

**Synonymic and Descriptive Notes on the Chalcidoid
Family TRICHOGRAMMATIDÆ with Descrip-
tions of New Species.**

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These synonymic and descriptive notes form another lot of matter which I wish to eliminate from a revision of the family now in preparation. In another paper I described some new genera which it was necessary to establish but my final revision of the genera has not been definitely formed as yet. Thus *Pentarthron* Riley I may finally decide to combine with *Trichogramma* Westwood; and *Westwoodella* Ashmead with *Oligosita* Haliday. Several new species in both of these questioned genera are described in this paper. *Pentarthron minutum* (Riley) I have left untreated until later as I have not decided as yet just what its limiting specific characters are; it is very widely distributed, variable and has a great number of hosts scattered over several orders of insects. In regard to *Trichogramma* Westwood I must confess that I do not know what it is excepting what may be known by consulting Westwood's original and revised descriptions of it and what I have learned indirectly concerning it.

Besides these few points, there is another in regard to the value of the two subfamilies and the distribution of the various genera among them.

It will be noticed in the descriptive matter following that for specific characters wing ciliation, relative width and length of the wings, the form of certain antennal joints, habitus and the like have been relied upon more and more and general coloration, unless very marked, less and less so that coloration here takes minor rank in most instances as a specific character. This is so because the other characters are more stable and more easily distinguished. In certain genera, notably *Pentarthron* Riley (*minutum*), there exist what are undoubtedly biological species but I do not consider them of importance when viewed from a strictly systematic standpoint; in practice they are not perceivable as systematic units; nevertheless, I think they must be viewed as potential systematic units.

JAPANIA genus novum.

Normal position.

A genus resembling *Lathromeris* Foerster in general appearance but differing in having two distinct funicle joints in the antennæ; more closely allied with *Ufens* Girault and *Ittys* Girault, differing from the former in having the funicle distinctly divided into two subequal joints, combined smaller than the pedicel, in having a conic-ovate abdomen as long as the head and thorax combined and more slender fore wings without peculiarly distinct lines of cilia, the discal ciliation moderately dense, arranged in regular lines none of which, however, are conspicuous as in *Ufens*; also from the last named genus indirectly in having no sexual antennal dimorphism. From *Ittys* this genus differs in the decidedly shorter marginal vein of the fore wing, in the less sharpened and shorter abdomen, in the shorter marginal ciliation of the fore wing and in its much smaller build in general.

Female.—Body slender. Tarsi 3-jointed. Pubescence of fore wings arranged in regular lines. Venation straight. Ovipositor not exerted. Antennæ 8-jointed—scape, pedicel, one ring-joint, 2-jointed funicle and 3-jointed club, the latter cylindrical-ovate, long, the first funicle joint nearly twice the size of the second, the pedicel longer than their combined length; ring-joint distinct. Fore wings convexly rounded at the apex, the marginal ciliation moderately short, the discal ciliation uniform and moderate in density, the oblique line of cilia running back from the stigmal knob present, consisting of about six cilia; at their widest portion, the fore wings with about fifteen lines of discal cilia. Submarginal vein two and a half times longer than the marginal, widening distad where it breaks nearly to the width of the marginal vein, the latter short, straight, rather thick, slightly longer than the stigmal vein which is moderately strong, moderately long, terminating in an ovate knob with an acute uncus pointing distad projecting from its distal margin at the middle; its neck short, slender. Posterior wings without the usual discal cilia at the edges, with three longitudinal lines of them within, the first (cephalic) two side by side near the cephalic margin,

equal, the third near to the caudal margin, its cilia farther apart in the line. Marginal cilia of the caudal margin of the posterior wings longer than the greatest width of that wing. Abdomen pointed-ovate, from lateral aspect slender, somewhat longer than the rest of the body, sessile, acute at tip, the ovipositor not exerted. Legs normal, the caudal femora somewhat thickened, the tibial spurs single, short, apparently absent on the cephalic legs, the tarsal joints all short.

Male.—The same but differing in having parallel sides to the abdomen which is regularly ovate, stout and obtuse at tip; antennæ the same but the pedicel is shorter, the funicle joints longer. Pubescence of antennæ consisting of sparse, moderately long setæ of which several shorter ones project from the tip of the club.

Type.—*Japania ovi* species nova, described beyond.

1. **Japania ovi** species nova.

