

Studies on the North American CHALCIDIDÆ, with descriptions of new species, chiefly from Florida.

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In the following pages I continue my studies on this family, give synonymical and other notes on various species, describe the new forms brought to my notice and correct many errors made in my earlier papers on the subject, all of which I hope will be found of interest and value to the student.

Subfamily CHALCIDINÆ.

SMICRA Spinola.

1. **Smicra flavopicta** Cress.

Two specimens of this species, which was originally described from Cuba, were taken on oak shrubs last summer; it is therefore to be added to our fauna.

2. **Smicra mendica** Cress.

This Mexican species was also taken here last summer and should therefore be added to our fauna.

3. **Smicra montana** n. sp.—♂ Length .25 inch. This species agrees in color and markings exactly with *Smicra ambigua* Cress., a Mexican species, excepting as follows: In place of "numerous minute black teeth" *there are but six*, the four middle ones being very long and large; the petiole of abdomen is black; the first abdominal segment and second, excepting along the basal suture, and oblong lateral blotches at tip of third, fourth and nearly the whole of the fifth segments, lemon-yellow. On the metathorax there are two deep, transverse foveæ separated only by a carina. The sculpture is very coarse.

Hab.—Asheville, N. C.

This interesting species was captured early one morning in October, while looking for cynipidous galls, resting on a leaf of the white oak; it had evidently been numbed by the frost the night previous, for I captured it in my fingers.

4. **Smicra carolina** n. sp.—♂ Length .35 inch. Head lemon-yellow, antennal groove and vertex, and space back of head, antennæ, excepting scape at base and a stripe beneath, and tips of mandibles, black. Collar, excepting humeral angles posteriorly, along parapsidal sutures, triangular blotch at base of wings, base of scapulæ, three small spots beneath wings, anterior edge of mesopleuræ, metapleuræ, spot on metathorax on each side of petiole, scutellum, ex-

cepting small spot in centre, the petiole, the abdomen, excepting a V-shaped blotch at base and along anterior margin of first segment, base of third, and slightly along sutures of other segments, the four anterior legs, the posterior coxæ beneath, and the posterior femora, excepting teeth and a blotch on disk connected slightly along teeth with a small blotch at apex and base of tibiæ, lemon-yellow. The swollen femora are armed with rows of seven short, stout, conical teeth.

Hab.—Asheville, N. C.

This beautiful species approaches nearest to *Smicra Nortoni* Cress., and has a lemon-yellow line before each ocellus as in that species, but the lower margin of cheeks are not narrowly margined with black, the discal spot on scutellum is not large, the metathorax is black, and its apex is not yellow; the coxæ, the femora and abdomen are, too, differently colored, and there are only seven teeth.

I had confounded this species with *S. Nortoni*, but the characters pointed out will easily separate it.

CHALCIS Fabr.

5. *Chalcis pedalis* Cress.

A single specimen of this species was taken in beating net last summer. It agrees pretty well with Mr. Cresson's description, excepting its abdomen is not black, but dull rufous, and I have grave doubts as to its being that species.

6. *Chalcis ovata* Say.

A single specimen of this insect was bred last summer from the squash vine borer *Eudiotis hyalinata* Linn.

HALTICELLA Spinola.

7. *Halticella xanticles* Walker.

One specimen, captured last August, agrees perfectly with Mr. Walker's description for a transcript copy of which I am indebted to Mr. Samuel Henshaw, of the Boston Natural History Society, and I desire to express my thanks thus publicly to this gentleman, to Dr. George Dimmock, of Cambridge, and to Mr. E. T. Cresson, of Philadelphia, for courtesies of a similar character.

The species also seems to agree with Mr. Howard's *Halticella americana*, the only real difference between the two descriptions, that I can find, is a slight one of size. The two are evidently identical.

8. *Halticella onatas* Walker.

I reared a single specimen of this species from the cynipidous oak gall *Dryophanta polita* Bassett, in March, 1886. It agrees perfectly

with Mr. Walker's description, and is, I believe, the only species of the genus on record reared from an oak gall. It is easily recognized by its rufous colored legs.

9. **Halticella longicornis** n. sp.—♀. Length .16 inch. Black, coarsely but not confluent punctured and covered with a sparse white pile, this is fine and denser on the swollen femora and tibiæ. The antennæ is unusually long and slender, subclavate; the scape and legs are rufous, excepting the apical half of the swollen femora, which is black. The abdomen is shining black with whitish pile on the segments laterally; wings dusky hyaline.

Described from one specimen captured at large.

This species is near *H. onatas*, but the difference in the antennæ and the apical half of posterior femora easily distinguish it.

Subfamily TORYMINÆ.

LOCHITES Förster.

10. **Lochites punctata** n. sp.—♂. Length .10 inch. Opaque, granulated punctate and of a dull brownish color above and shining blue-black at sides and beneath. The face is finely punctate; antennæ robust, pubescent, with the joints distinctly separated, the scape rufous; the pedicel, which is rather small and the flagellum are darker; the two small ring joints which distinguishes this genus, are distinctly seen, thence there are eight joints, the first being a little longer than broad, the others about as broad as long and slightly pedicelated. The thorax has the peculiar punctuation common to the *Pireninæ*. The abdomen is sessile, blue-black, slightly broadened behind, convex beneath, subconvex above. Legs, including trochanters, but not the coxæ, are rufous, the tibiæ paler than femora, all the tarsi are white. Wings hyaline, stigma not developed.

Described from one specimen taken at large.

MEGASTIGMA Dalman.

11. **Megastigma feigera** n. sp.—♂. Length .07 inch. Color: a uniform dark blue with a slight æneous reflection on thorax and abdomen. The antennæ are brown, tarsi white and clear hyaline. The abdomen is sessile, clavate, concave above, convex beneath, and the stigmal vein is developed and knobbed.

Described from one specimen bred in 1885 from cynipidous galls *Holcaspis feigera* Ashm., and another from *Amphibolips femorata* Ashm., MS. in 1886.

