 1868. From the *Conductors.*

American Naturalist for August and September, 1868. From the *Editors.*

Canadian Entomologist. Vol. 1, No. 1. From the *Entom. Soc. of Canada.*

American Entomologist, Vol. 1, No. 1. From the *Editors.*

Essai d'une Faune Entomologique de l'Archipel Indo-Néerlandais. Troisième Monographie: Famille des Pentatomides. 1re Partie. Par S. C. Snellen Van Vollenhoven. 4to. From the *Government of the Netherlands.*

Catalogue des Espèces de l'ancien genre Scolia, par H. de Saussure et J. Sichel. 1864. From *Prof. F. Sumichrast.*

Sur quelques Scolies de Basse-Californie, par H. de Saussure. 1862. From *Prof. F. Sumichrast.*

Études Hyménopterologiques, par J. Sichel. Premier fascicule. 1866. From *Prof. F. Sumichrast.*

Notes on the stridulation of some New England Orthoptera, by S. H. Scudder. From the *Author.*

Entomological Notes, No. 1, by S. H. Scudder. From the *Author.*

Supplement to a list of the Butterflies of New England, by S. H. Scudder. From the *Author.*

On the structure of the ovipositor and homologous parts in the male insect, by A. S. Packard, Jr., M. D. From the *Author.*

On the development of a Dragon-Fly (Diplax), by A. S. Packard, Jr., M. D. From the *Author.*

A Guide to the Study of Insects. Part 2. By A. S. Packard, Jr., M. D. From the *Author.*

A Monograph of the British Neuroptera—Planipennia, by R. Mac Lachlan. From the *Author.*

On the synonymy of certain species of American Lepidoptera, by A. R. Grote. From the *Author.*

Catalogue of Coleoptera from South-western Virginia.—New species of Coleoptera from the Pacific District of the United States, by G. H. Horn, M. D. From the *Author.*

Three Plates of N. A. Lepidoptera, engraved on copper by Prof. T. Glover. From the *Dept. of Agriculture.*

The following paper was presented for publication in the *Transactions*:—

"Synopsis of the Scolytidæ of America, north of Mexico. by Dr. C. Zimmermann; with an Appendix, by Dr. Jno. L. LeConte."

The following communications from Dr. Henry Shimer were read:—

Notes on insects bred from the Prickly Ash,

(*Xanthoxylum americanum*).

May 25th. 1868.—This morning I passed by a small grove of Prickly Ash, a mile west of this town, and observing that the woodpeckers had attacked the branches of some dead trees, the trunks of which were barked last July, I made an examination, and found that the bark had been considerably undermined by wood-boring larvæ. This work had been done during the latter part of last summer: in the autumn the borers entered the wood, usually by oblique paths, to secure safe winter quarters. On cutting down I found the larvæ—footless borers—of whitish and pink-orange colore, about one-fourth of an inch long. In these burrows I found several pink-orange pupæ, invariably lying with their heads outward: their long antennæ folded over the wing-cases, oblique down on the sides, passing beneath the posterior pair of legs, a little beyond them, and then curving up over the breast reach the head. From these pupæ I bred a small Lamiide, related to *Liopus alpha.*

LIOPUS XANTHOXYLI, n. sp.—*Gray, with bands and spots of blackish pubescence.* Antennæ about once and a half the length of the body, joints blackish at the articulations: hoary, mottled with cinereous and light brown between. Elytra hoary-cinereous, or slightly shaded with light brown, marked with an imperfect broad transverse band before the middle, and with two oblique bands, and many smaller spots of blackish behind the middle: in some specimens the grey predominates, in others black: in a few the bands are almost obsolete, being merely spotted with black. Thorax with two broad longitudinal lines converging to a point in form of the letter V; each side behind the middle with an angular spine-like projection. Head depressed between the antennæ, grey, with some small black spots: on the occiput a posterior median half line, and many small black spots, not equally well defined in all specimens. Beneath cinereous, incisures blackish: legs grey, somewhat spotted with black. Length about .2 inch.

June 10th.—I found only a few pupæ in their holes in the wood; but a few days later I took a number of specimens of the perfect insect by beating the Prickly Ash bushes. Examinations of old bushes show the work of former years. From these observations I conclude that they breed in wood recently dead, never in living wood, nor yet in wood dead for several years. In many of the holes in the body of the trees, I find a small, white silky cocoon, and where this is I never find the pupæ of the *Liopus*. From these, June 20th—25th, I bred an undetermined species of Ichneumonidæ. I also find a white maggot preying on some recently dead larvæ. One of these maggots, not yet half grown, appears to have just killed its victim, which is still quite plump, the posterior part a little shrivelled from the sucking of the maggot; these parasites were probably deposited this spring. They soon became pupæ, with the naked white legs free. From these—June 15th—I obtained a beautiful little Ichneumonide—also undetermined. I find many small beetles (*Læmophlœus adustus* Lec., and *Sacium fasciatum* Say) crawling about slowly on the bark of the Prickly Ash bushes.