Normal position.

Female.—Length, 0.50 mm. Blackish to dusky yellowish, variable, the cephalic aspect of the head yellow; coxæ, intermediate and caudal femora dusky yellowish; cephalic femora, the trochanters, the tibiæ and tarsi pallid yellowish, the antennæ somewhat darker yellowish; wings hyaline, the venation dusky yellowish; tip of abdomen yellowish. Body suffused with yellowish. Middle club joint of antenna as long as the terminal joint, the proximal club joint short.

From 2 specimens, $\frac{2}{3}$ -inch objective, 1-inch optic, Bausch and Lomb.

Male.—The same, only the body is dusky yellowish throughout.

From 2 specimens, the same objective and optic.

Described from two males and two females received from Mr. George Compere of the Horticultural Commission of California through the courtesy of Dr. L. O. Howard, mounted on two slides labelled "15,032" and stated by Dr. Howard (*in litt.*, October 19, 1910) to have been reared from leaf-hopper eggs on banyan in China.

Habitat.—China.

Types.—Type No. 13,626, United States National Museum, Washington, D. C., 2 ♂'s, 1 ♀ in xylol-balsam, 1 slide.

Cotypes.—Accession No. 44,185, Illinois State Laboratory of Natural History, Urbana, 1 ♀ in xylol-balsam.

Genus **PENTARTHON** Riley.1. **Pentarthron euproctidis** species nova.

Normal position.

Fore wings slightly fumated proximad ; posterior wings without three complete lines of discal cilia ; oblique line of cilia running back from the stigmal vein long, with from 6 to 10 cilia, usually 7 ; males winged.

Female.—Length, 1.15 mm. ; large for the genus. Similar in general to the other species, especially *minutum* Riley, but averaging distinctly larger and differing in the following particulars: The discal ciliation of the fore wing is somewhat denser ranging from 15 to 18 longitudinal lines across the widest portion of the wing blade and the oblique curved line of discal cilia leading back from the stigmal knob is nearly complete, that is, nearly joins a complementary or reciprocal line to form a v-shaped line of cilia and contains from 6 to 10 cilia, usually 7 ; in the posterior wings the cephalic longitudinal line of discal cilia contains from 6 to 8 cilia while the caudal line is three-fourths complete, or is noticeably longer than in *minutum* and noticeably incomplete as compared with *semifumatum* ; it would require two or three more of the cilia to be complete. General color variable, from pale cadmium yellow to dusky, but usually the thorax pale cadmium yellow, the abdomen dusky, contrasting somewhat, the head nearly concolorous with the thorax with the face pallid, contrasting sharply in some instances, the antennæ concolorous with the thorax, the legs the same but more pallid ; eyes bright red ; fore wings slightly fumated as in *minutum* ; the venation dusky yellowish ; the apical tarsal joint dusky. Antennæ nearly similar to those of *minutum*, the two funicle joints subequal, slightly longer than wide, both united subequal in length to the pedicel which is obconic ; the solid club is usual, subequal to the usual scape ; ring-joint normal. Mandibles with three principal teeth which are subequal and apparently several very minute ones between them.

From 69 specimens, $\frac{2}{3}$ -inch objective, 1-inch optic, Bausch and Lomb.

Male.—The same, but the face is pallid more often, concolorous with the legs and contrasting with the rest of the body ; the antennæ are usual consisting of a scape, pedicel, one ring-joint and an indistinctly 3-jointed funicle-club bearing the usual long, whorled hairs ; the two segments of the funicle are not actually articulated, but the articulations are indicated by slight but distinct constrictions between the club and distal joint and between the two joints themselves ; taken together they are somewhat shorter than the outline of the club itself, but each is distinctly longer and broader than the pedicel. The tarsi are not shortened as in apterous males and this sex is not smaller than the female.

From 39 specimens, same objective and optic.

