

Technical and Bibliographic Notes / Notes techniques et bibliographiques

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

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

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

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

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

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

- Additional comments: /  
Commentaires supplémentaires:

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

|     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 10X | 12X | 14X | 16X | 18X | 20X | 22X | 24X | 26X | 28X | 30X | 32X |
|     |     |     |     |     |     | ✓   |     |     |     |     |     |

# The Canadian Entomologist.

VOL. XIII.

LONDON, ONT., MAY, 1881.

No. 5

## DESCRIPTION OF THE PREPARATORY STAGES OF APATURA FLORA, EDW.

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

EGG.—Similar to egg of *Clyton*; nearly spherical, flattened at base, marked by 18 or 20 slightly prominent vertical ribs, and by many fine equi-distant striæ; color yellow-green. Duration of this stage 6 to 7 days.

YOUNG LARVA.—Length .8 inch; cylindrical, tapering from segment 3; pubescent; color pale green, translucent; head twice as broad as next segment, sub-globose, bilobed, the surface thickly pitted with shallow excavations; color shining yellow or ochrey-brown. Towards the last of the stage the body is less tapering, each segment well rounded; down middle of dorsum from 2 to 13 a dark green line, and another on upper part of each side, the dorsal area between these side lines whitish-green; below the lines more decidedly green; legs and feet green. To first moult 6 days.

After 1st Moulting.—Length .14 inch; body a little thickest at 7, tapering slightly either way, the last segment ending in a forked tail; the surface closely covered with yellow and yellow-white tubercles, arranged in longitudinal rows, and also in regular cross rows; these tubercles are stout at base, subconic at top, of irregular sizes, and at top of each is a short white appendage; on middle of dorsum a dark green stripe, and another, but narrower, on upper part of side; the dorsum is covered by two bands of tubercles, divided by the green stripe, each band made up of two rows, the outer row being whitish, the inner yellow; below the lateral stripe is another band of two rows, and as the stage proceeds these separate, showing a dull green line between them, the lower row running with the basal ridge of body; the tails are divergent from base, are short, tapering, rough with tubercles, and these gave out longer hairs than elsewhere; under side, feet and legs yellow-green; head subquadrate, the sides rounded, the front a little rounded, the top incurved; whole surface

shallowly pitted and covered with a short yellow down ; color greenish-white, with dark brown spots and patches ; a large brown triangle over mandibles, a small sub-triangular patch at top in the depression, a sub-crescent patch along base of each vertex, and a stripe from vertex half way down side, another down the back ; the ocelli black on brown ground ; on each vertex a short, compressed, fleshy, white process, and single white spurs along back of head at top and down sides ; on the sides and tops of the processes and spurs many long white hairs. To next moult 4 days.

After 2nd Moult.—Length .26 inch ; similar shape, stouter, the sides somewhat less rounded than dorsum, the base broadest ; the tails more produced ; the tubercles as at next previous stage, white and yellow, but broader and flattened ; the two rows of each dorsal band a little separated so as to show a dull green imperfect line ; the side stripe much widened ; segment 2 wholly yellow ; head shaped as before, the depression more angular, green behind, green with dark brown patches at sides and front ; these patches much extended, the one at top nearly meeting by a triangular projection the triangle from mandibles, and the one from base of process in nearly all cases protracted to outer end of mandibles, so that the white in front is confined to two curved vertical stripes forming with a cross line between the two triangles the letter H, each upright, incurved ; the processes stout, short, cylindrical, evenly forked at top, each fork bluntly rounded, and a little tapering ; at the base is a spur turned forwards, and along the back and sides are single spurs ; color of process black in front, green behind ; along back of head at top spurs in line, and so down the sides, diminishing gradually in length, the upper ones bent down ; all as well as the processes pilose. To next moult 3 days.

After 3rd Moult.—Length .38 to .4 inch ; stouter, the back more arched ; marked as before ; head almost precisely as before. To next (last) moult 5 days.

After 4th Moult.—Length .6 inch, greatest breadth .14 inch ; same shape as at close of last stage and banded in same way, viz., a narrow dark green medio-dorsal stripe ; a broad upper lateral yellow-green stripe, a lower lateral one of same color ; the tuberculated bands on dorsum each divided by a medium yellow-green stripe, not so clear or uninterrupted as the others ; the inner row of each band is quite narrow and is yellow, the outer row is wider and white ; below the upper lateral stripe

is a yellow row, and a yellow and wavy one runs along the ridge, at base ; these two side bands unite at 4 or 3 and go to head as one broad band.

Six days after 4th moult the larva reached maturity, and two days later suspended.

MATURE LARVA.—Length 1.2 ♂, 1.4 ♀; greatest breadth .18 ♂, .2 ♀; body sub-cylindrical, obese, in some cases almost same thickness from 2 to 8, then tapering rapidly to end, in others the middle segment is thickest and the taper is regular either way, 2 being of equal diameter with 12; the dorsum well rounded, the sides much less convex, rather flattened, and sloping to a broad base ; the last segment ending in a forked tail ; banded with tubercles as immediately after the moult, but these have constantly diminished in size as the larva progressed, and in no place are so distinct, and many have disappeared altogether ; general color either bright yellow or ochre yellow, a little whitened along the edges of dorsal area ; the medio-dorsal stripe is very narrow and either black or deep blue, but greenish on two or three anterior segments ; the two side stripes are dull or sordid green, as is also the under side ; feet and legs same ; head .06 inch broad, .07 high, sub-quadrate, the sides rounded, the front moderately rounded, the top depressed at a slight angle ; on each vertex a short, stout stag-horn process, with two equal prongs at top, one in front at base, another near the base on the front inner side, making four prongs which are of same shape, tapering to a blunt rounded top, and these and the entire front and sides of the process are black ; the back is green, and upon it and at the sides below are four green similar prongs ; along the back of head, at top and down the sides are several greenish-white slender spurs, the upper ones long, those on sides diminishing in length as they descend, and bent down ; on the front four small knobs, two below horns towards the suture, two at side ; the back of head green, the rest greenish-white and black, and thickly covered with a fine yellow down ; the processes and spurs much covered with quite long white hairs ; the entire surface of head shallowly pitted ; in nearly all cases the pattern of face is as in the preceding stages, the top being black, and projecting over front and sides black sub-triangular or long patches ; and also a black triangle resting on the black patch which covers the mandibles ; the white area being restricted to four vertical stripes, two of them incurved on middle front, making the letter H, the uprights reaching from vertices to ends of mandibles, a narrow space between the two front triangles making a cross

bar; the other two being on the sides; but in many cases the white is much restricted on the front, there being merely two short bars on lower face; one example differed from all the rest, the face being largely white, the black tip and patches merely indicated by gray of the palest shade, the only black being in a small spot over mandibles; in all cases the mandibles and ocelli are black.

CHRYSA LIS.—Length .7 ♂, .85 ♀; compressed laterally, the outline of ventral side convex, a regular curve from top of head case to end of wing cases; the abdomen prominent dorsally, much arched, sharply carinated, the sides very little convex and near the keel slightly incurved; the anterior edge of each segment on the keel a little produced and thickened, and marked on either side here by a shining black dot; the thoracic segments depressed at an angle of about 45° above the end of the keel, and their sides excavated; mesonotum low, rounded at summit, with a slight carina, the sides convex; the head case subconic, the ocellar projections prominent, three sided and running to a blunt point, the space between them on top of head being concave; from end of each a small ridge runs back, the two ridges meeting at base of mesonotum, the intervening area being almost flat, very little convex; color pale yellow-green, finely streaked and specked with light buff over head case, mesonotum and wing cases, and specked over abdomen; the neuration of the wings distinct in pale yellow or buff; a buff line passes along the keel and mesonotum, and forks to the projections of head case; another passes along the posterior edge of the wing case and is joined by a wavy line down side of abdomen; on middle of each abdominal segment on dorsal side is an oblique faint buff line pointing down and forwards, ending in a little buff spot. Duration of this stage 6 and 7 days.

In Butterflies of N. A., Vol. 2, Part 5, I described *A. Flora* as a "possible variety of *A. Clyton*," but expressed the opinion that it would be thereafter found to be a good species. The few examples then known to me were all collected by the son of the late Mr. Wm. Stadlmair, of Brooklyn, N. Y., at Pilatka, Fla., and were accompanied by undoubted *Clyton*. In 1880, I received from Dr. Wm. Wissfeld a female *Flora* taken at Indian River, and I urged him, in case he was so fortunate as to capture another female, to tie it in a bag over a branch of any species of *Celtis* tree. On 20th July, I received about 50 young larvæ, from eggs laid 11th July. A female had laid about 225 in a cluster within bag on

leaves of *Celtis integrifolia*, and on 12th, part of these were forwarded to me by mail in a tin box, arriving in good order, because the leaves had not lost their freshness, though 8 days on the road in the heat of July. I gave the larvæ *Celtis occidentalis* leaves, which they took to readily, and I had no difficulty in raising several of them to maturity. The first stage was about one half over when I received these larvæ, and four days afterward the first moult took place. The habits of the larvæ were similar to those of *Clyton*, during the early stages gathering in dense clusters and resting for long intervals, during the later stages separating and concealing themselves by stitching together two or three leaves. *Clyton*, in W. Va., unlike *A. Celtis*, has no second brood, and all the larvæ hibernate after passing the 2nd moult. In the spring they pass three additional moults, making five in all. *Flora* passed but four moults, like the summer generation of *A. Celtis*, and none of the larvæ hibernated. The butterflies began to emerge from chrysalis 22nd Aug., and continued doing so till 31st, by which time I had 4 ♂, 6 ♀. No examples of *Clyton* were at any time received last year from Indian River, and probably it does not inhabit that locality.