May 23rd.—Saw several of the *Sacium fasciatum* in the holes of the borers. Observing a small round hole, like a pin hole, in a dead Prickly Ash bush, I cut out two specimens of a Scolytide, which Dr. LeConte informs me he has recently named *Micracis suturalis.** Upon several occasions, up to the present time, I have beaten Prickly Ash bushes in different localities in the groves within two miles of Mount Carroll, but never found either *Micracis suturalis*, *Liopus xanthoxyli*, *Læmophlœus adustus* or *Sacium fasciatum*, except in the one locality on the creek a mile west of the town; no dead trees were, however, observed in the other localities. The finding of *Sacium fasciatum* frequently in the borer holes, might lead us to conclude that they feed on the excrements or exuvia of other species. Among the Coleoptera obtained by beating the Prickly Ash bushes, I observe numerous specimens of a small, grey snout-beetle—an undescribed species of *Centrinus*. I find the trees in fruit, and have collected them from no other trees.

Since making the above observations on *Micracis suturalis*, I have succeeded in obtaining a small number by cutting in the dead wood, where the bark was adherent and where the Liopus larvæ had not worked. They are only found in imago now, and in this state appear to have entered; their holes are entirely free from chips, and I usually found them with their heads inward; their holes frequently intersect, and wind in various directions; sometimes they have several external openings, and when approached they usually go deeper in, if possible. I never took one by beating on the bushes. I saw one on the trunk of a Prickly Ash, but it escaped by falling to the ground.

June 19th.—I obtained from beneath the bark, a small species of Chalcididæ; also a larva of a species of *Scymmus* from the holes of the borers.

I am indebted to Dr. LeConte for determining the Coleoptera above noticed.

MOUNT CARROLL, ILLINOIS, July 1, 1868.

A brief Extract from Notes on Grape Vine Borers.

April 25th, 1868.—When examining dead wood of Isabella and Clinton Grape vines, I find many of the vines literally riddled by some kind of borer; and in these galleries I observe many specimens of *Amphicerus bicaudatus*, Say. A

* Trans. Am. Ent. Soc. ii, 165.

small proportion of them were living; they doubtless passed the winter in the perfect state, and as the vines were exposed to unusually severe weather on the trellises, many of the insects died; the dead specimens were passibly fit for preserving, had it been desirable. I saw two male specimens, one dead, the other living. The finding of the *Amphicerus bicaudatus* Say, under these circumstances, associated with *A. aspericollis* Germ., confirms the opinion of Dr. LeConte, that the two are sexes of one species. Upon a subsequent occasion, I found two *A. bicaudatus* just in the act of boring into grape vines immediately above the buds; they had entered about once and a half their length in limbs frost-killed during the last winter. These observations remind me that Dr. John Hostetter, of Mount Carroll, about five years ago, informed me that he had found a grape vine borer in its different stages. I find in the vines three species of Coleopterous larvæ; one rather rare, footless, yellowish-white, with black horny mandibles, length .30 inch; from these, after eighteen days in puparium, I bred *Callidium amœnum* Say. Another is a thick wrinkly grub, with a hoary-brownish line on the upper part of the abdomem; thorax extremely heavy, body curved so that the extremities come together, legs quite hairy. I placed about a dozen specimens into a box; they refused to eat. I never saw them crawling, they were always curled up, and when handled, tumbled about like balls, the feet were constantly in motion. These all died in the course of two or three weeks without becoming pupæ; their greatest length is .30 inch. Still later, I obtained two much larger grubs; these are yet in the larval state in the vine; I can only conjecture that they may be the larvæ of *Amphicerus bicaudatus*. A third larva, a grub somewhat similar to that noticed above, but smaller and more slender, is very abundant; it is white, without the dark spot on the abdomen, and curls up as the other when removed from the wood.

May 15th.—Many of these larvæ have become pupæ, and on the 10th of June most of them were in the perfect state, and only one larva was seen. These developed into *Lyctus opaculus*, Lec., and on the 1st of July I took the last imago out of the grape wood. These were so numerous in many vines as to eat up the wood entirely, the bark alone sustaining the vine. I am convinced that they only feed on wood recently dead, more especially because they are so often huddled together so closely; it is quite apparent that they do not interfere with living sappy wood. I am inclined to believe the same regarding all these three species of grape vine borers. If this is a correct conclusion, they will not damage the vines.