Described from the following specimens from the collections of the Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C., received through the kindness of Dr. L. O. Howard: Eleven balsam slides bearing 6 ♂'s, 19 ♀'s labelled "2006. Gypsy Moth Parasite Laboratory. European species," and bred from parents reared from imported egg-masses of the brown-tail moth, *Euproctis chrysorrhæa* (Linnæus) from Europe, 4th generation; 3 balsam slides bearing 7 ♂'s and labelled "1869 B. Gypsy Moth Parasite Laboratory," reared from the parents of the preceding, 3rd generation. Also 2 balsam slides from the National Bureau of Entomology collection labelled "9309^o. *Trichogramma pretiosa* Riley. From tortricid (?) eggs on *Polygonum*. D. C. August 29, 30, 1900", bearing 3 ♂'s, 9 ♀'s and 15 ♂'s, 13 ♀'s respectively; 3 balsam slides labelled "from lepidopterous eggs, Bloomington, Illinois, August 20, 1910, A. A. Girault. *Pentarthron euproctidis*; *P. minutum*." Of the former, 1 ♂, 2 ♀'s; 3 ♀'s and 1 ♀ respectively; miscellaneous moth eggs. One slide bearing 1 ♀ labelled "U. S. N. M. specimen, Washington, D. C. Remounted from a tag." Another slide bearing 2 ♂'s, 12 ♀'s from U. S. N. M. collection labelled "Lepd. eggs on oak, Oct. 16, '83." Remounted in balsam from tagmounted specimens. And 2 balsam slides received from Mr. George Compere of the Horticultural Commission of California through Dr. L. O. Howard, labelled "No. 15,052" and "No. 15,068" and respectively stated by Dr. Howard (*in litt.*, October 19, 1910) to have been reared from a cluster of moth eggs (4 ♂'s, 8 ♀'s) and to have been captured while resting on a cluster of moth eggs (1 ♂, 1 ♀) respectively, in Japan.

Habitat.—Europe; United States (District of Columbia; Bloomington, Illinois; Massachusetts—(imported from Europe); Japan. Here we have a species imported from Europe to the United States a year or so ago but which was evidently already here.

Types.—Type No. 13,627, United States National Museum, Washington, D. C., 2 ♂'s, 1 ♀, 1 slide (G. M. L. 2006),

Europe. *Cotypes*.—Accession No. 44,190, Illinois State Laboratory of Natural History, Urbana, Illinois, 1 slide, 1 ♂, 1 ♀ (G. M. L. 2006), Europe.

This species may be the same as *carpocapsæ* Ashmead (Schreiner) but I have no means of telling because of the inadequate description and grotesque illustration of that species. To say that it is as bad or worse than to say that it isn't and I think most is to be gained by considering it quite distinct. So far as may be told from the description of *carpocapsæ* it is different, but if Schreiner's figure is indicative of the character of his description the latter must be untrustworthy. I am more concerned to know whether it may not be an extreme variation of *minutum* Riley.

2. **Pentarthron semblidis** (Aurivillius).

Oophthora semblidis Aurivillius, 1897, pp. 253-254, tafl. 5, figs. 1, 2, 3 and 3 a and 4-10.

Oophthora semblidis Aurivillius—Silvestri, 1908, pp. 72-83, text-figures.

(*Oophthora*) *Pentarthron semblidis* (Aurivillius)—Girault, 1910, p. 275.

This European species is so closely allied with the type species of the genus—*minutum* Riley—that the only distinct differentiating character which I am able to detect, other than habitus, is the presence of dimorphism in the male. It is true that the specimens which I have seen are nearly all dark and uniform in color but the great variation in color of the type species makes this character in *semblidis* of little specific value. The species was originally described as the type of a new genus—*Oophthora* Aurivillius—and is very accurately figured. The figures accompanying the original description of the species are unusual for the faithfulness in showing details but they do not show the obvious infuscation of the fore wings.

From what may be called paratypic specimens—being two slides bearing all forms of the species probably selected from the same series from which the original description was drawn and possibly the actual specimens (no types were deposited or mentioned by the describer) I add the following descriptive details :