---

## NOTES ON SCIOMYZIDAE WITH DESCRIPTIONS OF NEW SPECIES.

BY DR. L. T. DAY, NEW HAVEN, CONN.

*Tetanocera clara* Lw. Mass., Conn. Specimens of this species with typical frontal markings, have the posterior transverse vein nearly straight and perpendicular, as in *valida*. In a single specimen there is an incomplete brownish-black abdominal stripe, interrupted at the incisures.

*Tet. pictipes* Lw. Conn., Pa., Kansas, Wash. Ter. Specimens from Wash. Ter. are larger and more melanized than the New England species. Nearly the whole front is occupied by a blackish-brown quadrangular spot, leaving a yellowish border laterally and anteriorly.

*Tet. combinata* var. *sparsa* (Lw.) Mass., Conn., Pa. From the examination of a large number of specimens of both forms, chiefly collected by Dr. Williston, I am satisfied that *sparsa* can not be specifically

separated from *combinata*. In none of my specimens do I find the polished frontal stripe narrowed anteriorly, and yet in some the brown spots form very distinct double bands running across the wing. I find the antepenultimate band to run as frequently before as over the posterior transverse vein. Again, in those specimens with the double-band arrangement of the brown spots on the wings, I find the tibiæ in more than two-thirds not darker than the femora. In some of the specimens there is only a feeble attempt at double bands; even in single specimens I find both double and single bands, showing an unusual degree of variation for species of this genus.

TET. PUBESCENS, sp. nov. 1 ♂ ♀. Third joint of the antennæ shorter than the second, excised, bristle white pubescent, wings reticulated, with narrow costal border, posterior transverse vein but slightly curved and nearly perpendicular, tips of tarsi black. Long. corp. 7 mm. Long. al. 6.5 mm.

Yellowish-brown, somewhat tinged with reddish. Front yellow, with the middle stripe broad, excavated and polished, widening somewhat anteriorly; on each side near the orbit is a small black dot, and more anteriorly a second larger one between the antennæ and the anterior corner of the orbit. Antennæ reddish-yellow, with the third joint shorter than the second, distinctly excised above and somewhat pointed; the second joint very broad, the upper border thickly studded with stout hairs, the under border with finer hairs. Antennal bristle slightly yellowish at the base and covered with a whitish pubescence. Face with white reflection and considerably receding. Dorsum of the thorax with two stripes dusted with white and bordered with brownish streaks, enclosing a rather narrow median yellowish stripe; lateral borders dusted with yellowish. Superior part of the pleuræ with a brownish-red longitudinal stripe extending to beneath the halteres. Scutellum somewhat lighter than the thorax. Abdomen yellowish-brown, with narrow brownish median stripe interrupted at the incisures. Legs yellowish; tarsi tipped with black. Surface of the wings yellowish, with the margin of the costal border black, extending from the stigma to the fourth longitudinal vein. There are five or six small clear spots on the anterior margin of the second longitudinal vein; the remainder of the reticulation similar to, but coarser and less distinct than in *saratogensis*, consisting of narrow longitudinal stripes bordered by small transverse spots, arranged for the greater part in pairs. The anterior transverse vein is near the middle of the discal cell;

the posterior transverse vein is slightly curved and almost perpendicular.

Hab. Washington Territory, H. K. Morrison. This species is most nearly related to *saratogensis*, but differs in the greater size of the second joint of the antennæ, and the long hairs or bristles above; the narrower costal border and sparser reticulation of the wings, and the blackened tips of the tarsi.

*Tet. plebeja* Lw. Specimens from Washington Territory agree closely with this common Eastern species. The median abdominal stripe is however more distinct, and there is a feeble indication of a double curvature in the posterior transverse vein.

*Tet. plumosa* Lw. The most common species of this genus in Connecticut. This species runs so closely to the preceding that it is sometimes extremely difficult to distinguish them. The posterior cross vein shows a considerable variation in its shape, as do the frontal markings.

TET. MONTANA sp. nov. ♀. Third joint of the antennæ obtuse, short, not distinctly excised, bristles plumose with black, wings greyish, unicolorous, posterior cross vein feebly bi-arcuated. Long. corp. 8.5 mm. Long. al. 7 mm.

Acorn colored. Front golden yellow, with a narrow distinct reddish median furrow, the black spot near the orbit wanting, but a reddish spot between the base of the antennæ and anterior corner of the orbit. Antennæ reddish-yellow, first two joints thickly covered with black hairs, third joint not longer than the second, and not distinctly excised above; bristle of the antennæ plumose with black. Face perceptibly lighter than the front, and by reflected light with a golden glisten. Occiput without distinct white spot. Thorax with a very distinct median, longitudinal stripe, bordered with a dusky line; also two narrow, less distinct, and interrupted stripes on each side; thorax covered with numerous short black hairs. Pleuræ distinct chestnut, and somewhat pollinose with gray. Abdomen unicolorous and thickly covered with black hairs; a narrow dark median stripe interrupted at the incisures; sides dusted with grey. Legs luteous; anterior femora darker than the middle and posterior, hind femora with a single long bristle on the under side in front; three last joints of anterior, two of middle and posterior tarsi black. Wings broad, not reticulated, of a uniform greyish or blackish tint; posterior transverse



vein very slightly bi-arcuated and sub-perpendicular; both transverse veins narrowly bordered with brownish-black.

Hab. Wyoming, June, Dr. Williston.

TET. LINEATA, sp. nov., ♀. Bristles of the antennæ nearly bare, wings not reticulated, posterior transverse vein very strongly doubly curved, so that the middle half is parallel to the fourth longitudinal vein. Long. corp. 6 mm. Long. al. 5 mm.

Pale brownish. Front obscure yellowish, with the median polished stripe tapering anteriorly; on each side near the orbit is a small reddish spot, and more anteriorly, between the base of the antennæ and anterior corner of the orbit, a larger reddish spot with a dark centre. Antennæ nearly the color of the front, the second joint covered with small black hairs, the third joint as long as second, scarcely excised and obtuse; basal half of the bristle concolorous with the antennæ, terminal half slender, whitish, and microscopically pubescent. Face gently receding, light yellowish. Thorax with a median reddish-brown stripe extending over the scutellum, divided in its anterior part by a narrow whitish line; on each side a stripe dusted with white extending over the side of the scutellum; laterally on each side there is another irregular brownish-red stripe bordered by whitish in front of the wings. Pleuræ with brownish stripe, extending to beneath the poisers. Abdomen brown with paler lateral borders and narrow posterior margins of the segments. Legs obscurely yellowish-brown, hind femora with a number of short spine-like bristles underneath the distal halves; tarsi blackened towards their tips. Wings yellowish-hyaline, with irregular brownish clouds in the end of the sub-marginal, most of the first posterior and middle of discal cells; posterior margin of the wing greyish. Transverse veins clouded with brown, the posterior one strongly curved, its middle portion parallel to the fourth, and its terminal portions perpendicular to the fourth and fifth longitudinal veins.

Hab. Connecticut, Dr. Williston.

An easily recognizable species with characters approaching somewhat the genus *Sepedon*.

*Sepedon fuscipennis* Lw. Specimens from Washington Territory cannot be distinguished from New England ones. In all, the lateral frontal spots are more commonly absent, and the tarsi may show but a faint degree of blackening in their ground color. Long. corp. 5.5-8 mm.

*Dryomyza pallida*, sp. nov. Polished, pale yellow, bristle of the antennæ slender, sparsely pubescent with black near the base, thorax striped, wings pubescent, hyaline, first longitudinal vein clothed with hairs. Long. corp. 8 mm. Long. al. 8 mm.

Pale yellow, shining. Front deeper yellow, opaque, with the short pubescence and bristles black. Antennæ incumbent, reddish; second joint short, third about twice as long as wide, oval; bristle slender, the distal end bare, the proximal sparsely pubescent with black. Thorax yellow, with two narrow median stripes of a brownish tinge; on each side and posteriorly there are about ten black bristles. Scutellum with four black bristles. Pleuræ with narrow distinct brownish lines extending from the root of the wings to the humeri; just below and in front of the tegulæ is a small oval black spot. Abdomen pallid, yellow, and darkened toward the tip, shining, covered with rather long, fine black hairs. Legs pale yellow, with black hairs; last two joints of all the tarsi black; tip of middle tibial, and first three joints of middle tarsi, with a short brush of golden pile. Wings pubescent, hyaline. The first longitudinal vein distinctly hairy, the third bare; posterior transverse vein straight and perpendicular; both transverse veins bordered with black, as is also more narrowly the termination of the fourth longitudinal.

Hab. Connecticut, May.

This species is easily distinguished from the other American species already described by the hairy first longitudinal vein.

My thanks are due to Dr. S. W. Williston for the examination of his excellent collections in this family.

---

## ON A GIGANTIC CHALCID FLY INHABITING FLORIDA.

BY WM. H. ASHMEAD, JACKSONVILLE, FLORIDA.

In the spring of 1880, while collecting Coleoptera, I secured a ♀ of a large species of Chalcid belonging to the genus *Smicra*, which is apparently unknown to the scientific world.