Associated with these borers, I found at least three distinct parasites; two identical with the undetermined Ichneumonide mentioned in my Notes on the Prickly Ash insects; and a third a naked, black, footless pupa found in early spring in the borings of the coleopterous larvæ, which probably passed the winter in the stems; these developed an undetermined species of Chalcididæ, which presents the following characters;—Head, thorax and anterior part of abdomen greenish, with purple, golden and metallic reflections; posterior part of abdomen steel-blue; legs and first joint of antennæ reddish; remainder of antennæ black; wings with two smoky transverse bands; the antennæ equal one-fourth the anterior wing in length; length of body one-fourth of an inch.

Several other insects were observed in connection with these observations, but of which I did not learn sufficient to notice at present.

Mount Carroll, Ills., July 1, 1868.

October 12, 1868.

President Horn in the Chair.

Eight members present.

The following donations to the *Library* were announced :—

Transactions of the Entomological Society of London. Vol. 3, Part 5; Vol. 4, Parts 4 and 5; Vol. 5, Part 8, and Parts 1 and 2 for 1868. From the *Society.*

Journal of the Linnean Society, London. Zoology. Nos. 36—42. From the *Society.*

American Naturalist for October, 1868. From the *Editors.*

Bericht über die wissenschaftlichen Leistungen im Gebiete der Entomologie während der Jahre 1859 to 1866. (7 Parts) Von Dr. A. Gerstaecker. From the *Author.*

Dr. Horn made a few remarks concerning *Cossyphus*, a genus considered from its tarsal characters as being a Tenebrionide Coleopteron, showing however a peculiarity of structure unknown until now, excepting among the Rhynchophora. The character was first observed by Dr. LeConte in the latter group of families, and its systematic value pointed out before the National Academy a year or two ago, and consists in the union of the edges of the prosternal epimera on the median line behind the prosternum, so that the latter never attains the margin of prothoracic segment, and is consequently never near the mesosternum. The accompanying illustration exhibits this peculiar structure in *Cossyphus*, which appears to indicate the possibility of the removal of the genus from its present position to the head of the great Rhynchophorous section of Coleoptera.

Dr. LeConte followed in remarks regarding the interest of the observation here made known, and explained at some length the peculiarities of structure of the under surface of the prothorax in the different families of Coleoptera.

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November 9, 1868.

President Horn in the Chair.

Fifteen members present.

The following donations to the *Cabinet* were announced :—

A collection, in alcohol, of Arachnida, Myriapoda, Hymenoptera and Orthoptera, made in New Mexico. From J. L. LeConte, M. D.

Thirteen specimens of *Catocala* (*C. ultronia, C. ponderosa, C. paleogama, C. ennubens, C.* sp. indet.), from Charles Wilt.

The following donations to the *Library* were announced :—

Proceedings of the Academy of Natural Sciences of Philadelphia, 1868, No. 3. From the *Academy.*

The American Naturalist, for October, 1868. From the *Editors.*

The Entomologist's Monthly Magazine for October, 1868. From the *Conductors.*

A Guide to the Study of Insects, by A. S. Packard, Jr., M. D. Part 3. From the *Author.*

The Canadian Entomologist, Vol. No. 3. From the *Entom. Soc. of Canada.*

The Sugar Insect: "*Acarus Sacchari*," found in raw sugar. By Rob't Niccol, Esq. of Greenock, Scotland. 1868. From the *Author*.

Annual Report of the Trustees of the Museum of Comparative Zoology, together with the report of the Directors. 1862, 8vo. From *Chas. H. Hart*.

Report of Dr. Fitch on the Noxious and other Insects, detrimental to Agriculture. 1865, 8vo. From *Chas. H. Hart*.

Thirty-one plates, illustrating the Orange and Cotton Insects, and their ravages in the Southern States, engraved from nature, by Prof. Townend Glover. From the *Department of Agriculture*.

The American Entomologist, Vol. 1, Nos. 2 and 3. From the *Editors*.

The Butterflies of North America, by Wm. H. Edwards. Part 2. From the *Author*.

The following paper was presented for publication in the *Transactions*:

"List of the Sphingidæ, Ægeriidæ and Bombycidæ of Cuba, by Aug. R. Grote."

December 14, 1868.

President. Horn in the Chair.

Seventeen members present.

The Annual Reports of the Recording and Corresponding Secretaries, Treasurer, Librarian, Curator and Standing Committees were read.

The following donations to the *Library* were announced:—

Proceedings of the Zoological Society of London, 1868, Part 1. From the *Society*.