There is no sexual color dimorphism; the coloration of the specimens is fuscous or brown, the legs, antennæ and venation being somewhat clearer, the tibiæ and tarsi usually pallid but not abruptly so, there being no marked contrast in colors; the fore wings are slightly infuscated at their proximal halves as in *minutum* and they bear about the same number of longitudinal lines of discal cilia as in that species, and about the same number of discal cilia in the oblique line running back from the stigmal vein, namely, usually 5, but ranging from 4 to 6*; the venation of the fore wing is not different from that in the type species nor is the marginal ciliation, though usually here the fringes are somewhat longer and less abruptly, more gradually change in length from the cephalo-distal margin to the caudo-distal margin; but in *minutum* also this change is gradual but, in general, less so than in this species. The discal ciliation of the posterior wing differs from that of *minutum* but very slightly, the cephalic and posterior longitudinal lines having a tendency to be longer by one cilium but this is not a reliable differentiating character. The antennæ of the female are similar to those of *minutum* as are those of the winged male similar to those of the male of *minutum*, but those of the wingless male are quite different from any known male antenna of the genus being very similar to those of the female but the club-joint has parallel sides and is relatively longer, not obliquely truncate along one side of the apex as in the female. The tibial spurs are single, apparently absent on the cephalic legs and inconspicuous on the intermediate legs; the tarsal joints of the wingless males are noticeably different from those in the winged forms, both males and females, being much shorter especially in the cephalic and intermediate legs. The mandibles are tridentate. The figures of the species given by Aurivillius are as correct as drawings will allow, with the exception noted above.

These descriptive notes were taken from the specimens before mentioned on two slides labelled in the handwriting of Aurivillius as follows: "*Oophthora semblidis* Auriv. Blidö, 1896." and consisted respectively of 3 apterous males, 1 alate male, 15 females and 3 apterous males, 1 alate male and 14 females. They were obtained through the ready kindness of Dr. L. O. Howard to whom they were sent by Aurivillius. I have found other specimens on a slide also obtained from the collections of the National Bureau of Entomology through Doctor Howard and labelled "*Trichogramma minutum* Riley. Egg-parasite of *Chauliodes*. July

* In the right fore wing of one specimen I have seen as many as 7, which number was sufficient for the line to reach the discal ciliation; the left wing had but five.

1900, Saranac, N. Y. J. G. Needham'' and bearing 6 apterous males and 7 females. I am unable to distinguish these specimens from the others labelled *semblidis*; hence the species occurs in the United States.

In regard to the apterous males it may be recalled that Riley once mentioned brachypterous specimens of *minutum* (Riley, 1885, *Trichogramma pretiosa*) but later Girault (1907 a) showed that these were simply imperfect specimens with the wings as yet unfolded, or at least showed that the existence of these so-called brachypterous specimens may have been thus explained. This naturally leads to the question whether the apterous males of *semblidis* or *retorridum* may not be these imperfect males, which having been killed too soon after their emergence as adults to allow for the time necessary under some conditions for the unfolding of the wings, appear to be wingless; but with these two species this can hardly be so because (1) the antennæ of all such males are different, a correlation; and (2) the wings are very minute, barely indicated, not large as is the case where development has been mechanically arrested.

Subsequent to its original description, this species has attracted very little attention not being noticed systematically; however, Silvestri (1908) has given us a very valuable and thorough study of its development.

In this connection I have forgotten to mention that the apterous males are not very much smaller than the winged specimens, not minute as with the apterous males of the species *retorridum*. Of the specimens mentioned above, the nineteen on the first slide listed have been deposited in the collections of the Illinois State Laboratory of Natural History and given the accession number 44,188.

3. *Pentarthron semifumatum* Perkins.

This species very recently described by Perkins in the current volume of *Fauna Hawaiiensis** is the only well-marked species of the genus but even at that is subject to some confusion with the type species on account of the fact that the

* I have merely seen the proof of this paper. It had not been published up to December, 1910.

latter may sometimes have the fuscation of the fore wings as intense as it occurs usually with this species and may be as black as this species. But *semifumatum* may be distinguished at once from the fact that the posterior wings have three complete lines of discal cilia.

As its name indicates, the fore wings of this species are deeply and distinctly fumated at their proximal half which contrasts with the remaining clear portion of the wing. It is true other species have some fuscation but with them it is slight not noticeable casually and has usually been omitted in descriptions.

From specimens hereinafter listed I draw the following additional descriptive details :

Similar to *minutum* Riley but the wings have the following structural characteristics—the oblique curved line of discal cilia running back from the stigmal vein contains from 7 to 9 cilia and is long and complete, that is joins the proximal extension of the discal ciliation and joining a complementary or reciprocal line running disto-caudad forms a v-shaped ciliated line like a broad upper portion of the Greek letter upsilon; besides the deep fumation this is the characteristic borne by the fore wing; the posterior wing has three complete lines of discal cilia, the intermediate one as usual being the more prominent. Otherwise I am unable to distinguish the species from *minutum*. The ovipositor is slightly more prominent; the antennæ are similar, the ring-joint perhaps less distinct but not enough so as to be characteristic. The males are smaller, with the usual male antenna, winged and more variable as to general coloration, both the head and thorax being liable to be sordid yellowish, the body to be shorter, more compact, robust, especially noticeable in the shorter tarsal joints. In both sexes the single tibial spur of the posterior legs, and also the intermediate legs, is large, the cephalic tibiæ apparently spurless. The ovipositor is slightly larger than usual, so as to seem somewhat top-heavy.