The specimen was captured on an oak shrub, in close proximity to an empty *polyphemus* cocoon. Could it have hatched from it? This is not improbable, as Prof. C. V. Riley's *Smicra mariæ* was bred from this moth,

and other species of the genus are known to be parasitic upon the larvæ of our larger moths.

For want of a good scientific library of my own, and there being none in the State, I was unable to look up the species until recently, and as I fail to find any description that will agree with it, either in size, coloration, &c., I submit the following :

*SMICRA GIGANTEA*, n. sp.

♀. Length .43 of an inch.

Head, antennæ and thorax black, opaque. Head and thorax coarsely and strongly punctate, antennæ more finely punctate ; eyes greenish red ; collare somewhat bulging at sides, praescutum triangularly elongated posteriorly ; scutum rather large, bulging ; scutellum convex, rounded off posteriorly, punctate ; abdomen rather abruptly produced into a long sharp point, the thick globular basal portion being a shining brownish red ; basal half of segment next the peduncle longitudinally grooved, the grooves being deepest at base and shallowing off at middle of segment ; the pointed part of abdomen black or brownish black, a few short whitish hairs scattered promiscuously over abdomen ; wings hyaline fuscous, veins black ; anterior and middle coxæ brownish red ; femoræ brownish black ; tibiae and feet lighter ; posterior coxæ and femoræ brownish red, smooth and polished, coxæ slightly punctate, the swollen femoræ toothed beneath where tibiae rest when drawn up, the latter brownish black ; tarsi and feet reddish brown.

#### NORTH AMERICAN NOCTUIDAE IN THE ZUTRAEGE.— FOURTH AND FIFTH HUNDREDS.

BY A. R. GROTE.

*Oria sanguinea*, ♀, fig. 613-614.

"Georgia." This species has been generally recognized. *Oria* is used for *maculosa* in the Verzeichniss, from which *sanguinea* is distinct structurally. I have referred the latter as the type of *Porrina* in the Check List, No. 664. The doubtful reference there to Fitch's *volupia* must be struck out.

*Epizeuxis lubricalis*, 19, figs. 665-666.

"Java." I have considered that the locality is erroneous and that this undoubtedly represents *Helia phcalis* Guen., a common species throughout the U. S. and California.

*Dyachrisia bulluca*, 22, fig. 681-682.

"Georgia." The figures are excellent representations of our not uncommon *Plusia balluca* from Canada and the Middle and Eastern States.

*Trigonophora frugiperda*, 22, figs. 683-684.

Geyer refers to Abbot and Smith as authority for the species. It is without doubt the *Laphygma frugiperda* of Gueneé, a common and destructive Southern and Western species re-described by Prof. Riley in the Missouri Reports as *Prodenia autumnalis*.

*Aedia limbolaris*, 23, fig. 689-690.

"Georgia." I have taken this species about Buffalo, N. Y.

*Antiblemma flavipunctalis*, 25, fig. 701-702.

"Java." Also with *lubricalis*, from M. de Luxerre, and probably American. It represents a female allied to *Renia pastoralis* Grote, which seems to differ only from *Renia Belfragei*, a common species, in the yellow stigmata. I have two males colored more darkly than *pastoralis* and agreeing in this respect more nearly with Geyer's figure. I have labeled these *flavipunctalis* in my collection; but the distinctness of the three forms is not fully made out.

*Autographa oxygramma*, 37, fig. 769-770.

"Georgia." Gueneé refers this Southern species to *Plusia*, Noct. 2, 350.

*Agriphila bistrariis*, 38, fig. 775-776.

"North America." I believe this is *Doryodes acutaria* H.-S., and have so referred it Bull. U. S. Geol. Survey, 179, 1878.

*Exarnis diffua*, 9, figs. 821-822.

"Labrador." Staudinger refers this as a synonym of *exulis*, Cat. Eur., 100.

*Clytie liburna*, 40, fig. 963-964.

"North America." This is without doubt the species afterwards described by Gueneé as *Scolococampa ligni*. The red-brown shading on the reniform is not so bright as Geyer figures it. I have made this identification in my List of the Noctuidæ of North America, p. 20.

*Acolasia hinna*. 41. fig. 971 972.

"Georgia." A ♀ specimen sent me through Mr. v. Meske from Texas (coll. Heiligbrodt) seems to belong to this species. It is less distinctly marked than the figure, else nearly resembles it.

Carl Geyer is to be regarded as authority for the species in these fourth and fifth Hundreds, concluding the work. The date of the first Hundred is 1818; of the second, 1823; third, 1825; fourth, 1832; fifth, 1837. The total number of figures is 1,000, each example being figured in two positions separately numbered; each Hundred contains two hundred figures.

## NEW CYNIPIDAE.

BY H. F. BASSETT, WATERBURY, CT.

(Continued from Page 79.)

### CYNIPS TENCICORNIS, n. sp.

Galls: Densely hairy hemispherical masses attached by a single small point to the upper or under surface of the leaves of an unknown species of oak found in Arizona. They are from one-half to three-fourths of an inch in diameter. One specimen in my collection is nearly globular, but all the others are hemispherical, the flat side lying close upon the surface of the leaf. The woolly hairs are of a dull russet color and entirely hide the polythalamous gall beneath. Denuded of the hairs the surface of the gall is uneven, and beneath the slight protuberances lie the larval cells. The shell or rind is brittle, and when dry crumbles easily. The inside is nearly filled by the small and extremely thin-walled larval cells. Between these there are a few thin fibrous plates or lamina with open spaces. A gall of average size contained fourteen larval cells.

Gall-flies: All females. Head black, vertex finely rugose or punctate. Ocelli rather large; the middle one lies in a smooth shallow groove which extends from the posterior margin of the vertex nearly to the base of the antennae, and is broader behind than before. Face microscopically wrinkled and hairy. Antennae 14-jointed, extremely slender or thread-like; 1st and 2nd joints short and comparatively stout. the 2nd nearly as

long as the 1st, both of a clear dark amber color. Color of the remaining joints dark brown; 3rd joint equal in length to the first two: 4th, 5th and 6th gradually shorter, the remaining ones sub-equal. All except the first two closely connate. Thorax black, finely and evenly crackled. Parapsidal grooves only two. These are sharply defined but remarkably narrow, and widely separated on the collare, but closely convergent on the scutellum. Scutellum more coarsely and less evenly crackled, but in other respects like the mesothorax, from which it is separated by an extremely fine line or groove. Fovae absent. There are on the scutellum, also on the mesothorax between the base of the wings, and on the head, a very few microscopic hairs. Legs clear dark amber or yellowish brown. Tarsi darker brown. Abdomen olive brown with paler transverse bands; 1st segment half broader than the 2nd, and with a few very fine hairs on the sides beneath the wings. All the segments, except a narrow border on the anterior edge of each, with an extremely fine punctation that gives to them when highly magnified the opaque effect seen in ground glass. Sheath of the ovipositor short with a minute tuft of hairs at the tip. Ventral valves extending to the extremity of the abdomen. These, with the sheath of the ovipositor, darker than the rest of the abdomen.

Wings hyaline, medium size. Veins small, dark brown, or black towards the base, lighter at the apex of the wing. Areolet medium size, bounded by equal veins, cubitus disappearing a short distance from the 1st transverse. Radial area open, long and narrow.

Length, body .11, wing .12, antennae .03.

Galls collected in the Mule Pass Mts. in Arizona, in Nov., 1879, by Prof. E. T. Cox.

*CYNIPS BELLA*, n. sp.

Galls: These belong to the class known as oak-apples. They are attached by a minute sessile point to the under side of the leaves of an oak found in Arizona—often near the margin of the leaf, but more commonly on or near the mid-vein. They are perfectly round, and those that have escaped the attack of parasites are quite uniform in size, measuring from  $\frac{3}{4}$  to  $\frac{7}{8}$  of an inch in diameter. Those stung by parasites are generally much smaller, and this species is so subject to their attacks that more than three-fourths are thus affected. The galls (when dry) are of various shades of brown, mostly smooth but not polished: a few specimens have a decidedly russet color and a rough surface. The shell very thin and

brittle. Each gall contains a single larval cell which is kept in a central position by fine, silky, radiating fibres that reach from it to the outside covering. Besides these fibres, there are others that are attached to the inner surface of the shell, but which are not attached to the larval cell. They are much finer than the others and resemble coarse wool. Except that these galls are smaller, and the internal structure more delicate, and the surface less smooth and polished, they might easily be taken for those found on *Quercus rubra*—*C. inanis*.

Gall-flies: All females. Head brownish black, very small, though transversely very broad. Vertex microscopically wrinkled. Eyes rather narrowly oval. Ocelli large, black and shining. Head and face covered with fine downy hairs. Antennæ short, slender, hairy, shining reddish brown, darker towards the tips, fourteen-jointed; 1st joint large, club-shaped or ovoid with the upper end truncate and hollowed to receive the globular 2nd joint; 3rd one-fourth longer than the first two taken together; 4th equal to the 1st and 2nd; 5th to the 9th gradually decreasing in length, 10th to 14th very short, scarcely longer than broad. Thorax covered with bright shining hairs. Parapsidal grooves: Two parallel lines extending from the collare three-fourths the distance to the scutellum. Two diverging lines reaching from the scutellum to the collare. These are much nearer together at their starting point on the scutellum than is usual in the genus *Cynips*. There is the usual short line over the base of each wing. (All the above markings of the mesothorax are found in most of our one-gendered species—not in all, however.) The posterior limit of the two parallel lines vanishes in a tuft of long hairs, which in common with the hairs on the thorax, converge into a ridge on each of the interlinear spaces. Scutellum small, but long in proportion to its breadth, slightly shagreened. Fovæ very shallow, confluent, smooth and shining. Legs dark shining, semi-translucent brown, with abundance of whitish hairs.