Entomologist's Monthly Magazine. November and December, 1868. From the *Conductors*.

American Naturalist. November and December, 1868. From the *Editors*.

The American Journal of Science and Arts for November, 1868. From the *Conductors*.

The Canadian Entomologist, Vol. 1, Nos. 2 and 4. From the *Entom. Soc. of Canada*.

Proceedings of the Boston Society of Natural History. Vol. 12, pp. 113—144. From the *Society*.

On the Phalangeæ of the United States of America, by H. C. Wood, Jr., M. D. From the *Author*.

Constitution and By-Laws of the Entomological Society of Canada.

The following works were presented by J. Carson Brevoort, Esq.:—

Catalog der Kæfer-Sammlung von Jacob Sturm. 1843, 8vo.

Disquisitiones Physiologicæ circa Respirationem Insectorum et Vermium auctore F. L. A. W. Sorg. 1805, 8vo.

Monographia Coleopterorum Micropterorum, auctore J. L. C. Gravenhorst. 1806, 8vo.

Catalogue des livres d'Histoire Naturelle et principalement d'Entomologie composant la Bibliothèque de feu M. Victor Audouin. 1842, 8vo.

Bedenkingen over het einde, waartoe de Insecten vermœdelyk geschapen zyn. door C. F. Kleynhoff, M. D. 1805, 8vo.

Genera Insectorum eorumque characteres naturales secundum numerum, fig-

uram, situm et proportionem omnium partium oris adjecta mantissa specierum nuper detectarum, auctore J. C. Fabricius. 8vo.

Fundamenta Entomologiæ: or, an Introduction to the knowledge of Insects. By W. Curtis, Apothecary. 1772, 8vo.

Cours d'Entomologie, ou de l'histoire naturelle des Crustacés, des Arachnides, des Myriapodes et des Insectes Par M. Latréille. 1831, 8vo.

Précis des charactères génériques des Insectes disposés dans un ordre naturel. Par le Citoyen Latréille. 8vo.

Description des Chrysides du Bassin du Léman par Frédéric Chevrier. 1862, 8vo.

Pselaphiorum Monographia cum synonymia extricata auctore Carolo Aubé. 1833, 8vo.

Révision de la famille des Pselaphiens, par Dr. C. Aubé. 1844, 8vo.

On the Pselaphidæ of the United States. By John L. LeConte, M. D. 1844, 8vo.

Geschichte, Systematik und Literatur der Insectenkunde, von den ältesten Zeiten bis auf die Gegenwart. Von Dr. J. N. Eiselt. 1836, 8vo.

Essai sur l'Entomologie du département du Pay-de-Dome. Monographie des Lamelli-Antennes. Par M. J. Baudet Lafarge. 1809, 8vo.

Epitome Entomologiæ Fabricianæ sive Nomenclator Entomologicus emendatus sistens Fabriciani systematis cum Linneano comparationem. 1797, 8vo.

Johannes Goedartius de Insectes, in Methodum Redactus; cum Notularum additione opera M. Lister. 1685, 8vo.

A guide to the study of Insects, by A. S. Packard, Jr. M. D. Part 4. From the *Author*.

Rapport fait à la Societé sur les moyens de prevenir et d'arrêter les ravages de l'alucite des grains (pou volant, teigne, papillon des grains), au nom d'une Commission composée de MM. Busche, Darblay, Labbé, Vilmorin; Huzard fils, rapporteur. 1831, 8vo. From *C. H. Hart.*

On ballot, the following Officers and Standing Committees were elected to serve the ensuing year:—

OFFICERS.

President—Coleman T. Robinson.
Vice-President—Jno. L. LeConte, M. D.
Corresponding Secretary—E. T. Cresson.
Recording Secretary—J. Frank Knight.
Treasurer—James W. McAllister.
Librarian—Charles A. Blake.
Curator—Ezra T. Cresson.

STANDING COMMITTEES.

On Coleoptera—J. L. LeConte, M. D., Sam'l. Lewis, M. D., G. H. Horn, M. D.
Lepidoptera—C. T. Robinson, A. R. Grote, C. A. Blake.
Hymenoptera—E. T. Cresson, J. W. McAllister, C. A. Blake.
Diptera—Chas. Wilt, E. T. Cresson, James Ridings.
Neuroptera and Orthoptera—J. Frank Knight, G. B. Dixon, C. H. Hart.
Hemiptera and Aptera—J. Ennis, J. Meichel, C. H. Hart,
Insect Architecture—J. Frank Knight, J. H. Ridings, M. D., J. Meichel.
Library—Wm. S. Pine, Samuel Lewis, M. D., Geo. B. Dixon.
Publication—E. T. Cresson, C. T. Robinson, Samuel Lewis, M. D.
Finance—J. W. McAllister, Samuel Lewis, M. D., Charles Wilt.
Hall—C. A. Blake, Wm. Ridings, Samuel Lewis, M. D.
Collecting Fund—Wm. Ridings, Charles Wilt, J. Ennis.
Microscopy—C. C. Cresson, M. D., C. T. Robinson, C. A. Blake.