The foregoing notes taken from two slides of specimens received in alcohol from Dr. D. T. Fulloway and mounted in balsam. They were labelled as follows: "No. 1-1910. Egg-parasite of *Phlegethontius cingulata* on sweet potato. Honolulu. 11. iv. 10.", 6 ♀'s and 2 ♂'s, 2 ♀'s respectively. The slide bearing 6 ♀'s has been deposited into the collections of the Illinois State Laboratory of Natural History and given the accession number 44,189.

4. *Pentarthron brasiliense* Ashmead.

Pentarthron brasiliensis Ashmead, 1904, p. 521.

Pentarthron brasiliense Ashmead—Schmiedeknecht, 1909, p. 487.

This species belongs to this genus. I have made the following notes from the type specimen in the United States National Museum collection :

Fore wings as in *Pentarthron* Riley as far as venation is concerned but not as large, shorter, more rounded, the apical margins nearly circular in outline, the marginal fringes moderately long, about three times longer than is usual to the genus ; discal ciliation of the fore wing in distinct lines, about twelve lines across the widest part of the wing, the lines not very close together, the oblique line of cilia running back from the knob of the stigmal vein absent ; fore wing slightly fumated from the base out as far as the middle of the marginal vein. Posterior wings with the marginal fringes of the caudal margin much longer than the marginal fringes of the fore wing and with at least one principal line of discal cilia, nearer the cephalic margin, the other two lines usually present in the genus, here absent. Ovipositor not exerted. Parapsidal furrows complete, widely separated. Antennæ—scape, pedicel, one ring joint, two funicle joints and a solid club. Sculpture of the body inconspicuous ; body smooth. Caudal margin of the mesoscutum acute at the meson, its sides oblique and straight. Antennæ normal ; pedicel long-obconic, about twice the united length of the two funicle joints, the first funicle joint broader and longer than the second by about a third, both wider than long. Club of the antennæ acuminate-conic, as long as the elongate pedicel, the flat ring-joint and the funicle combined. Funicle and club with a few long, scattered setæ. Typical *Pentarthron* excepting for the elongate antennal pedicel, the moderately long fringes of the fore and posterior wings and the absence of the oblique line of discal cilia leading back from the knob of the stigmal vein.

From a single tagmounted type female labelled “ *Pentarthron brasiliense* Ashm. Type. Type No. 6596, U. S. N. M. Collected on cotton, Bahia, March, '83.” For the purpose of obtaining these notes the specimen was remounted in balsam, relabelled and deposited in the same place. For its coloration see the original description.

5. *Pentarthron retorridum* species nova.

Normal position.

Males apterous ; fore wings of female slightly fumated proximad ; posterior wings without three complete lines of discal cilia. Oblique line of cilia running back from the stigmal knob short, incomplete, containing but two cilia.

Female.—Length, 0.65 mm. Visible to unaided eye; moderate in size.

Similar to *Pentarthron minutum* (Riley) and *P. semblidis* (Aurivillius) in aspect and structure but differing in habitus and as follows:

Mainly in ciliation of the wings. The oblique line of discal cilia running back from the knob of the stigmal vein has at the most three cilia, usually two, hence is short; the discal ciliation is denser, less distinctly arranged in straight lines; the marginal ciliation of the fore wing is distinctly longer. In the posterior wings the two caudal lines of discal cilia are complete; the anterior line of cilia is distinctly more than half complete, containing from seven to eight cilia (in *minutum* and *semblidis*, this anterior line is short usually containing from two to six cilia and not more than half complete, usually not half complete; the posterior line is incomplete).

Differing next in antennal structure: The funicle joints are both distinctly wider than long, transverse, the first longer than the second but neither longer than wide or subquadrate. Otherwise, the same structurally as the two other species mentioned. Easily separated upon comparison of specimens and with the characters given but not without care in either case.