12. **Megastigma cecidomyiæ** n. sp.—♂ and ♀. Length .05 to .08 inch. Ovip. .05 to .06 inch. Yellowish, with blue head and occasionally some greenish spots on abdomen and sometimes a green face. The wings are hyaline and the stigma is but slightly developed, about as in *Megastigma collaris* Boh., to which also it has some resemblance. One ♂ has the head, body and abdomen all blue

with pale yellowish, almost white legs, excepting a brown stripe along upper edge of posterior tibiæ and tarsi; another has the sides of collar, tegulæ, coxæ and venter all pale yellowish. The antennal club is enlarged.

Described from six ♀ ♀ and two ♂ ♂, bred April, 1886, from an unnamed cecidomyious gall on *Baccharia halimifolia*.

13. **Megastigma canadensis** n. sp.—♂. Length .10 inch. Robust, scaly punctate and of a blue or bluish-green color. The head is large, broader than thorax; eyes and antennæ brown, the latter rather long and slender, pubescent. Legs yellowish white, all the femora, excepting at tips, brown or greenish. The abdomen dull metallic green. The wings are hyaline, the stigmal vein unusually long, extending to the middle of the wing and knobbed.

Described from one specimen sent me by Mr. Wm. Brodie, of Toronto, Canada, and reared by him from oak gall *Biorhiza forticornis* Walsh.

DIOMORUS Walker.

14. **Diomorus biorhizæ** n. sp.—♀. Length .10 inch. Ovip. .11 inch. Dull, coppery-green, finely wrinkled and punctate, with some distinct, larger, coarser punctures. The antennæ, excepting the extreme base of scape, are black, and the joints of the flagellum are very closely united. The abdomen is dark green, with the basal abdominal flap excised in the middle. The legs are green, excepting tips of tibiæ and tarsi, which are white; the posterior coxæ are very coarsely punctate, and the femora have a distinct tooth beneath near apex. The wings are hyaline with brown veins; there is a slight dusky streak beneath stigma.

Hab.—Toronto, Canada. Described from one specimen bred from gall *Biorhiza forticornis* Walsh, and sent me by Mr. Wm. Brodie.

OLIGOSTHENUS Förster.

15. **Oligosthenus stigma** Fabr.

Syn. Monodontomerus viridæneus Prov.

In *Petite Faune Entomologique du Canada*, vol. ii, p. 569, M. L'Abbe Provancher has redescribed this well-known European species. It is parasitic on the Bedeguar rose gall *Rhodites rosæ* Linn., a gall now found plentifully on both continents; it was probably imported along with its host. Its synonyms are as follows:

Ichneumon stigma Fabr., *Ent. Syst.* ii, 1793, p. 188.

Deplolepis stigma Fabr., *Sys. Piez.* 1804, p. 152.

Cinips stigma Fonsc., *Ann. Sc. Nat.* xxvi, 1852, p. 289.

Callimome stigma Walk., *Ent. Mag.* i, 1833, p. 139.

Monodontomerus stigma Walk., *Ent. Mag.* ii, 1835, p. 158.

Torymus ater Nees, *Hym. Ich. aff. Mon.* ii, 1834, p. 69.

Glyphomerus (Oligosthenus) stigma Först., *Hym. Stud.* ii, 1856, p. 44.

Monodontomerus viridæneus Prov., *Petite Faun. Ent. du Canada*, ii, 1883, p. 569.

It is the only representative of this genus known to our fauna.

SYNTOMASPIS Förster.

16. **Syntomaspis Lissus** Walker.

17. **Syntomaspis Theon** Walker.

These two species were described by Mr. Walker under the old genus *Callimome*; they belong properly to *Syntomaspis*.

To this genus also belong my *Callimome racemariæ*, *C. melanocera*, *C. citriformis*, *C. æneus*, *C. elegantissima* and *C. dryorhizoxeni*.

18. **Syntomaspis advena** O. S.

This species has been recognized from specimens sent me by Mr. Brodie bred from gall *Andricus petiolicola* and *Andricus ventricosus* Bass. It was also described as a *Callimome*.

19. **Syntomaspis tubicola** O. S.

I have reared several specimens of this species from gall *Andricus flocci* Walsh; it was described as a *Callimome* from oak gall *Andricus tubicola* O. S. I have reared it also from *Andricus flocci* Walsh.

20. **Syntomaspis Brodiei** n. sp.—♂ ♀. Length .13-.15 inch. Ovip. .12 inch. Differs principally from *Syntomaspis tubicola* O. S., in its much larger size, and in having tips of femora and tibiæ and tarsi yellowish; the trochanters are occasionally yellow, and the color of the thighs vary from a green to bluish-green; the pleuræ and hind coxæ are also blue; the tarsi are paler than the tibiæ. The ♂ has the collar, pleuræ, pectus and thighs blue and a bluish-green abdomen.

Hab.—Toronto, Canada. Described from three specimens sent by Mr. Wm. Brodie, of Toronto, Canada, and reared by him from the cynipidous gall *Acraspis pezomachoides* O. S.

21. **Syntomaspis dryophantæ** n. sp.—♀. Length .11 inch. Ovip. .08 inch. This species resembles *Syntomaspis tubicola* O. S., but differs from it in its much more compressed abdomen, finely, confluent punctured thorax, and red legs and white tarsi. The metapleuræ are violet and contrast most beautifully with the surrounding metallic green of the metathorax, mesopleuræ and coxæ.

Described from one specimen bred July, 1886, from cynipidous gall *Dryophanta catesbæi* Ashm.

22. **Syntomaspis albihirta** n. sp.—♀. Length .10 inch. Ovip. .03 inch. A short, robust, opaque, dull greenish-blue, granulate punctate species, and covered with short white hairs, more especially on abdomen. The antennal scape is brown, and the flagellum is brown-black. The legs are rufous, with the anterior and middle femora slightly infuscated, posterior pair bluish, with the tips of tarsi brown. The abdomen is broad, submetallic green-blue, with the first abdominal flap excised in the middle, while the ovipositor is short and stout.