JANUARY 11, 1869.

Vice President LeCONTE in the Chair.

The following donations to the *Library* were announced :—

Proceedings of the Boston Society of Natural History, Vol. 15, pp. 155—192. From the *Society*.

American Naturalist, for January 1869. From the *Editors*.

American Entomologist, Vol. 1, Nos. 4 and 5. From the *Editors*.

Canadian Entomologist, for December 1868. From the *Entom. Soc. of Canada*.

Descriptions of American Lepidoptera, No. 4, by A. R. Grote and C. T. Robinson. From the *Authors*.

Descriptions of New Canadian Ichneumonidæ, by E. T. Cresson. From the *Author*.

Descriptions of North American Bees, No. 1, by E. T. Cresson. From the *Author*.

Nova Acta Regiae Societatis Scientiarum Upsaliensis. Seriei Tertiae. Vol. 6, Fasc. 1—2. 1866-8. From the *Society*.

The following paper was presented for publication in the *Transactions :*

"Description of a new genus of Pieridæ, and certain new species of butterflies from California, by H. Behr, M. D."

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FEBRUARY 8, 1869.

Vice President LeCONTE in the Chair.

Thirteen members present.

The following donations to the *Library* were announced :—

Proceedings of the Zoological Society of London, 1868. Part 2. From the *Society*.

Proceedings of the Boston Society of Natural History, Vol. 12, pp. 193—224. From the *Society*.

Proceedings of the Academy of Natural Sciences, 1868, No. 4. From the *Academy*.

Transactions of the American Entomological Society, Vol. 2, No. 2. From the *Publication Committee*.

Proceedings of the Essex Institute, Vol. 5. No. 8. From the *Institute*.

Entomologists' Monthly Magazine, for January 1869. From the *Conductors*.

American Naturalist, Vol. 2, No. 12. From the *Editors*.

American Entomologist, Vol. 1, No. 6. From the *Editors*.

Canadian Entomologist. Vol. 1, No. 6. From the *Entom. Soc. of Canada*.

A Guide to the Study of Insects, by A. S. Packard, Jr., M. D. Part 5. From the *Author*.

Essai d'une Faune Entomologique de l'Archipel Indo-Néerlandais, par S. C. Snellen Van Vollenhoven. Troisiéme Monograph. Famille des Pentatomides. Ire Partie. From *Rathmell Wilson*.

Iconographie et description de Chenilles et Lépidoptères inedits, par P. Milliére, (3 Livraisons). Tome 2. From *Rathmell Wilson.*

Histoire Naturelle des Insectes Coléoptères, par Th. Lacordaire. Tome huitiéme contenant les familles des Tricténotomides et des Longicornes. 1869. From *Rathmell Wilson.*

Diptera Americæ septentrionalis indigena, descripsit H. Loew. Centuria octava. From the *Author.*

The following paper was presented for publication in the *Transactions* :—

"Synonymical Notes on Coleoptera of the United States, with descriptions of new species, from the MSS. of the late Dr. C. Zimmermann. Edited by John L. LeConte, M. D."

The following amendments to the By-Laws of the Society were adopted, viz:

Art. 2 of Chap. III, strike out, in the second line, the words "one dollar" and substitute "two dollars."

Art. 3 of Chap. III, strike out, in the second line, the word "fifty" and substitute "seventy-five."

William S. Wilson was unanimously declared a *Life member* of the Society.

MARCH 8, 1869.

Dr. HORN in the Chair.

The following donation to the *Cabinet* was announced:

A large and handsome collection of South American and European Diurnal Lepidoptera. From *Coleman T. Robinson.*

The following donations to the *Library* were announced:—

American Journal of Sciences and Arts for January 1869. From the *Conductors.*

American Naturalist, Vol. 3, No. 1. From the *Editors.*

Entomologists' Monthly Magazine, for February 1869. From the *Conductors.*

Canadian Entomologist, Vol. 1, No. 7. From the *Entom. Soc. of Canada.*

Rhopalocera Africæ Australis; a catalogue of South African Butterflies, comprising descriptions of all the known species, by Roland Trimen. London, 1862—66. From *C. T. Robinson.*

Die Tineen und Pterophoren der Schweiz, von Prof. Heinrich Frey. Zürich, 1856. From *C. T. Robinson.*

On ballot, John Akhurst was elected a *Resident member* of the Society.