Wings large, surface covered with short, stout, nearly erect hairs, and numerous dark opaque with lighter cloudy spots. Veins dark shining brown and very heavy. Cubitus, as in *C. nubila*, is very broad and heavy at its union with the 1st transverse; 2nd transverse broad and heavy, particularly at the base of the radial area. Arcolet not large, but clearly defined. The radial vein at its termination forms a large triangular blotch with an indistinct arcolet in the centre. By the curvature of the radial vein and its considerable backward extension along the margin of the wing and the upward extension of the costal vein beyond the base of the radial area,

what may be termed a *half open* and perfectly radial area is formed. The anal vein is sometimes branched or forked at the tip.

Length—body .14, wing .16, antennæ .08. Des. from living specimens. Galls received from Prof. E. T. Cox, of Tucson, Arizona.

DIASTROPHUS SIMILIS, n. sp.

Galls on *Nepeta glechoma*. simple or compound; the simple ones are round and have a single cluster of larval cells in the centre; the compound are extremely irregular in form and size, and have two or more distinct clusters of cells. The round galls vary in size from  $\frac{1}{8}$  to  $\frac{3}{4}$  of an inch in diameter, and contain from one to six and even more round larval cells. The cells in dry galls are held in place by coarse fibres that are attached to the cell and to the extremely thin and almost paper-like outside covering of the gall. From galls that lie on the ground through the winter the outside quite often entirely disappears, and the bleached fibres surrounding the larval cells look like little burrs. The galls grow on the leaves, petioles and occasionally on the stems of the plant. The plant is not common in this place, but wherever I have seen it the galls are also found. Very fine specimens have been sent to me from Long Island. This species does not seem to differ very much from *D. glechomæ* found in Europe, and may be identical. The plant is supposed to have been introduced from Europe, and with it the insect may have come, but such descriptions as I have found of *D. glechomæ* are not sufficiently full to enable me to decide as to their identity, and I have some very good reasons to believe them distinct.

Gall-fly: Head black, finely rugose on the vertex. Ocelli small, close together, and almost linear in position. Face rough, broadly carinate. Mandibles black. Antennæ long, slender, thirteen-jointed with faint traces of a suture in the last joint; 2nd one-half as long as the 1st; 3rd to the 12th inclusive of equal length; 13th one-third longer than the preceding. The head hairy on the posterior side. Thorax black and shining, but when highly magnified it presents a beautifully crackled surface. The two parapsidal grooves broad and smooth, narrowly convergent on the scutellum. Scutellum unevenly and roughly rugose. Fovæ large and deep, separated by a low smooth ridge. Legs of a uniform reddish brown, ungues black. There is on the middle of the posterior side of the posterior pair a rather dense tuft of hairs much longer than on the other legs and reminding one of the tufts found similarly situated on certain species of bees.

Wings hyaline; veins slender, pale yellowish brown. Areolet wanting,



and the thick dark spot at the confluence of the veins, which usually marks the obsolete areolet, also wanting. Cubitus very pale, and reaching only half way to the first transverse. Radial area open. Abdomen black, shining; 1st, 2nd and 3rd segments dorsally sub-equal, 1st with a minute round, dense tuft of hair on the sides beneath the wings. Sheath of the ovipositor not exerted, inconspicuous, a few minute hairs at the point.

Length—body .12, wing .15, antennæ .10.

Described from living insects cut from the galls, Oct. 23, 1879. The flies probably live in the galls over winter.

### C. MINUTA, n. sp.

As soon as the leaves of *Quercus alba* begin to expand in the spring, a few buds are occasionally seen that develop into a cluster of greatly enlarged petioles without a leaf blade, or at most only a very rudimentary one. They are three or four times the size of those of a full grown leaf, and each contains a number of larvæ of the small gall insect which I have named *C. minuta*. The larvæ mature very rapidly and the imago leave the gall about the time that the leaves are full grown. Occasionally an embryo leaf seems to have escaped the sting of the mother insect, and a fully developed leaf appears among the galls, but such instances are not common. The galls are pubescent and usually of a pinkish color. The insects are of both sexes, and may be described as follows:

Male: The entire body a clear semi-transparent amber, with a shade of brown on the thorax and the back of the abdomen. The eyes and ocelli a dull black, the latter much less prominent than in *C. vesicula*, n. sp. (next described). Antennæ 14-jointed, the first three joints pale amber, the remaining ones by a sudden transition a dusky brown; 1st joint club-shaped, 2nd oval, 3rd long and slender, curved, but only slightly incised; remaining ones short and of nearly equal length.

Thorax smooth and shining, but in certain lights the living specimens show bands of darker brown where the parapsidal grooves appear in other species. Scutellum small, smooth and shining. Fovæ wanting, but the furrow separating the mesothorax and scutellum broad and deep.

Wings with a slight smoky tinge, veins distinct. Cubitus reaching quite to the 1st transverse. Areolet of medium size. Radial area long and narrow, partially closed by the thickened border of the wing as in *C. vesicula*. Legs of a uniform pale amber, ungues dusky brown.

Abdomen petiolate, small, smooth, shining and tapering to a cone-like point at each extremity.

Length—body .08, wing .10, antennæ .07.

Female: Entire body except the antennæ and legs apparently black, but really a very dark brown. Antennæ 13-jointed, and as in the male, except that they are shorter and the 3rd joint is straight. First segment of the abdomen (petiole?) short, remaining ones taken together not longer than deep.

The color, the much smaller wings (only .08), the shorter antennæ and the very short petiole give to the female an appearance so distinct from that of the male that it is not easy to believe that they belong to the same species; but that they are the same is proved by their being often found *in coitu*, and indirectly by the fact that there are several other species in which the sexes differ in the same way, and to almost as great an extent as in this case.

Length—body .07, wing .08, antennæ .05. Not rare in this section.

#### CYNIPS VESICULA, n. sp.

Gall a small, smooth, reddish brown vesicle developed from the centre of the buds of *Quercus alba*, surrounded at the base by the bud-scales. The color is sometimes a pale greenish brown. The walls of the gall are thin and the larva free, that is, having no larval cell. These galls are partially developed in the preceding autumn, and mature so rapidly in the spring that the insects emerge about the time the leaves of the oak begin to expand.

Gall fly—Male: Head small, black, vertex triangular, and nearly covered by the large and protruding ocelli which form an equilateral triangle. Eyes very large. Face narrow, almost linear, the breadth considerably less than half the width of one eye as seen from the front. Antennæ long, filiform, 15-jointed, 1st and 2nd joints short, globular, 3rd deeply incised, the remaining ones nearly equal in length, except the very short terminal joint; 1st joint nearly black at the base, the others yellowish brown, darker towards the tip of the antennæ. Thorax shining black with extremely fine microscopic reticulations; no grooves or lines. Scutellum; surface as the mesothorax. Fovæ shallow and indistinct. Wings very large, clear smoky brown. Veins dark and heavy, the 2nd transverse when the wings are closed on a line with the extremity of the abdomen. Cubitus heavy and reaching quite to the 1st transverse. Areolet distinct. Radial area long

and narrow, and apparently closed by the somewhat thickened border of the wing. This thickened border of the wing scarcely deserves to be called a vein. Legs: Coxæ and trochanters clear shining black, changing below to yellowish brown, which is the color of the remaining parts. Color of the posterior pair a little darker than the others, particularly near the body. Abdomen shining black, the first segment an extremely slender pedicel, which is slightly enlarged in the middle.

Length, body .12, wing .16, antennæ .12.

Female: Head broader than in the male. Ocelli and eyes much less prominent, face twice as broad. Antennæ slender, pale brown at the base changing to dusky brown above. Some shades darker throughout than the male antennæ and only two-thirds as long; 14 joints. Thorax like the male except that there are two faint parapsidal depressions, hardly grooves. Wings smaller and shorter. Color and venation the same. Legs paler. Abdomen large, shining, black, not distinctly pedicilate. This appears early in April.

Length, body .13, wing .14, antennæ .08.

#### CYNIPS PATTONI, n. sp.

Galls, clusters of larval cells along the midvein of the leaves of *Quercus obtusiloba*, on the under side, and standing perpendicular to its surface. The cells are completely hidden in a short, dense brownish wool. The largest clusters often extend along the midvein more than half the length of the leaf. They are found on young trees, and usually on the leaves near the top of the stronger growing shoots. The insects live over winter in the galls. My specimens gathered in October were kept in a warm room and the insects came out in the February following. The galls resemble in their woolly covering those of *C. flocci* of Walsh, but the latter are round and the woolly hairs are longer, and the species is only found on *Quercus alba*. *C. Pattoni* was discovered in 1876 on West Rock, in New Haven, Conn., by Mr. W. H. Patton, from whom I have received several interesting species of gall insects, and to whom, in acknowledgment of my indebtedness, I dedicate this species.