Described from one specimen taken at large, and very distinct from any other in our fauna.

TORYMUS Dalman.23. **Torymus bedeguaris** Linn.Syn. *Callimome magnifica* O. S.

Baron Osten Sacken described his *Callimome magnifica* from specimens furnished him by Mr. Edward Norton, reared from rose galls. I had identified his species from specimens reared from rose galls *Rhodites carolina* A. and *R. rosæ* L., but was surprised on receiving specimens of *Torymus bedeguaris* Linn., from Europe, to find them identical. The species varies from a golden-green to bluish-green in the females, and to a greenish-blue in the males. It has been unquestionably imported to this country on *Rhodites rosæ* along with *Oligosthenus stigma* Fabr.

To this genus also belong my *Callimome cærulea*, *C. lividus* and *C. virentis*.

24. **Torymus flavicoxa** O. S.

One specimen, or rather what I take to be this species was reared from the root oak gall *Belonoenema Treatæ* Mayr.

25. **Torymus brevicauda** O. S.Syn. *Callimome brevissimicauda* Ashm.

Numerous specimens of this species reared from two blackberry galls *Diastrophus nebulosus* O. S. and *D. cuscuteæformis* O. S., convince me that my *Callimome brevissimicauda* is but a variety of this species. The length of the ovipositor and the color of the abdomen is variable.

26. **Torymus omnivoræ** n. sp.—♂ ♀. Length .07 to .12 inch. This species varies from a bluish or greenish-blue in the males to a greenish æneous or dull metallic green in the females. The punctuation is as in *Syntomaspis tubicola* O. S., and as in that species the tarsi are white, all the femora and tibiæ being green or bluish-green, excepting occasionally the tibiæ are brown, or tips white or yellowish. It could not be confounded with *S. tubicola*, as it is not so bright a green as that species, and the scutellum has no transverse groove.

Described from numerous specimens reared 1886 from cynipidous gall *Holcaspis omnivora* Ashm.

27. **Torymus neuroterus** n. sp.—♂. Length .05 inch. A diminutive, metallic-green, little species, with a large, transverse head, black antennæ, blue or violet colored metathorax and abdomen and metallic-green legs, the trochanters, tips of tibiæ, and tarsi alone being white. The abdomen is pedunculate.

Described from specimens bred 1886 from gall *Neuroterus minutissimus* Ashm.

28. **Torymus anthomyiæ** n. sp.—♀. Length .07 inch. Ovip. .05 inch. This is another short, robust, metallic-green species, closely resembling *Syntomaspis tubicola* O. S., and difficult to distinguish from it. In color it is exactly the same, excepting the femora at tips, and the tibiæ and tarsi are pale yellowish; the ovipositor is shorter and stouter and the abdomen is pubescent. These characters will also distinguish it from *Torymus omnivora* m.

Described from two specimens taken on a cultivated plant, the leaves of which were mined by an anthomyid larva which I have good reasons for suspecting is parasitized by this species.

ORMYRUS Westwood.

29. **Ormyrus vacciniicola** n. sp.—♀. Length .10 to .12 inch. Blue-black, with a slight metallic lustre and the thorax almost devoid of the peculiar, fine, wrinkled sculpture, so characteristic of this genus. The head is finely transversely rugulose; the antennæ dark brown, scape rufous; the legs pale brown with a reddish cast, the posterior femora being slightly infuscated above, all coxæ brown, excepting the posterior ones at base. The abdomen is much compressed, brown, with a metallic lustre, a row of long white hairs on each segment, excepting the basal one, and the tip is prolonged into a slender point. The wings are hyaline and the veins brown.

Hab.—Toronto, Canada. Described from three specimens sent by Mr. Wm. Brodie, and reared from the cynipidous gall *Solenozopheria vaccini* Ashm.

The compressed abdomen and its color will separate this species from the others in our fauna.

30. **Ormyrus ventricosus** n. sp.—♂. Length .15 inch. A robust form of a uniform æneous-green or dark greenish-blue color including the legs and the antennal scape. The abdomen is bluish-green above; the anterior tarsal joints are streaked above with brown and the four terminal joints of the middle legs are brown, the basal joint being yellowish-white, or sometimes all the tarsal joints are whitish and the legs greenish-blue.

Hab.—Toronto, Canada. Described from specimens reared from *Andricus ventricosus* B., and an undescribed oak gall sent by Mr. Brodie.

31. **Ormyrus minutus** n. sp.—♂ ♀. Length .04 to .08 inch. Color ranging from metallic-blue through greenish-blue to bluish-green, with rufous legs; the femora are generally green or blue, sometimes brown, the posterior ones being much thickened, sometimes all the femora are rufous, the same color as the tibiæ; sometimes only the posterior femora will be green or blue, and sometimes the tibiæ, especially the posterior pair, will be rufous; one ♂ has uniform brownish-yellow legs.

Described from numerous specimens reared from oak gall *Neuroterus laurifoliae* Ashm.

Like *Ormyrus labotus* Walker, it is very variable, but the thickened thighs will readily distinguish it.

Subfamily EUPELMINÆ.

EUPELMUS Dalman.32. **Eupelmus reduvii** Howard.

Several specimens of an Eupelmid which I take to be this species were reared last summer from the eggs of the common squash bug *Anasa tristis* DeG.

33. **Eupelmus quercus** Ashm.

A single specimen of this species was reared this January from oak gall *Holcaspis ficigeræ* Ashm.

Subfamily ENCYRTINÆ.

CERAPTEROCERUS Westwood.

34. **Cerapterocerus floridanus** n. sp.—♂. Length .08 inch. Blue-black, the scutellum plumbeus. The head is oblong, flat; eyes large, prominent, long-oval, occupying at least two-thirds the length of the long head; the antennæ, including the scape and the flagellum, are broadly widened or dilated, pubescent, they issue just above the mouth; the scape has an æneous or greenish lustre in different lights; the flagellum is brown black. The legs are pale yellowish with the middle and posterior femora infuscated and the posterior tibiæ at tips are also dusky. The wings are clear hyaline, with a rather long marginal vein.