April 12, 1869.

President Robinson in the Chair.

Twelve members present.

The following donations to the *Library* were announced :—

Entomologists' Monthly Magazine for March 1869. From the *Conductors.*

American Journal of Science and Arts, March 1869. From the *Conductors.*

American Entomologist, for March and April 1869. From the *Editors.*

Canadian Naturalist, Vol. 1, No. 2. From the *Editor.*

Bulletin of the Essex Institute, Vol. 1, Nos. 1 and 2. From the *Institute.*

American Naturalist, Vol. 3, No. 2. From the *Editors.*

Proceedings of the Boston Society of Natural History, Vol. 12, pp. 225—336. From the *Society.*

A Guide to the Study of Insects, by A. S. Packard, Jr., M. D. Part 6. From the *Author.*

An Entomological Essay read before the Fruit Grower's Association of Easton Pennsylvania, by S. S. Rathvon. From the *Author.*

Revision of the large Stylated Fossorial Crickets, by S. H. Scudder. From the *Author.*

Six plates of Lepidoptera, engraved on copper by Prof. T. Glover. From the *Dept. of Agriculture.*

The following were presented by *Dr. Jno. L. LeConte :—*

Descriptions of three new species of the genus Cremastocheilus, by T. W. Harris, M. D.

Upon the Economy of some American species of Hispa, by T. W. Harris, M. D. (1835.)

A Monograph of North American Insects of the genus Cicindela, by Thomas Say. (In MS. 1817.)

Verzeichniss der in "Dejean's species général des Coléoptéres" beschriebenen Carabiden, by Dr. Zimmermann. (In MS.)

Verzeichniss der Lamellicornia Melitophila, von Dr. Schaum. (1848.)

Versuch einer systematischen Feststellung der Insecten-Familie: Panorpatæ und Auseinander setzung ihrer Gattungen und Arten.

Synopsis Hymenopterologiæ Scandinavicæ, I—II.

The following papers were presented for publication in the *Transactions :—*

"Biological Notes on Diptera, (Galls on Solidago.) by Baron R. Osten Sacken."

"A Summers Study of Hickory Galls, with descriptions of supposed new insects found therein, by Henry Shimer, M. D."

May 10, 1869.

Vice President LeConte in the Chair.

The following donations to the *Library* were announced :—

Proceedings of the Boston Society of Natural History, Vol. 12, pp. 337—400. From the *Society.*

Memoirs read before the Boston Society of Natural History, Vol. 1, Part 4. From the *Society*.

Transactions of the Entomological Society of London; 1868, Parts 3—5; 1869, Part 6. From the *Society*.

American Journal of Science and Arts, May 1869. From the *Conductors*.

American Naturalist, for May 1869. From the *Editors*.

Canadian Entomologist, Vol. 1, No. 9. From the *Entom. Soc. of Canada*.

Canadian Naturalist, Vol. 1, Nos. 3—5. From the *Editor*.

Entomological Correspondence of Dr. Thaddeus William Harris. From the *Boston Society of Natural History*.

First Annual Report on the Noxious, Beneficial and other Insects of the State of Missouri, by Charles V. Riley, State Entomologist. From the *Author*.

Entomological Notes, No. 1, by Samuel H. Scudder. From the *Author*.

Supplement to a List of Butterflies of New England, by Samuel H. Scudder. From the *Author*.

Notes on the Stridulation of some New England Orthoptera, by Samuel H. Scudder. From the *Author*.

Stettiner Entomologische Zeitung. From the *Entom. Soc. of Stettin*.

Verhandlungen der kaiserlich Königlichen Zoologisch-botanischen Gesellschaft in Wien. Vol. 18. No. 1—4. From the *Society*.

Mélanges Orthopterologiques, par H. de Saussure. From the *Author*.

The following paper was presented for publication in the *Transactions*:

"Description on a new species of Grapta, with notes upon G. interrogationis, by J. A. Lintner."

On ballot, R. J. Mendenhall, of Minneapolis, Minn., was elected a *Corresponding member* of the Society.

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JUNE 14, 1869.

Vice President LECONTE in the Chair.

Ten members present.

The following donations to the *Library* were announced:—

Entomologists' Monthly Magazine. May 1869. From the *Conductors*.

Proceedings of the Boston Society of Natural History, Vol. 12. pp. 401—420. From the *Society*.

Canadian Naturalist, May 1869. From the *Author*.

Canadian Entomologist, Vol. 1, Nos. 8—10. From the *Entom. Soc. of Canada*.