Gall fly: Head reddish brown. Antennæ 14-jointed, dusky brown. The last two joints indistinctly separated by a closely connected suture. Entire head and face covered with short white hairs. The tips of the mandibles black. Thorax very dark shining brown, that in certain positions appears quite black; surface finely and evenly reticulate. Par-

apsidal grooves closely convergent at the scutellum. Short line usually present over the base of each wing, in this species wanting. A few scattered hairs on the borders of the mesothorax, most abundant at the base of the wings. Scutellum rugose, hairy. Fovae large and shallow. Legs a uniform reddish brown except the darker tips of the tarsi. Wings hyaline, veins fine and slender, dark brown. Areolet medium size, cubitus very pale and sometimes quite disappearing before reaching the 1st transverse; radial area open, broad and rather abruptly terminated by the short curve of the radial vein. Abdomen shining blackish brown, lighter on the venter. A few hairs on the sides of the first segment beneath the wings. The ventral valve projects a little above the dorsum.

Length, body .08, wing .11, antennae .07.

Described from twenty-five specimens, all females. In my collection.

#### CYNIPS POLITA, n. sp.

Galls round, monothalamous, found abundantly in midsummer on both surfaces of the leaves of *Quercus obtusiloba*, at or near the summit of young and thrifty shoots, from one to fifteen or twenty on a single leaf. They are from one-fourth to three-fourths of an inch in diameter, and are when grown in the shade of a paler green than the leaf, but when exposed to the sun are red or brown. They are attached so slightly to the mid-vein and its branches that their removal leaves little if any trace. The shell is when dry extremely thin and brittle, and the single round larval cell is kept in a central position by fine radiating and branching fibres that extend to the outside shell.

These galls resemble, except in their mode of attachment to the leaf, those of *C. singularis* B., but the insects differ considerably. They are also somewhat like those of *C. inanis* Harris, but are many times smaller. The insects are fully mature in October, but remain in the galls over winter.

I received my specimens of this species from Mr. E. Potts, of Philadelphia, and from Mr. Thomas Annadown, of Glassboro, N. J., and Mr. P. H. Uhler informs me that they are very abundant in southern New Jersey and in some parts of Maryland.

The shining and finely polished thorax and abdomen suggest the specific name given to the insect.

Gall flies: All females. Head apparently black, but in a strong light it is seen to be a very dark reddish brown; cheeks a shade lighter than

the other parts. Vertex beautifully reticulate. Antennae black, 14-jointed, 1st joint club-shaped, 2nd short ovate, 3rd as long as the two first taken together, 4th one-fourth shorter than the 3rd, remaining joints except the last short, sub-equal, last a little longer than the 13th. Thorax black, smooth and shining. Parapsidal grooves two, deep and narrow; between them are two parallel depressions that reach from the collare two-thirds the distance to the scutellum, but so very slight are they that they can only be seen by means of the difference in the angles of reflection when they are placed in a strong light. There are a few scattered hairs on the thorax and the polished and mirror-like pleurae are bordered with short scattered white hairs. Scutellum finely wrinkled, rounded posteriorly and projecting over the metathorax. Fovae small, widely separated, shining. Legs a very dark reddish brown, a little lighter at the joints. Wings hyaline, veins moderately heavy. Cubitus pale and slender. Areolet small. Radial area open, short and broad by the curvature of the radial vein. Abdomen black and polished. Pedicel, which in most species is a short thin plate, is in this more than half as long as broad. First segment with a very few scattered hairs on the sides beneath the wings. Sheath of the ovipositor slightly projecting, and at the end it has a few long yellowish hairs.

Length, body .11, wing .14, antennae .08.

Described from dry specimens in my collection.

#### CYNIPS RUGOSA, n. sp.

Round, hard galls, sessile, on the branches of *Quercus prinoides*. Size from  $\frac{1}{2}$  to  $\frac{3}{4}$  of an inch in diameter. They are attached to the branch by a small point. The surface when green is smooth and often quite red on the side exposed to the sun. When fully ripe they have a shrunken and shrivelled surface and the color varies from an ashen hue to a dull brown. The free larval cell is surrounded by a yellowish brown cellular mass, too dense to be called spongy, which fills the entire gall. This species has been known to me for many years, but until lately I have considered it a variety of *C. globulus* Harris, but a careful study convinces me that it is a distinct species. *C. globulus* is only on the white oak and rarely more than one or two galls in a place, and has even when dry a smooth surface, while *C. rugosa* is often found in clusters of four or five and even more, so closely compressed that the galls are of an angular or cuneate form. The flies are all females and they mature and leave the

galls late in the fall, at least I have never been able to find them in the galls in winter.

Gall-fly: Head small, vertex wrinkled. Ocelli minute and very close together. Face with short hairs which are longest about the mouth. Antennæ dark brown, 14-jointed, 1st joint large, club-shaped; 2nd broader than long, 3rd longer than the first two taken together, 4th as long as the first two, the four next following gradually shorter, 9th and remaining ones short and of equal length. Thorax covered with short appressed yellowish white hairs, which nearly hide the punctate surface. Parapsidal grooves: two parallel lines that extend rather more than half way from the collare to the scutellum, and two, also parallel, that extend half way from the scutellum to the collare, and a short line over the base of each wing, all nearly parallel and equidistant. Legs dark reddish brown. Wings large, hyaline; veins blackish brown, quite distinct, the subcostal and 2nd transverse darkest. Areolet present, not large. Cubitus reaches only half way from the areolet to the 1st transverse. Veins enclosing the open radial area stop abruptly before reaching the margin of the wing. Abdomen black, shining; 1st segment (in dry specimens) equals in length all the rest, and is covered with short white hairs on the sides beneath the wings. Sheath of the ovipositor a dark yellowish brown.

Length, body .16, wing .18, antennæ .10.

Described from numerous specimens in my collection.

*CYNIPS CICATRICULA*, n. sp.

Polythalamous galls on the midvein of the leaves of *Quercus alba*, never more than one on a leaf, and situated sometimes at the base, but usually from one-fourth to one-half way from the base, rarely above the middle. They project one-third below and two-thirds above the surface of the leaf. On the under side of the leaf they are rounded and on the upper cone-shaped. The gall is solid and somewhat fibrous, and in its shorter diameter measures about one-half inch and in the longer from five to seven-eighths of an inch. The larval cells radiate in all directions from the centre of the gall and are quite numerous. There is at or near the summit of the cone a small scar or indentation which is always present and so characteristic as to suggest the name I have given to the species.

*CYNIPS CAPSULA*, n. sp.

Galls: Monothalamous, on slender pedicels on the margins of the

leaves of *Quercus bicolor*, rarely more than one on a leaf. The pedicels are from one-half to three-fourths of an inch long. The galls are three-eighths long and one-eighth of an inch in diameter, oval and resemble very closely the capsules of certain mosses. Surface rough, and with the pedicel finely pilose, or rather, pubescent. The pedicel is usually, but not invariably, the extension of a lateral leaf vein. The whole is of the color of the under side of the leaves of this species of oak. Most of the leaves which bear galls are fully developed, but a part are more or less imperfect and occasionally a gall is found on what is but the merest rudiment of a leaf.

The galls appear with the leaves and the insects come out early in June. This little gall is a true larval cell and its thin walls offer slight obstacle to the attacks of parasites.

The gall flies are of both sexes and are described as follows :

Female: Color a deep shining black, with the exception of the antennæ, legs and sheath of the ovipositor. Head and thorax microscopically punctate and sparsely dotted with extremely fine, short hairs. Parapsidal grooves: One pair converging as they approach the scutellum, and a slight groove over the base of the wings. The short parallel pair seen in many species near the dorsal line is in this species represented by a very slight depression on each side of the rather prominent dorsal ridge, but these last are so obscure as to easily escape notice. The scutellum wrinkled rather than punctate. Fovæ wanting. Antennæ short, 13-jointed, 1st and 2nd globose, 13th as long as the 11th and 12th together and with a connate suture. Color amber, inclining to brown. Legs: Coxæ, trochanter black or blackish brown, femur and tibia dark, clear shining brown, paler at the joints. Tarsi pale cinnamon brown. Ungues black. Wings hyaline, veins pale brown, fading in the smaller ones to hyaline. Areolet small, indistinct. Radial area short, broad, open.

Abdomen: 1st segment equal in length to all the others taken together. The sheath of the ovipositor dark translucent brown, not turned up at the extremity.

Length, body .10, wing .11, antennæ .06.

Male: The smaller size, darker and longer antennæ, darker legs, and the much smaller and laterally compressed abdomen distinguish the male from the female.

Length, body .07, wing .11, antennæ .08.

Described from dry specimens in my collection.

## CYNIPS AFFINIS, n. sp.

Monothalamous, round, thin-walled galls in the buds of *Quercus prinoides*, usually partly hidden in the scales of the bud, but in some instances standing out round and free like a little blister on the twig, in size only large enough to hold the larva within, and in color dark brown with grayish spots, or wholly brown. These galls are half-grown in the autumn and develop so rapidly in the spring that the insects come out just as the leaves begin to expand.

I should have been disposed to consider this species a variety of *C. vesicula*, which, both in gall and in insect, it closely resembles, had not late discoveries shown that dimorphic species often in one generation closely resemble each other and in the next develop characters that fully establish their non-identity.

The gall insects are of both sexes and may be described as follows :

Female: Black. Head finely rugose. Ocelli prominent. Antennæ 14 joints on a protuberant base; 1st joint short, truncated; 2nd short, ovoid; 3rd one-fourth longer than 1st and 2nd taken together, 4th equal to the first two, 5th to 10th gradually shorter, the remaining four subequal, the last small and pointed. Color clear yellowish brown in the basal half, changing to dusky brown toward the tip.