Described from a single specimen captured at large in April, 1884.

This is an interesting addition to our fauna, being the first of the genus to be described in N. A. and is very distinct from the two European species *C. mirabilis* Westw. and *C. corniger* Walker.

HOMALOTYLUS Mayr.

35. **Homalotylus similis** n. sp.—Differs from *Homalotylus obscurus* Howard, in having all the tarsi white, excepting the apical tarsal joints of the posterior legs. The inner margins of the eyes are covered with a short, dense, silvery pubescence; the thorax is also sparsely pubescent. The scutellum is brown, *not dead black*. The metapleuræ are densely pubescent and the abdomen has a greenish lustre.

Described from one specimen bred in August, 1886, from pupa of *Scymnus cervicalis*.

Mr. Howard's species was bred from the larva of *Cycloneda guinea*. My *Homalotylus lachni*, bred from an Aphis, *Lachnus australis* Ashm., I think, does not belong to this genus, but to the genus *Phænodiscus* Först.

To this genus also belongs *Eutelus scymnæ* Shimer, described as a Pteromalid, *vide* Trans. Am. Ent. Soc. vol. ii, p. 385. It will be found to be very close to *H. obscurus* How.

LEPTOMASTIX Förster.

36. **Leptomastix tineævora** n. sp.—♀. Length .08 inch. Reddish-brown, eyes, scutellum and flagellum, darker. The antennal scape is very long and slender as well as the flagellum; the thorax shining; the mesopleuræ are violaceous, and the abdomen at base above is metallic-green, metathorax and legs pale brown; the posterior femora above and the tibiæ, apical two-thirds dusky. The wings are hyaline, with a dusky blotch the width of the marginal vein, which is long and thick, the stigmal vein being very short; the margins of wings are fringed with short ciliæ.

Described from one specimen bred 1886, from a Tineid larva mining in woolly galls *Andricus Pattoni* Bass. It is very distinct from *Leptomastix dactylopii* Howard.

ENCYRTUS Dalman.

37. **Encyrtus inquisitor** Howard.

A single specimen of this species was taken on a Coccid *Lecanium* sp on Pine.

38. **Encyrtus solus** Howard.

One specimen, evidently this species, was reared from *Trioza magnoliæ* Ashm. The wings were dusky; Mr. Howard says nothing about wing characters in his description.

39. **Encyrtus sublestus** Howard.

A male and female of this species were reared from a Coccid *Lecanium* sp occurring on *Pinus australis* last summer.

40. **Encyrtus mesograptæ** Ashm.

Numerous specimens of this species were reared in my work for the Department of Agriculture last summer from the pupæ of the syrphid fly *Mesograptæ polita* Say. It is very closely related to *E. sublestus* Howard.

41. **Encyrtus aphidiphagus** Ashm.

Numerous specimens of this species were reared from the cabbage Aphid, *Aphis brassicæ* Linn., last summer.

42. **Encyrtus 4-maculatæ** Ashm.

This species was described as a *Pteromalus*; it is very close to *E. sublestus* and *E. mesograptæ* Ashm., but probably distinct. My types are in poor condition and the species was very imperfectly character-

ized in the "Canadian Entomologist" some years ago when I began my entomological studies and knew comparatively nothing of the enormous work accomplished by hosts of learned students. I can see now that my earlier work is of but comparatively little value.

Subfamily PTEROMALINÆ.

Tribe MISCHOGASTRIDES.

MEGORISMUS Walker.

43. **Megorismus nubilipennis** n. sp.—♀. Length .11 inch. Broad, robust, shining blue-black, almost devoid of sculpture. The antennal scape and legs reddish-brown, the posterior femora infuscated, in one specimen slightly bluish, the tarsi pale. The wings are hyaline, with a large brown blotch enclosing marginal vein and stigma; veins brown; the marginal vein about twice the length of the stigmal, the knob of the stigmal vein is toothed and the submarginal vein is interrupted by a pale ring at the juncture with the marginal vein. The abdomen is broad and flattened.

Hab.—Toronto, Canada. Described from three ♀ specimens sent me by Mr. Wm. Brodie, of Toronto, Canada, and bred by him from the cynipidous gall *Solenozopheria vaccinii* Ashm.

I have also reared hundreds of the same species from the same gall in Florida.

HALTICOPTERA Spinola.

44. **Halticoptera Brodiei** n. sp.—♀. Length .10 to .12 inch. Metallic greenish-blue; the face more or less green; the antennæ are brown, the scape and the legs pale brown or yellowish-brown. The thorax is granulately punctate without parapsidal grooves; the collar is very short, visible from above only as a sharp ridge. The sessile abdomen is long, pointed, ovate and is slightly brassy above at base. The wings are clear hyaline with pale yellowish veins, the marginal and postmarginal veins both long, the stigmal ending in a small knob and two-thirds the length of the postmarginal.

Hab.—Toronto, Canada. Described from three specimens reared by Mr. Wm. Brodie from the oak gall *Biorhiza forticornis* Walsh.

Tribe CLEONYMIDES.

TRIGONODERUS Westwood.

45. **Trigonoderus aegeriæ** n. sp.—♀. Length .12 inch. A brilliant golden-green, coarsely punctate species, with a large, somewhat triangular head, distinct parapsides and subsessile, flattened, rounded abdomen. The antennæ are placed slightly below the middle of the face rather slender, subelavate, with a black pedicel, markedly contrasting with the brown scape and flagellum. The scutellum has a deep, transverse groove near its tip, and is convexly rounded; the legs yellowish. The wings are hyaline, veins brown; the marginal vein is not particularly long, about the same length as the postmarginal.

A very handsome species taken on the leaf of a squash vine and supposed to be parasitic on *Melittia ceto* Westw., which was found boring into and destroying the vine.

Tribe SPHEGIGASTRIDES.

PACHYCREPIS Forster.