American Entomologist, Vol. 1, No. 10. From the *Editors*.

American Naturalist, Vol. 3, No. 4. From the *Editors*.

A Guide to the Study of Insects, by A. S. Packard, Jr., M. D., Part 7. From the *Author*.

The Family Visitor, 1850 and 1851. From *Dr. J. L. LeConte*.

Traité élémentaire d'Entomologie ou d'histoire des animaux articulés, par M. Audouin et H. Milne-Edwards. 2 vols., 16 mo. From *Prof. S. S. Haldeman*.

August 9, 1869,

Dr. Horn in the Chair,

The following donation to the Cabinet was announced :—

A beautiful collection of named Mexican Coleoptera. From *Dr. G. H. Horn.*

The following donations to the *Library* were announced :—

Annales de la Société Entomologique de France. 4e Sér., Tom. 8, Trim. 1—4. From the *Society.*

The Entomologist (London), Vol. 3 (bound), and Nos. 48—60. From the *Conductors.*

The Zoologist, 2nd Series, Nos. 28—39. From the *Conductors.*

Proceedings of the Academy of Natural Sciences, 1869. No. 1. From the *Academy.*

American Journal of Science and Arts, July 1869. From the *Conductors.*

American Naturalist, Vol. 3, No. 5. From the *Editors.*

Canadian Entomologist, Vol. 1, Nos. 11 and 12. From the *Entom. Soc. of Canada.*

Canadian Naturalist, Vol. 1, Nos. 7 and 8. From the *Editors.*

Entomologists' Monthly Magazine, Nos. 61 and 62. From the *Conductors.*

Bulletin of the Essex Institute, Vol. 1, No. 3. From the *Institute.*

Lancaster Farmer, Vol. 1, Nos. 1, 5, 6 and 7. From *S. S. Rathvon.*

Entomological Essay, by S. S. Rathvon. From the *Author.*

Catalogue of the Orthoptera of North America, by S. H. Scudder. From the *Smithsonian Institution.*

First Annual Report of the Trustees of the Peabody Academy of Sciences, From the *Academy.*

A Guide to the Study of Insects, by A. S. Packard, Jr. M. D., Part 8. From the *Author.*

On the Food Plants of New England Butterflies, by Samuel H. Scudder. From the *Author.*

Considerations on the Neuropterous genus Chauliodes and its allies; with notes and descriptions, by R. McLachlan. From the *Author.*

The following paper was presented for publication in the *Transactions:*

"Descriptions of certain new species of Diurnal Lepidoptera found in the United States, by Wm. H. Edwards."

September 13, 1869.

Vice President LeConte in the Chair.

The following donations to the *Library* were announced :—

American Journal of Sciences and Arts, September 1869. From the *Conductors.*

American Entomologist, August 1869. From the *Editors.*

American Naturalist, Vol. 3, No. 7. From the *Editors.*

A Guide to the Study of Insects, by A. S. Packard, Jr., M. D., Part 9. From the *Author*.

The Butterflies of North America, by Wm. H. Edwards, Part 4. From the *Author*.

Entomological Notes, No. 2, by Samuel H. Scudder. From the *Author*.

Tijdschrift voor Entomologie. Achtste Jaargang, 1 Aflevering. Tweede Serie, 3e deel, 2—6 Aflevering. 4e deel. I Aflevering. From *Entom. Soc. of Pays-bas*.

The following paper was presented for publication in the *Transactions*:—

"On certain parasitic Hymenoptera, belonging to the family Chalcididæ, by Benj. D. Walsh, M. A."

October 12, 1869.

Dr. Horn in the Chair.

The following donations to the Library were announced:—

Entomologists' Monthly Magazine, Nos. 63 and 64. From the *Conductors*.

American Naturalist, Vol. 3. No. 6. From the *Editors*.

Canadian Naturalist, Vol. 1, No. 10. From the *Editor*.

Synopsis de la Scolytides, par F. Chapuis. From the *Author*.

November 8, 1869.

Dr. Horn in the Chair.

The following donations to the Library were announced:—

Transactions of the Entomological Society of London, 1869, Parts 1—4. From the *Society*.

Entomologists' Monthly Magazine, October 1869. From the *Conductors*.

Proceedings of the Boston Society of Natural History, Vol. 13, pp. 33—112. From the *Society*.

Transactions of the American Entomological Society, Vol. 2, No. 3. From the *Publication Committee*.

Bulletin of the Essex Institute, Vol. 1, No. 4. From the *Institute*.

American Naturalist, Vol. 3, Nos. 8 and 9. From the *Editors*.

Canadian Naturalist, Vol. 1, No. 11. From the *Editor*.