Mesothorax very finely and evenly punctate; parapsidal grooves wanting. Scutellum small, punctate, separated from the mesothorax by a rather broad shining groove. Legs clear, shining, almost translucent brown, with a darker shade in the trochanter and upper half of the femur.

Wings smoky. Veins smoky brown. Subcostal and the two transverse much darker than the others. The areolet of medium size, and instead of the usual equilateral, in this species it is an isosceles triangle with the narrow base on the 2nd transverse vein. Cubitus slender but reaching quite to the 1st transverse. Radial area open, but the subcostal extends above the base a short distance, and the anterior border of the wing is somewhat thickened, which gives, in certain lights, the appearance of a closed radial area. Abdomen briefly petiolate, black and shining, so shrunken in the specimens before me as to render further description impossible.

Length, body .09, wings .11, antennæ .08.

Male: Antennæ 15-jointed, slender, long, 3rd joint deeply incised. Color of antennæ as that of female. Wings much larger. Legs paler



and the dark brown of femur wholly wanting. Abdomen with a long slender petiole, very small and black and shining throughout.

Length, body .11, wing .13, antennæ .11.

C. GEMULA, n. sp.

This species is a recent discovery of mine, having escaped detection on account of its early appearance and minute size. The gall is found in the centre of both the flowering and leaf buds of *Q. prinoides*. It is fully developed when the sterile flowers of this species of oak are in bloom. Only one gall is found in a single bud. It is exactly like an ordinary acorn in shape, having a truncate base and a cone-like extremity with a sharp point at the apex. It is a dull blackish color, and only .10 of an inch in length and .05 in diameter. It contains but one larva. When the gall happens to be in a leaf bud it is often found at the summit of a young branch one or two inches long, so rapid is the growth of the tree at this season. In the flower buds it is often nearly hidden in the surrounding bud scales. The insects appear in both sexes about the middle of May, and may be described as follows:

Female: Head black, finely rugose. Ocelli medium size, the anterior one forming the vertex of a more than ordinarily obtuse triangle. Antennæ 14 joints; 1st short, truncate; 2nd ovate and standing in the cup-shaped summit of the first like an egg in an egg cup; 3rd short, though a little longer than the first two taken together; 4th a very little shorter than the 3rd. Remaining ones sub-equal and of moderate length. In color the 1st and 2nd are a clear brownish yellow, the rest a dull brown, growing darker in the terminal joints. Thorax bright shining black. Parapsidal grooves well defined; no other lines or grooves. Scutellum finely rugose. Fovæ wanting, but there is a smooth narrow groove between the mesothorax and the scutellum. Legs a clear, uniform amber, ungues black. Wings decidedly fuscous. Veins dark and well defined. Cubitus *heaviest in the lower half*. Areolet present, but very minute. Radial area open. Radial vein heavy its entire length and slightly thickened at the end, which does not quite reach the margin of the wing. Abdomen sub-pedicellate; 1st segment very long, shining black, remaining segments in dry specimens concealed in the first so completely as to make their study very difficult. Sheath of the ovipositor very small, with a few microscopic hairs on the dull yellowish brown tip.

Length—body .08, wing .11, antennæ .07.

Male: Antennæ 15 joints, the 1st and 2nd a little darker than in the

female, the 3rd slightly curved. Thorax narrow. Wings much larger than the females. Abdomen very small and much compressed laterally; in other respects not differing materially from the female.

Length—body .09, wing .14, antennæ .09.

This species is often found with *C. affinis*, but both gall and insect are quite different from that species.

*C. PIGRA*, n. sp.

The galls of this species answer perfectly to Baron Osten-Sacken's description of *C. q. tumifca*. They are large irregular swellings on the midrib of the leaves of *Q. tinctoria*, always on the under side and usually on the lower half of the leaf. Sometimes two distinct galls are found on the same leaf. Their presence is only indicated on the upper surface by a widening of the midrib and a slight depression of the leaf at that point. They are often an inch in length and in the middle half an inch in diameter, tapering more or less towards the ends. They are of a dense cellular tissue, with the woody fibre of the midrib along the axis. The cellular portion contains a large number of larval cells, which are inseparable from the enveloping substance.

Having discovered a young oak nearly all of whose leaves had these galls upon them early in June last year, I made frequent visits to it to watch the development of the larvæ. Quite sure that they would prove to be *Cynips q. tumifca*, I expected to find the insects fully matured early in July, but at that time the larvæ could scarcely be seen in the soft, immature vegetable cells that surrounded them, and it was late in autumn when the perfect insects made their appearance. This extremely slow development suggested the specific name. The gall flies are all females, and differ widely from *C. q. tumifca* O S.

Description: Head, thorax and abdomen deep black. Ocelli small, widely separated and inconspicuous in the rather coarsely rugose surface of the vertex. Antennæ 14-jointed; 1st joint short, club-shaped, 2nd ovate, 3rd not quite as long as the 1st and 2nd taken together; 4th, 5th and 6th each a little shorter than the one immediately preceding it. The remaining joints sub-equal and scarcely shorter than the 6th. Color at the base is a clear yellowish brown changing gradually to a light dusky brown at the end. Thorax finely and evenly punctate. A favorable light reveals two extremely faint, parallel lines that extend half way from the collare to the scutellum. They might more properly be called depressions, as they

do not interfere with the punctation. There is a very short but broad and smooth groove that begins at the scutellum on the middle of the mesothorax; it ends suddenly as a groove, but continues as a faint depression half way to the collare. The parapsidal grooves are fine and narrow, but distinct. There is a smooth polished line over the base of the wings. Scutellum rugose, round, small. Fovæ large and deep. Legs rather dark reddish brown. Wings large, hyaline, veins slender but sharply defined; areolet small, radial area open, cubitus extremely slender in the lower half and colorless throughout. Abdomen polished and shining, 1st segment long and more than equalling in length the remaining ones taken together. A few short scattered hairs on the anterior half beneath the wings. Sheath of the ovipositor very short, color at the tip dark yellowish brown, a few very short microscopic hairs at that point.

Length—body .11, wing .14, antennæ .08.

C. IGNOTA, n. sp.

Galls: Small oval cells, found singly or in small clusters of from two to eight together on the under side of the leaves of *Q. bicolor*. They are sessile on the midrib and principal veins, and usually lie in a position nearly horizontal to the surface of the leaf. They are at first covered with short woolly hairs, but when ripe become more or less denuded. The naked surface when examined with a microscope shows numerous minute papillæ, and between these a fine and regular reticulation. They are .10 of an inch in length and .05 in diameter, and might easily be mistaken for the cocoons of some species of *Microgaster*.

About fifteen years ago I found a few of these galls on the fallen leaves of a large oak and also on a small tree a few rods distant. The next year the greater part of the leaves on the large tree were covered with galls, a hundred or more being sometimes found on a single leaf. I gathered a large quantity after the leaves fell, and the flies came out the next spring. I have examined this tree every year since and have never found any of these galls, nor have I ever seen them on other trees.

There are some specimens of this species in the Museum at Cambridge, which Dr. Hagen informs me were found on oaks in the University grounds. I examined some oaks of the same species in the borders of the Botanical Garden at Cambridge last fall, and found several species of galls, but none of these. Can it be that the species has disappeared entirely?

The flies are all females.

Description : Head black, finely rugose. Ocelli small. Antennæ 13-jointed ; 1st and 2nd joints short, dusky yellowish brown, remaining ones changing gradually from dull dusky brown to dark opaque brown. Thorax microscopically crackled or striate, the striæ apparently transverse, though not so over the whole surface. Parapsidal grooves present, but not as strongly impressed as in most species ; no other lines. Scutellum finely rugose. Fovæ wanting. Legs clear yellowish brown, posterior pair much darker, especially the femur. Wings slightly dusky, veins pale slender. Areolet medium size, and bounded by almost transparent veins. Radial area open ; cubital vein very slender. Abdomen black ; 1st segment black and shining, in length equal to all the others taken together. Sheath of the ovipositor short, dusky yellowish brown at the tip.

Length—body .07, wing .10, antennæ .06.

*C. PAPULA*, n. sp.

Clusters of small papillose or cone-like galls on the upper side of the leaves of *Q. rubra* and *Q. tinctoria*, projecting unequally and usually so crowded as to form a confluent mass of pustule-like elevations. They are very hard, though only transformed portions of the blade of the leaf. On the under side of the leaf they appear simply as a scar, projecting little if at all. They bear a slight resemblance to the galls of *C. futilis*, but this species is rarely confluent and never beyond two or three galls, while *C. papula* is quite often found in clusters of forty or fifty, or even a hundred. *C. papula* is monothalamous, while *C. futilis* has, usually, from three to five larvæ in each gall.

I discovered this species many years ago on a red oak tree near my residence, but the galls were only seen on a single leaf. Soon after I found a leaf or two having these galls upon them—on the same species of oak, twenty miles south of this place (at Derby, Conn.) ; and still later found them in considerable numbers on the leaves of *Q. tinctoria*, at Chicopee, Mass. In this last locality I have observed them for several years, but always confined to a few trees in a very limited area.

This species *ought* to be found in both sexes, but among the few specimens in my collection I cannot discover any males.