46. **Pachycrepis lachni** n. sp.—♀. Length .09 inch. A brilliant golden green, somewhat transversely sculptured species with violet reflections. The posterior coxæ are blue, the legs pale yellow, excepting a greenish or brown blotch on middle of posterior thighs. The color, differently colored legs, and its larger size will readily distinguish it from *Pachycrepis mesograpta* Ashm.

Described from three specimens reared from pine aphid *Lachnus australi* Ashm.

47. **Pachycrepis mesograpta** Ashm.

This species was reared last summer from syrphid pupæ *Mesograpta polita* Say.

PACHYNEURON Walker.48. **Pachyneuron syrphi** Ashm.

This species is my *Spalangia?* *syrphi* reared from a syrphid pupa *Syrphus philadelphicus*, and described some years ago in the "Canadian Entomologist." I gave the same name to another species last summer, but which is evidently distinct; that may be known as *syrphicola*.

Subfamily PERILAMPINÆ.

LAMPROSTYLUS Förster.

49. **Lamprostylus (?) floridanus** n. sp.—♂. Length .11 inch. Black, opaque, coarsely and deeply punctate, the face covered with white pubescence. The antennæ in structure is similar to the males in *Eurytoma* with whorls of long, white hairs. Eyes brown, scutellum large, elevated posteriorly. Wings hyaline, short, at apex full and round; the marginal vein is short, stout, the stigmal vein short. The abdomen is ovate, all the dorsal segments plainly visible, and nearly equal in length, the two ventral segments overlapping the two dorsal segments at sides, and is attached to the stout peduncle, apparently from the side, the butt end appearing above, the pointed end beneath, or like an egg standing on its point. All the femora, excepting at their tips, and the middle and posterior tibiæ, excepting tips, black; rest white.

Described from one specimen captured at large.

This interesting species shows very close affinity with the *Eurytominae*, and will help to bridge the barrier separating these closely related subfamilies.

Subfamily EURYTOMINÆ.

EURYTOMA Illiger.50. **Eurytoma gigantea** Walsh.

Syn. *Callimome Duckeri* Brodie.
Ormyrus elongatus Prov.

Four specimens of this interesting Eurytomid were identified from specimens sent to me by Mr. Wm. Brodie and reared from a dipterous gall *Eurosta solidaginis*. He informs me it is his *Callimome Duckeri* and *Ormyrus prolongatus* Prov. It varies greatly in size from .12 to .25 of an inch, but is known at once by its "compressed abdomen, unusually long and acutely porrect ventral valve and 9-jointed antennæ."

The male, which was unknown to Walsh, has also antennæ of distinctly 9-joints, which will at once separate it from all other known Eurytomid males in our fauna, but its abdomen is also compressed, very high dorsally and acutely emarginate at tip beneath, giving it a very peculiar shape.

51. **Eurytomus abnormicornis** Walsh.

A single specimen of this insect was captured at large here last summer. It is at once known by the abnormally lengthened third antennal joint.

52. **Eurytoma auriceps** Walsh.

Six specimens of this species were reared last summer from gall *Andricus rugosus* Ashm. It is easily distinguished by the dense, golden pubescence of the face.

53. **Eurytoma prunicola** Walsh.

This species varies greatly in the color of the abdomen; it has been reared from various galls.

54. **Eurytoma diastrophii** Walsh.

This species has been reared from *Diastrophus nebulosus* O. S., and *D. cuscutæformis* O. S. It seems to be a very distinct and constant species, although somewhat related to *E. prunicola*, but the abdomen is proportionally longer and not so broad vertically.

Dr. Mayr has given the same name to a European species in his "Arten der Chalcidier-Gattung Eurytoma durch Zucht erhalten," that species is also in my collection, but very distinct; and, as Mr. Walsh has priority, I propose the name *Eurytoma Mayri* for the European species.

55. **Eurytoma studiosa** Say.Syn. *Eurytoma lanulæ* Fitch.*Eurytoma phytes* Walk.*Eurytoma teredon* Walk.? *Eurytoma Bolteri* Riley.

I have followed Walsh in considering *Eurytoma Bolteri* Riley, synonymous with this species, but it seems to be a much larger and distinct species, and I am inclined to believe it distinct, but cannot surely tell without seeing specimens. Mr. Howard's *Eurytoma funebris* seems also to be closely related to *studiosa*; I can find no character in his description to separate them. Mr. Walker's description of *E. phytes* and *E. teredon* agree, and Dr. Fitch's *E. lanulæ* is certainly *studiosa*, for I have reared it from the same oak gall from which his type came, and besides his description can only apply to this species. I have reared it from several galls.

56. **Eurytoma maculipes** Ashm.

This species was described by me as a *Decatoma*; it is a much more slender form than *E. studiosa*, the abdomen is twice as long as thick through vertically and the ventral valve is not prolonged to a point. Two specimens agreeing very closely with my type were received from Canada.

57. **Eurytoma californica** n. sp.—♂ ♀. Length .12 to .20 inch. Black, robust, similar in form to *Eurytoma obtusiloba* Ashm. Like *E. auriceps* Walsh, the face is covered with a golden pubescence, becoming in the female a dirty white, or white on the thorax and abdomen, in the males brownish; the abdomen, too, is similar to that species in shape, but the fifth and following segments are fringed with white hairs, and all the femora in the middle and all the tibiæ, excepting sometimes the anterior pair are brown or black in the middle. The posterior coxæ are always black, but the others are generally brown. The antennæ in the female are 9-jointed; in the males but 8-jointed, the 9th not being distinctly separated, the first flagellar joint is very large and broad, and the others are gradually narrowed, with whorls of long hairs, the terminal joint is equal in length with the third. The wings are hyaline, the veins thick and of a brown color; the stigmal vein is short, about half the length of the marginal vein.

Hab.—Los Angeles, California. Described from several specimens reared from the oak gall *Andricus pomiformis* Bass.

This species could only be confounded with *E. auriceps* Walsh, but its large size, color of the legs and antennal characters will at once separate it.