American Entomologist, Vol. 2, No. 1. From the *Editors*.

Canadian Entomologist, Vol. 2, Nos. 1 and 2. From the *Entom. Soc. of Canada*.

Condition and doings of the Boston Society of Natural History, May 1869. From the *Society*.

Notes on American Tortricidæ, by C. T. Robinson. From the *Author*.

Mittheilungen der schweizerischen Entomologischen Gesellschaft (Bulletin de la Société Suisse d'Entomologie), Vol. 3, Nro. 1—2. 1869. From the *Society*.

Hemiptera Africana descripsit Carolus Stal. Tomus 1—4. From the *Swedish Royal Acad. of Sciences*.

Hemiptera Fabriciana auctore C. Stal. Part 1. From the same.

The following are from *Dr. H. de Saussure*:—

Catalogue des espèces de l'ancien genre Scolia, par H. de Saussure et J. Sichel. 1864.

Essai d'un Système des Mantides, par H. de Saussure.

Etudes sur quelques Orthoptères du Musée de Genève nouveaux ou imparfaitement connus, par H. de Saussure.

Description de quelques Crustacés nouveaux de la Côte occidentale du Mexique, par H. de Saussure.

Mutillarum novarum species aliquot, auctore H. de Saussure.

Note sur les Polistes Americains, par H. de Saussure.

Essai Monographique sur les Oxybelus du Bassin du Léman (Insectes Hyménoptères), par F. Chevrier.

Description des Chrysides du Bassin du Léman, par F. Chevrier.

Hyménoptères divers du Musée Godeffroy, par H. de Saussure.

Melanges Orthoptérologiques, par H. de Saussure. Fasc. I—II. 4to.

The following papers were presented for publication in the *Transactions*:—

"On the North American species of the genus Aleiodes, Wesmael, by E. T. Cresson."

"Descriptions of new American Tortricidæ, by C. T. Robinson."

December 13, 1869.

Dr. Horn in the Chair.

The Annual Reports of the Recording and Corresponding Secretaries, the Treasurer, Librarian and Curator were read.

The following donations to the Library were announced:

Journal of the Linnean Society of London, Nos. 43 to 46 inclusive. From the *Society*.

Address of George Bentham Esq., President of the Linnean Society. From the *Society*.

List of the Members, &c., of the Linnean Society of London. From the *Society*.

The Canadian Entomologist, Vol. 2, No. 3. From the *Editor*.

Entomologische Zeitung, Stettin, 1869. From the *Society*.

The American Journal of Science and Arts, November 1869. From the *Conductors*.

The following papers were presented for publication in the *Transactions:*

"Notes on some genera of Coprophagus Scarabæidæ of the United States, by Geo. H. Horn, M. D."

"Synopsis of the Parnidæ of the United States, by Geo. H. Horn, M. D."

The Corresponding Secretary announced the death of Benjamin D. Walsh, M. A., of Rock Island, Illinois, a Corresponding Member of the Society, and on motion a Committee of three was appointed to draft suitable resolutions respecting the deceased.

On ballot, the following Officers and Standing Committees were elected to serve the ensuing year:—

OFFICERS.

President—John L. LeConte, M. D.
Vice-President—George H. Horn, M. D.
Corresponding Secretary—E. T. Cresson.
Recording Secretary—J. Frank Knight.
Treasurer—James W. McAllister.
Librarian—Charles A. Blake.
Curator—Ezra T. Cresson.

STANDING COMMITTEES.

On Coleoptera—J. L. LeConte, M. D., Sam'l. Lewis, M. D., G. H. Horn, M. D.
Lepidoptera—C. T. Robinson, James Ridings, C. A. Blake.
Hymenoptera—E. T. Cresson, J. W. McAllister, C. A. Blake.
Diptera—Chas. Wilt, E. T. Cresson, James Ridings.
Neuroptera and Orthoptera—J. Frank Knight, G. B. Dixon, C. H. Hart.
Hemiptera and Aptera—J. Ennis, J. Meichel, C. H. Hart,
Insect Architecture—J. Frank Knight, J. H. Ridings, M. D., J. Meichel.
Library—Wm. S. Pine, Samuel Lewis, M. D., Geo. B. Dixon.
Publication—E. T. Cresson, C. T. Robinson, Samuel Lewis, M. D.
Finance—J. W. McAllister, Samuel Lewis, M. D., Charles Wilt.
Hall—C. A. Blake, Wm. Ridings, Samuel Lewis, M. D.
Collecting Fund—Wm. Ridings, Charles Wilt, J. Ennis.
Microscopy—C. C. Cresson, M. D., C. T. Robinson, C. A. Blake.