Description : Head dark reddish brown. A few white hairs on the posterior edge of the vertex. Ocelli large. Vertex finely punctate. Antennæ brownish red, darker towards the extremity ; 13-jointed, the last three joints connately joined, and forming a rather heavy club, such as is

seen in many Braconides. Thorax black, lustreless, sparsely covered with very fine short hairs. Parapsidal grooves faint and indistinct, converging slightly as they approach the scutellum. A very faint median line, discernible on the posterior part of the mesothorax, extends one-third the distance to the collare. Surface of the entire thorax.

Fovæ present but indistinct. Legs reddish brown. Abdomen shining black. Sheath of the ovipositor yellowish. Ovipositor yellowish brown, and remarkable for its great length. In all my dry specimens it is exerted to a length at least five times that of the entire body, and is coiled two or three times.

Wings hyaline. Costal and first and second transverse veins fine clear reddish brown, the others fine and nearly colorless. Cubitus extremely faint, and quite disappearing before reaching the first transverse. Areolet small and elongated, and in some specimens wanting. Radial area open.

Length—body .08, wing .07, antennæ .04.

*C. NOXIOSA*, n. sp.

Galls : Large, woody, polythalamous, terminal or sub-terminal swellings on the twigs of *Q. bicolor*, varying greatly in size and form, but usually tuber-like and three or four times as long as thick. The larger specimens in my collection are nearly an inch in diameter and four inches long, and contain a large number of insects. The smallest are almost imperceptible swellings, and have often but a single insect. These galls develop in the summer, and the insects, which are all females, live in the galls over winter, coming out before the leaves appear in the spring. They resemble, both gall and gall-fly, *C. batata* B., and I for a long time, considered them a variety of that species. Some new facts in the history of *C. batata* B. having been learned, I shall re-describe it in these articles, when the differences between the two species will be stated. *C. noxiosa* is described as follows :

Head black, finely and regularly punctate. Antennæ 13-jointed ; 1st dark, nearly black ; 2nd and 3rd brownish yellow, the remaining ones gradually changing to dark dusky brown. Thorax smooth, but under a one-eighth lens showing a beautifully fine crackled surface. Parapsides entirely wanting. Surface of the scutellum like the meso-thorax, though the markings are a trifle coarser. Fovæ wanting. Legs dark shining brown, with clear yellowish brown joints. Tarsi dark yellowish brown.

Wings hyaline. Veins almost black, all clear and distinct. Areolet small but very sharply defined. Cubitus unusually heavy its entire length. Radial area open, the veins enclosing it strong and dark quite to the edge of the wings. Abdomen smooth, shining black, much shrunken and distorted in the dry specimens, and the long ovipositor much exerted.

Length—body .08, wing .09, antennæ .06.

These galls are invariably preceded by a vernal crop, which affects the leaves only, and which may be described as follows: Gall, an enormous development of the mid-vein of the leaf, often to the extent of an inch in diameter and an inch and a half in length. Green, smooth, but irregular in shape, and succulent and a little harder than a green grape. The blade of the leaf dwarfed and curled, and after the galls mature drying up. In some years these galls are so abundant on certain trees as to affect nearly all the vernal leaves, but a later crop hides the blighted appearance they produce. They are filled with larval cells, from which are produced vast numbers of male and female gall flies, about the twentieth of June. Long observation has satisfied me that this is the bisexual generation of *C. noxiosa*. The females of this brood agree exactly with the above species, except in size and in the length of the antennæ, they being a little smaller.

Length—body .07, wing .08, antennæ .04.

The males, which are nearly or quite as abundant as the females, differ from them as follows: Color throughout somewhat paler. Body longer. Antennæ 14-jointed, 3rd joint curved but not incised. Legs clear yellowish brown. Abdomen small, petiolate, petiole slender.

Length—body .09, wing .08, antennæ .05.

Large numbers of both generations in my collection.

#### CYNIPS CORRUGIS, n. sp.

This species is founded on a single specimen which I took from the claws of a small spider that had evidently just killed it. The spider was in a cluster of the sterile flowers of *Quercus prinoides*. The capture was made on the 11th of May. This species is remarkable for the almost diaphanous wing veins, the pedicellate abdomen, and the coarsely corrugated sculpturing of the thorax. It is a female, and may have been in the act of ovipositing in the young acorns or the buds of this oak when killed by the spider. The description is as follows:

Head clear dark reddish brown, finely and evenly rugose. Ocelli dark brown, not *black*, as is usually the case among the Cynipidæ. Antennæ 14-jointed, clear translucent brown, except the four or five terminal joints, which are darker and more opaque. Mandibles black and shining, and contrasting beautifully with the clear light brown of the face. Thorax clear, translucent brown, somewhat darker than the head, coarsely rugose and corrugated; even the parapsidal grooves have a wrinkled surface, and are in certain lights scarcely distinguishable from the general surface. Scutellum like the meso-thorax, but small and ending abruptly posteriorly and perpendicularly to the axis of the body. Fovæ wanting. Wings and wing veins, except the subcostal and 2nd transverse, perfectly hyaline; these last have a very faint brownish tinge. Areolet wanting. Radial area open. Legs clear dark, somewhat paler at the joints. Tarsi pale brown; ungues nearly black. Abdomen petiolate; 1st segment clear brown at the base, changing to shining black posteriorly; in length equal to one-half the entire abdomen; remaining segments of an opaque brownish black, and with a fine microscopic punctation. Venter and the sheath of the ovipositor clear shining brown, the sheath without hairs and only moderately exerted.

Length—body .11, wing .12, antennæ .06.

C. CINEROSA, n. sp.

Globular, monothalamous galls, from three-fourths to one inch in diameter, the surface in recent specimens covered with a mealy grayish powder, which disappears when the galls have been long exposed to the weather; internally of a dense cellular structure, much like the galls of *C. g. globulus*; the rather large, centrally placed larval cell nearly or quite free. These galls, and the gall flies produced from them, were collected in Texas, and were sent to me by Mr. Wm. Saunders, of London, Ontario, who received them from Prof. J. M. Maisch, of Philadelphia. I have been unable to learn from what species of oak they came.

The flies, which are all females (20 specimens), may be described as follows: Head small, covered throughout with short appressed hairs. Tips of the mandibles shining black. Color of the head, thorax and legs, a dull yellowish brown. Antennæ 14-jointed; short, hairy, dusky brown, except that the first joint on the inner side, and the second and third at the tips, are a paler brown and shining.

Thorax: two parallel lines extend from the collare half way to the

scutellum. The space between these is darker than outside. There is a short median line starting on the posterior edge and soon disappearing, and two rapidly diverging lines from the same border, which extend half way to the collare. Outside of these are two parallel lines of the same length. All these are some shades darker than the general surface.

Scutellum small, and hairy like the meso-thorax. Fovæ wanting. Abdomen clear shining reddish brown, except the posterior edges of the segments, which are nearly black; 1st segment, except a small spot on the dorsum, covered with fine short hairs; sheath of the ovipositor very large and with strong white hairs; ovipositor shining black, and slightly exerted in dry specimens. *Ungues* black. Wings sub-hyaline, veins dark brown; second transverse heavy. Areolet distinct but small. Cubitus slender, and disappearing before reaching the 1st transverse. Radial vein heavy, and ending in an enlarged point within the border of the wing; radial area open. Length of a specimen of average size, .18.

This species is probably the agamous generation of what will yet be found in another generation and in another form of gall, two-gendered. The galls and insects sent me vary so much in size that I strongly suspect they may represent two very closely related species, but the slight differences between the large and small flies hardly warrant me in separating them till I can learn more of their habits. My description refers to the *largest* specimens.

#### C. FLOCCOSA, n. sp.

The late, terminal leaves of the thrifty shoots of young oaks of the species *Q. bicolor* are often thickly dotted on the under side with small hairy, or rather woolly, galls, sometimes as many as two hundred being found on a single leaf. The leaves are sometimes quite small, and in such instances the galls become nearly or quite confluent. They measure, including their woolly covering, about .15 of an inch across, but divested of this, only .05 or .06, and each contains but a single larva. The larva is free, having no larval cell. The galls are hemispherical, and attached by their flat side to the leaf, and they show on the upper surface only as small, smooth, flat, shining blisters. They are so much infested by inquilines and other parasites that all attempts to rear true gall flies from them proved fruitless for many years. I, at length, succeeded in rearing in the spring a considerable number of true gall flies from galls collected the October preceding in Northern Ohio. Only females have



yet been reared, and these minute creatures will be found, no doubt, like other and larger ones that live over winter in the galls, to be only of one sex. The description is as follows :

Head, thorax and abdomen shining black and smooth. Ocelli large, but not conspicuous. Antennæ 13-jointed ; 1st and 2nd joints comparatively stout, the 3rd a little longer than the two preceding ones taken together, very slender ; the remaining ones also slender, but slightly increasing in thickness towards the last ; color, a pale, dusky yellowish brown. Thorax without lines or grooves of any kind, anteriorly high and rounded. Scutellum very small. Fovæ obsolete. Legs dark brown, except the joints and the tarsi, which are almost colorless. The wings rather large. Areolet large. Radial area long, narrow and open. The cubitus is very slender, and disappears at some distance from the 1st transverse. The vein bounding the areolet on the posterior side is so nearly colorless at that point that the areolet itself might easily be pronounced wanting.

Abdomen smooth and shining ; the terminal segments, in dry specimens, are almost entirely retracted into the rather large 1st segment ; the abdomen is sub-petiolate.