58. **Eurytoma sculpta** n. sp.—♀. Length .12 inch. In this species the abdomen is short, stout, not compressed or but slightly, nearly as broad vertically or when viewed from the side as long, with ventral valve pointed and long, the whole surface is sculptured and the fifth at sides and following segments pubescent. The posterior femora are brown or black.

Described from four specimens. This species approaches nearest to *Eurytoma punctiventris* Walsh.

59. **Eurytoma solenozopheriæ** n. sp.—♂ ♀. Length .08 to .10 inch. Black, less coarsely punctured than usual, face and thorax covered with a silvery gray pubescence. In shape it somewhat resembles *E. studiosa* Say, but the black, polished abdomen is much more compressed, and the projecting valves longer, and its tip is only slightly pubescent. The antennæ are brown-black, excepting scape at base, which is pale; in outline the antennæ are subclavate, 8-jointed, the joints of club not distinctly separable, the joints of flagellum are rounded, the first being slightly longer than broad. The legs are brownish-yellow, the posterior femora brown or black, excepting tips and a brown line on anterior and middle pairs, and on all the tibiæ, excepting the anterior pair in the male. The peduncle of the male is very long, as long as the anterior femora.

Hab.—Toronto, Canada. Described from specimens sent me by Mr. Wm. Brodie, and reared from the cynipidous gall *Solenozopheria vaccinii* Ashm.

Its finer punctured surface, denser pubescence, large peduncle in the ♂, differently colored antennæ and legs, will readily distinguish it from *E. studiosa* Say, to which it shows affinity

DECATOMA Spinola.

60. **Decatoma querci-lanæ** Fitch.

Syn. *Spalangia querci-lanæ* Fitch.

Decatoma hyalipennis Walsh.

Var. *Spalangia dorsalis* Fitch.

Decatoma simplicistigma Walsh.

Dr. Fitch, in his "Fifth Report on Noxious and other Insects of New York" described a chalcid reared from his oak gall *Cynips lanæ* = *Andricus flocci* Walsh, which he called *Spalangia querci-lanæ* and a variety of it *dorsalis*, which I am satisfied is nothing but a *Decatoma*, as from this same gall I have reared nothing but *Decatoma*, two varieties agreeing in all particulars with this so called *Spalangia*, and which I shall show were afterwards described by Mr. Walsh as two distinct species, reared from galls on the white oak.

Let us compare descriptions in parallel columns:

Spalangia querci-lanæ Fitch
Length .08 to .10 inch.

Black, with the face, antennæ, sides of collar, whitish or greenish-yellow. Its cubital head, which is about as long as wide indicates its relationship to *Spalangia*, though in some respects it does not appear to fully coincide with the characters assigned to this genus. The abdomen is smooth and polished, its underside of a tawny red color, and is separated from the thorax by a pedicel.

Legs whitish or greenish-yellow. Some individuals have the upper side of the hind thighs and of the first joint of the antennæ, black.

Decatoma hyalipennis

Walsh. Length ♂ .08 inch.

♂. Black. Head subopaque, confluent and very coarsely punctate; orbits, narrowly interrupted above; the face below the antennæ, cheeks and mouth pale yellow. Antennæ dull yellow. Collar pale yellow, except a wide dorsal vitta. Wing scale and a longitudinal line above it, pale rufous. Abdomen highly polished, *picous* below. Peduncle two-thirds as long as rest of abdomen.

Legs pale yellow, basal two-thirds of the head, coxæ and a patch above on the middle of the hind femora, black.

The *stigma* of its forewing is a semi-circular, *black*, shining spot with a small appendage on the inner side of its hind end and its base slightly separated from the robust subvein, which vein is of a *dark* or black color.

Spalangia dorsalis Fitch.

Specimens frequently occur so very different in their colors that they might be deemed a distinct species. They may be termed the line-backed variety *dorsalis* of the oak wool parasite. In them the thorax is pale greenish-yellow with a black stripe along its middle, and the abdomen is yellow, with the back black, and commonly with black bands upon its sides.

Wings hyaline; veins brown; *stigma black*. No vestige, whatever, of any stigmatic cloud or patch.

Decatoma simplicistigma

Walsh.—♂ ♀. Pale ochre yellow. Head subopaque, confluent and very coarsely punctate; disk of the occiput, ocelli and which is rarely (1 ♂ 1 ♀) confluent by a narrow tongue with the occipital spot, all black. Antennæ with the flagellum slightly obfuscated above. Thorax sculptured as the head, but still more coarsely. Collar rarely (1 ♀) with a narrow dorsal black line; mesonotum with a more or less slender dorsal black triangle, the base of the triangle usually starting from the suture behind the collar, sometimes from the hind part of the collar, and the apex of the triangle approaching more or less nearly, but never quite attaining the scutel. Occasionally on each side of this black triangle two or three black dots are placed in the suture behind the collar. On the scutel a more or less wide dorsal black line not quite attaining its tip. Very rarely (1 ♀) the entire mesonotus is immaculate, mesothorax always with a more or less wide dorsal black line, which is almost always prolonged in a curve behind the mesothoracic scutel to the origin of the front wing. Abdomen highly polished, with the peduncle ♂ ♀ as in *varians*, the yellow color often merging more or less into rufous. Peduncle above and below, a dorsal, a dorsal line not attaining the tip, which generally expands upon each suture into a lateral tooth, and is sometimes dilated into one large dorsal patch, all black. Legs immaculate, but the suture at the origin of the hind coxæ is black. Wings hyaline; veing brown; stigma black; no vestige of any stigmatic cloud or patch. Length ♂ .06-.11 inch, ♀ .08-.11 inch.

Mr. Walsh's descriptions are very full and accurate, but I think a comparison with Dr. Fitch's will convince any reasonable person that all these species are the same; in my mind there is no doubt, for I have reared the species from the same galls as Dr. Fitch and Mr. Walsh, and from many other galls, and the species cannot be separated. It is a very variable species.

61. **Decatoma varians** Walsh.

This is also an extremely variable species, occurring in various galls, but may always be distinguished from *D. quercu-lanæ* by having a distinct stigmatic cloud. Very many others of the so called species in this genus will probably have to be placed as varieties here.

62. **Decatoma nubilistigma** Walsh.

Mr. Brodie has sent me three specimens of *Decatomæ* reared by him from *Solenozopheria vaccinii* Ashm., which cannot be separated from this species.

ISOSOMA Walker.

63. **Isosoma hordei** Harris.

Syn. *Decatoma basilaris* Prov.

L'Abbe Provancher's type of this species was sent to me along with other chalcids, but it would hardly have been necessary to see type to correct the synonym, for besides his description agreeing with *hordei* in speaking of the ♂ he says: "Les antennæ ornees de verticelles de longs poils blancs." The ♂ antennæ in *Decatoma* are always simple, same as the ♀.

This species is very closely related to the European species *Isosoma graminis* Giraud. As Mr. Walsh has shown it varies greatly in the color of the legs.

In my *Isosoma gigantea* rather inappropriately named, for it is by no means as large as many others in the genus, the stigmal vein is distinctly longer than the marginal vein, a character laid down in Mr. Howard's excellent "generic synopsis" for the genus *Systole* Walk., but the metathorax is gradually sloping, and in shape, etc., it does not differ from typical *Isosomæ*.

Subfamily TRIDYMINÆ.

METASTENUS Walker.

64. **Metastenus (?) acanthocini** n. sp.—♂ ♀. Length .15 to .25 inch. Black, opaque, coarsely granulately punctate, and sparsely covered with short white hairs. The head is rather broad, with antennal depression; eyes brown;

antennæ 10-jointed, inserted on middle of face, rather slender, scape long, pale brown, flagellum black, or brown-black, with two ring joints. The parapsides are obsolete. The abdomen is sessile, and in the female very long and acuminate, projecting considerably beyond the tips of the wings when they are folded over the back; it has a metallic lustre. The legs are pale yellowish-brown with the femora dark brown. Wings hyaline; veins brown, the marginal twice as long as the stigmal, the latter clavate; the postmarginal is slightly longer than the stigmal. The male is very much smaller than the female, with a short ovate abdomen and dull rufous antennæ, and I can detect but one ring joint.

This rare and curious species is described from ten individuals reared from the larva of a beetle *Acanthocinus obsoletus* Oliv., which is found boring into pine, and I have reared in all its stages.

Eighteen of the chalcid larvæ issued from a single larva of the beetle and transformed, without spinning cocoons, into pupæ; these I placed in a separate box with some loose mold. In three or four days (I watched them every day) I noticed they began to show signs of drying up on account of the mold becoming dry, so from that day for three weeks I sprinkled, twice a day, a few drops of water over them and kept them in as moist and healthy a condition as possible.

On the eighteenth day my labor was rewarded with my first fly, and for some days afterwards with others and I succeeded in rearing ten perfect specimens from eighteen pupæ.

Subfamily SPALANGINÆ.

SPALANGIA Latreille.

65. **Spalangia drosophilæ** n. sp.—♀. Length .08 inch. Blue-black, shining. The oblong, flattened head is covered with coarse, *distant* punctures, with a longitudinal median groove and a triangular projection at tip, sparsely pubescent. The 10-jointed antennæ issue from the extreme tip of the head; the prothorax is elongated; the scutellum has a transverse row of punctures posteriorly near the tip; on the metathorax are two lateral longitudinal grooves and on its disk a double row of coarse punctures confluent behind; the abdominal petiole is moderately long; the legs are clavate, black, pubescent, with pale or reddish tarsi; the wings are hyaline, with a rather long marginal and a short curved stigmal vein.

Described from one specimen bred from the larva of a Dipteron *Drosophila* species.

This species seems to agree very closely with the Proctotrupid genus *Synarsis* Förster.

Subfamily ELACHISTINÆ.

EUPLECTRUS Westwood.66. **Euplectrus leucotrophis** Howard.

A single specimen of this species was reared from an unknown noctuid larva.

67. **Euplectrus Comstockii** Howard.

Twelve specimens of this species were reared from an unknown larva last summer; the whole interior of the larva was honey-combed with their cocoons, the dorsal skin being held over them by silken threads.

STENOMESIUS Westwood.

68. **Stenomesus harrisinae** n. sp.—♀. Length .10 inch. Head, antennæ, legs, thorax and abdomen honey-yellow, joints of flagellum dusky. Thorax rugose, with golden-brown and yellowish; the collar somewhat conical rounded before; parapsides distinct; the scutellum is rugose and has two parallel grooves on its disk, and is of a decided gold-brown. The abdomen is ovate, pedunculate, and infuscated with brown. The wings are hyaline; veins brown, the marginal vein very long.

Described from one specimen bred last summer from the pupa of *Harrisina Americana* Harris.

Subfamily EUTEDONINÆ.

ASTICHUS Forster.

69. **Astichus auratus** n. sp.—♀. Length .05 inch. Head and thorax bright golden-green, scaly; eyes brown. Antennæ blue-black with whorls of long hairs, the scape yellowish. The abdomen is oval, with a short peduncle, and is bluish or cupreous. The legs are honey-yellow, with the femora dusky or brown. Wings hyaline, ciliated, with yellowish veins; the stigmal vein is short, knobbed, and there is no postmarginal.

Described from three specimens reared from oak gall *Neuroterus minutissimus* Ashm.

HOLCOPELTE Förster.70. **Holcoperlte flavipes** Ashm.

Syn. *Elachistus flavipes* Ashm.

This species was described in my last paper under the genus *Elachistus*, but belongs, as my description plainly shows, "scutellum with a median longitudinal groove" here.

71. **Holcoperlte violacea** n. sp.—♀. Length .08 to .09 inch. In statue this species is similar to *H. flavipes*; smooth, but of a uniform violet color, and only slight cupreous reflections on head, scapulæ and base of abdomen. The

legs are pale, almost white, with antennæ, excepting scape, black. The wings are hyaline, and the marginal vein very long, occupying two-thirds the length of the wing, the stigmal vein a mere dot. The scutellum has but one groove down its centre.