Length—body between .04 and .05, wing .06, antennæ .03.

#### C. COXII, n. sp.

Galls: Hard, smooth, woody knots or swellings on the twigs of *Quercus*, sp. They are covered with bark not unlike the rest of the twig. The two specimens in my collection are not more than three-fourths of an inch in diameter, but whether of average size or not I am unable to say. They might easily be taken for small specimens of *C. Suttonii*, B, from California, or for *C. batatoides*, Ashmead, an unpublished species from the live oaks of Florida, but the insects differ specifically from both these.

My specimens were received from Prof. E. T. Cox, who collected them near Tucson, Arizona, probably from one of the dwarf live oaks of that region. I have reared from them only female gall flies, which are described as follows :

Head deep yellowish brown ; vertex very slightly punctate. Ocelli small, black. Antennæ near together, 14-jointed ; 1st joint short club-shaped, 2nd short ovate ; these two, in a favorable light, are an almost golden yellow ; 3rd one-third longer, and the 4th a little shorter than the 1st and 2nd taken together ; the 5th, 6th and 7th short, and the remain-

ing ones very short, and all of them of a dull opaque brown; at the base of the antennæ, on the lower side, is a nearly black spot, its edges fading into the prevailing color. The face is hairy; the mentum smooth, but with a fringe of long stiff hairs on the lower edge. The mandibles are dark, nearly black. The color of the thorax differs considerably in different individuals; in some it is quite black, but in most is more or less clouded with spots of clear shining yellowish brown. The pleuræ are black in all my specimens. The parapsidal grooves are large and deep. They start quite near together on the scutellum, and diverge gradually till within a short distance of the collare, when they diverge so suddenly as to form a rather short curve in that part of their course. Scutellum small, finely rugose and hairy, separated from the mesothorax by a broad, smooth band, that can hardly be called a furrow or foveæ. Legs clear yellowish brown. Ungues very dark, but not black. Wings hyaline, quite large. Veins rather slender, pale reddish brown. Areolet small. Radial area open, and, by the curvature of the radial vein, broadest in the middle. Abdomen shining black; 1st segment rather large, and with a few short hairs scattered over its anterior half, mostly confined to the sides beneath the wings, remaining segments short and withdrawn (in dry specimens) within the first; sheath of the ovipositor straight, with moderately long hairs towards the point.

Length—Body .11, antennæ .06, wings .14.

Described from dry specimens.

---

[NOTE.—When my description of the gall of *C. cicatricula* was already in type, I found my specimens of the gall flies were quite unfit for description, and the species will be described in a future paper. In answer to some of my friends, who have expressed some surprise that I still retain for all the oak gall insects the old generic name *Cynips*, I will say that I intend to publish a complete list of our described species, with their true generic names, in the course of the summer. In this I shall follow Dr. Mayr's classification, adding to his list of American galls such new species as I have not already submitted to him. In my illustrated monograph, on which I am at work, I shall give brief descriptions of all the American species known to me.]

## CORRESPONDENCE.

## ANTIGASTER VS. EUPELMUS.

DEAR SIR,—

I have read with interest Mr. Howard's remarks on p. 31, *ff.* In the article in the *American Entomologist* which he refers to, I stated distinctly that he gives reasons for considering *Antigaster* and *Eupelmus* synonymous, and, as I consider the reasons good, I have no criticism to make thereon. My remarks were intended to show rather that his reflection on Walsh that there were "no grounds for the founding of the genus *Antigaster*" was hardly justified. I endeavored to show that with the light then at his command Walsh had reasons for erecting the genus. The characters of *Eupelmus* as set forth by Mr. Howard are mostly brought together from works subsequent to Walsh's characterization of *Antigaster*. The close relationship of this last with *Eupelmus* was recognized by me as previously stated by Mr. Howard, and whether, in the light of subsequent writings, the two should be combined generically is a question depending on the limitation or comprehensiveness we deem best to give to generic divisions, on which subject I have no reason for differing from my friend who, from special study of the family, is most competent to decide.

C. V. RILEY, Washington, D. C.

## HOW WE CAPTURED A HORNET'S NEST.

DEAR SIR,—

One fine day last October, while enjoying a ramble in the woods near Belleville, with two of my sons, one of them took hold of a knot which projected from a small half-decayed log, intending to turn it over to search for beetles beneath it. The piece, however, came away in his hand and disclosed the entrance of a nest of black hornets. Of course we retreated "at the double" before the disturbed insects recovered from their first surprise, leaving them to settle down at their leisure. A few days after, taking advantage of a cool morning, I sent my two boys to the wood with a small bottle of chloroform and a hard rubber syringe. According to directions, they injected about a drachm of the liquid into the hole, and threw a handkerchief over the entrance. In about five minutes they opened up the nest, when they found the inmates in a perfect state of slumber, and transferred them without trouble to their cyanide bottles. In about an hour they returned, bringing me forty-eight specimens of the insect

J. T. BELL.

## THE COLORADO BEETLE.

DEAR SIR,—

The following extract from an English newspaper, the *Bristol Mercury*, will show how carefully the Colorado Beetle is looked after in England and how great a risk he runs if he sets foot within the United Kingdom. He is far more sternly outlawed than was Robin Hood or Smith O'Brien, and if only a suspicion of his presence is felt, all, from the Privy Council downwards, are up in arms to crush him with all the terror of the law. Let us hope they will succeed in making the country too hot for even the ten-lined Spearman.

“ Mr. Borlase put a question as to the discovery of a Colorado Beetle in South Devon.

“ Mr. Mundella answered, saying the Colorado Beetle was in his department (a laugh). He then gave the facts of the discovery of a live Colorado Beetle in the possession of a man at Yealmpton, who refused to give it up. Upon instructions from the department he was prosecuted under the Destructive Insects Act of 1877, and fined the mitigated penalty of £5, he pleading ignorance of the law and agreeing to the destruction of the beetle.”

E. W. C.

DEAR SIR,—

I always look for the coming of the CAN. ENT. with pleasure. Having seen several articles in the ENTOMOLOGIST relative to the abundance or scarcity of insects, as compared with past seasons, I would inform you that in 1879 I did not see a single specimen of *Terias nicippe*, while this year they were abundant, in fact more numerous than *Colias philodice*.

Columbus, O., Dec. 2, 1880.

W. N. TALLANT.

DEAR SIR,—

On the 6th Oct., 1880, I took six *cresphontes* larvæ feeding on prickly ash. Some of them fed for several days afterwards, and in due time they all transformed to chrysalids. Now they have all emerged as butterflies; the first appeared on the 22nd of March, the last on the 17th of April, 1881. They measure from  $3\frac{3}{4}$  to  $4\frac{1}{2}$  inches in expanse of wing, perfect in form and rich in coloring.

J. ALSTON MOFFAT.

Hamilton, April, 1881.

DEAR SIR,—

In your last issue Dr. LeConte pronounces my record of the capture here of *Alaus gorgops* to be "probably erroneous," because he has not known any instance of that insect having been taken north of Texas and Western Louisiana, and that therefore my specimen *must* be *Alaus oculatus*.

*Alaus oculatus* is of such common occurrence here that I have long ceased to collect specimens, unless remarkable for beauty or for abnormal size, either large or small, and with over twenty years' acquaintance I ought to be tolerably familiar with its appearance and proportions. The specimen in dispute was found resting on a stump in Bleeker's Woods, about half a mile from our city limits, and was taken by me as an unusually fine and large example of *Alaus oculatus*, and placed as such among my seasonal captures; but on placing it in my cabinet I observed so marked and manifest a difference between it and the other specimens, that I thought it might be a distinct species. Finding from Crotch's List that there were only three species known, and possessing examples of two of them, I obtained a specimen of *A. gorgops* from Mr. E. P. Austin, of Boston, for the sake of comparison, which came to hand ticketed "Dallas, Texas." On placing this side by side with mine, I was unable to distinguish the slightest shade of difference except that mine is rather the larger and fresher specimen. In order to show the identity of these two examples, and their common difference from *A. oculatus*, I append their respective measurements as taken at the time, and carefully repeated and verified, as also the dimensions of my largest specimen of *A. oculatus*:

|                    | Mr. Austin's sp'n.                | My own.           | <i>A. oculatus</i> . |
|--------------------|-----------------------------------|-------------------|----------------------|
| Total length,      | 41 mm. (about $1\frac{2}{3}$ in.) | 42 mm.            | $42\frac{1}{2}$ mm.  |
| Length of thorax,  | 12 mm. (sharp.)                   | 12 mm. (full.)    | $12\frac{1}{2}$ "    |
| Breadth of thorax, | $11\frac{1}{2}$ mm.               | 12 mm.            | 11 "                 |
| Breadth of elytra, | $11\frac{1}{2}$ mm. (full.)       | $12\frac{1}{2}$ " | $11\frac{1}{2}$ "    |

The ocular spots on the thorax are much larger and more circular in shape than those of *A. oculatus*, and the white marginal lines are much broader and more distinctly marked, in all which characters Mr. Austin's specimen and mine thoroughly agree. I am thus led to the conclusion that either my specimen is *Alaus gorgops*, or that Mr. Austin's is *not*.

I have in my collection examples of *A. oculatus* varying in length from  $42\frac{1}{2}$  mm. to 25 mm.

JAMES T. BELL.

Belleville, April 29th, 1881.