Described from three specimens reared from a Tineid larva living in the wooly galls of *Andricus flocci* Walsh. These two species are the only ones known in this country.

ENTEDON Dalman.

72. *Entedon diastata* Howard.

Several specimens of this species were reared from a dipterous leaf-mining fly *Diastata* sp. mining in corn leaves; last summer.

73. *Entedon Herillus* Walker.

Several specimens of an *Entedon* agreeing almost exactly with Mr. Walker's description of this species in Ann. Mag. Nat. Hist. vol. xx, p. 23, were reared by me last summer from the pupa of *Desmia maculalis* Westw.

74. *Entedon aphidiphagus* n. sp.—♀. Length .08 inch. Head, thorax, scutellum, metathorax and metapleuræ, cupreous, rest of the body blue-black, although there is a slight metallic lustre to the abdomen above, and in one specimen slightly to the legs. The tarsi are white; wings hyaline.

Described from two specimens reared from the orange aphid *Siphonophora citrifolii* Ashm. It seems to be very distinct from all the others in our fauna and easily recognized.

Subfamily EULOPHINÆ.

SYMPIESIS Forster.

75. *Sympiesis flavipes* Ashm.

Three additional specimens of this species were reared last summer from a rose gall. The type was taken at large.

Subfamily TETRASTICHINÆ.

EUDERUS Haliday.

76. *Euderus elongatus* n. sp.—♀. Length .09 inch. Slender, elongate, blue-black, with dull metallic green, scaly thorax and scutellum. The vertex of head is transversely acute and the front deeply grooved for the reception of the antennæ. The antennæ (8-jointed?) dark brown, scape pale. The parapsides very distinct; tips of tibiæ and tarsi white, excepting the last apical tarsal joints, which are brown. The abdomen is sessile, elongate-ovate and blue-black. Wings hyaline; veins yellowish.

Described from one specimen.

CERANISUS Walker.

77. **Ceranismus flavipes** Ashm.
Syn. *Tetrastichus flavipes* Ashm.

This species was described by me under the genus *Tetrastichus*; it was reared from oak gall *Holcaspis ficigera* Ashm.

78. **Ceranismus flaviceps** Ashm.
Syn. *Tetrastichus flavipes* Ashm.

This was also described as a *Tetrastichus*.

79. **Ceranismus lecanii** Ashm.
Syn. *Tetrastichus lecanii* Ashm.

This species was reared from a coccid *Lecanium* species and described by me under the old genus *Tetrastichus*.

80. **Ceranismus flavopictus** n. sp.—♂ ♀.—Length .07 inch. The male is almost entirely yellow, with eyes, blotch on mesonotum, sides of scutellum and tips of abdomen above, brown. In all these species the grooves are as in genus *Tetrastichus*. The scape is slightly dilated and grooved, flagellum with long hairs, antennæ apparently 9-jointed. Wings hyaline, ciliated. In the female the antennæ are clubbed, shorter, and without long hairs on flagellum; there is a brown blotch on fore part of the collar and the whole abdomen is brown.

Described from two specimens captured at large.

BARYSCAPUS Förster.

81. **Baryscapus centricolæ** n. sp.—♀. Length .12 to .14 inch. A large black species with a slight metallic lustre. This does not differ greatly from species in genus *Tetrastichus*, excepting the antennæ is 8-jointed (scape, pedicel, 3 flagellar joints, 3 club joints), the scape is short, broad, the pedicel narrow and the first flagellar joint long. The abdomen is widened behind, truncate. The legs are black, excepting tips of femora and tips of hind tibiæ and a blotch on anterior and middle tibiæ, rest honey-yellow.

Hab.—Asheville, N. C.

Described from two specimens reared from oak gall *Holcaspis centricola* O. S.

HYPERTELES Förster.

82. **Hyperteles blastophagi** n. sp.—♂ ♀.—Length .03 to .04 inch. Blue-black in males or with greenish reflections in females. The vertex of head is sharp. Antennæ in ♂ brown with long hairs, in ♀ shorter, without hairs and clubbed. The thorax has a faint median groove and the scutellum has the usual two grooves on disk. The legs are pale yellowish, in some specimens almost white, with all the femora, except at both ends, brown or black. Wings hyaline, bordered with very short ciliæ.

Described from eighteen specimens bred from oak gall *Andricus blastophagus* Ashm.

83. **Hyperteles neuroteri** n. sp.—♂ ♀. Differs from the other species only in being black and in having black femora and a streak on tibiae. Length .03 inch.

Described from three specimens reared from oak gall *Neuroterus atomus* Ashm. MS.

84. **Hyperteles flocci** n. sp.—♂ ♀. Length .06 to .10 inch. Differs from the other species in its larger, stouter form; in color, varying from a dark greenish-blue to an æneous-green, in having all the femora blue or green, excepting tips, and in having a large blotch in middle of posterior tibiae and sometimes, not always a blotch on anterior and middle tibiae.

Described from several specimens reared from oak gall *Andricus flocci* Walsh.

TETRASTICHUS Haliday.

85. **Tetrastichus floridanus** n. sp.—♂ ♀. Length .08 to .10 inch. Differs from *Tetrastichus racemariae* Ashm., in lacking the middle groove on thorax and in having brown antennae and pale brown, immaculate legs. The antennal scape is also pale.

Described from numerous specimens taken at large. This species might easily be separated into a distinct genus by the absence of the mesonotal groove under the name *Tetrastichodes*.

86. **Tetrastichus californicus** n. sp.—♀. Length .08 inch. This species is entirely shining black, with metallic lustre, has a distinct median groove on thorax, the usual two grooves on scutellum, black femora, brown blotch on tibiae and a black flagellum.

Hab.—Los Angeles, California. Described from a specimen reared from oak gall *Andricus pomiformis* Bassett.