In color differing from normal yellow specimens of *minutum* in not being intensely yellow but grayish or dusky yellowish, dull in color, the abdomen varying to brown-black; doubtless, as in *minutum* the general body coloration is widely variable.* The fore wings are fumated proximad as in *minutum*, but not conspicuously as is usual in *semifumatum* Perkins. Antennæ normal—scape, pedicel, ring-joint, two funicle joints and a solid club, shorter than in *minutum*.

From 7 specimens, $\frac{2}{3}$ -inch objective, 1-inch optic, Bausch and Lomb.

Male.†—Decidedly smaller, minute, mere specks to the unaided eye. Length variable, averaging 0.20 mm. Wingless, the tarsal joints shortened. Antennæ short, the scape, pedicel and ring-joint distinct, normal, the funicle and club united into a conic-ovate club as long as the scape but distinctly divided into funicle and club regions but the two funicle joints united into a solid piece. Club with but moderately long hairs as in the normal males of the genus.

From 17 specimens, same objective and eye-piece; also high power.

This species is similar to *semblidis* Aurivillius in having

* See following.

† See later for description of the winged male.

apterous males but dimorphic males are not present here apparently* and the apterous males of *retorridum* have a different antennal structure than those of *semblidis*; the latter agree as concerns antennal shape and structure with the females, the winged male of the species differing as in the case of the normal male of the genus. Hence, apparently apterous males in this genus are aberrant forms perhaps with more or less structural variation.

Described from 17 males and 7 females received for identification from Mr. R. L. Webster, Office of the State Entomologist, Ames, Iowa and reared from the eggs of the wheat-head army worm, *Meliana albilinea* (Hübner). The 9 slides bearing the specimens were labelled as follows: (1) "From eggs of *Meliana albilinea*. Exp. 602. Sept. 1910. R. L. Webster", 4 slides, 6 ♂'s, 5 ♂'s + 2 ♀'s, 3 ♂'s and 3 ♂'s respectively. (2) "From eggs of *Meliana albilinea*. Exp. 528. 3 Sept., 1910. By T. M. M.", 1 slide, 1 ♀. (3) same label and "Exp. 533. 7 Sept., 1910. By Thos. McCall.", 2 slides, 1 ♀ each. (4) "Depositing into eggs of *Meliana albilinea*. Ames, Iowa, 23 August, 1910. R. L. Webster", 1 slide, 1 ♀. And (5) "From eggs of *Meliana albilinea*. Exp. 535. 30 August, 1910. By T. M. M.", 1 slide, 1 ♀.

Habitat.—United States: Corwith and Ames, Iowa.

Types.—Type No. 13,628, United States National Museum, Washington, D. C., 1 female in xylol-balsam (No. 2 in the series of slides given above). *Cotypes*.—Accession No. 44,186, Illinois State Laboratory of Natural History, Urbana, Illinois, 2 slides, 3 ♂'s of No. 1 and 1 ♀ of No. 5 of the series of slides given above; also 1 alate ♂ of No. 4 in the series of slides given beyond.

Since writing the foregoing, I have also examined the following specimens received from the same source as the others already listed: (1) Five slides labelled "From eggs of *Meliana albilinea*. Exp. 535. 30 August, 1910. By T. M. M.", bearing respectively 3 ♀'s, 1 ♀, 3 ♀'s, 3 ♀'s and 1 ♀. (2) One slide bearing a single female labelled "De-

* See later for description of the winged male.

positing into eggs of *Meliana albilinea*, Ames, Iowa, 26 August, 1910. R. L. Webster." (3) A slide bearing a single winged male labelled "From eggs of *Meliana albilinea*. Exp. 578. September 12, 1910. By Thos. McCall." (4) Another slide bearing a single winged male and labelled the same as the preceding and "Exp. 528. September 3, 1910. By T. M. M."; also two badly shrivelled tagmounted females with the same label, (5) A slide bearing a single female, labelled as the preceding and also "Exp. 533. September 7, 1910"; also six tagmounted females similarly labelled; a few of these were in tolerably good condition, not shrivelled very much. (6) One winged male, five females tagmounted, labelled "From eggs of *Meliana albilinea*. Exp. 529. September 3, 1910; remounted in xylol-balsam but bad specimens for study.

From the series of tagmounted specimens of No. 5 of the preceding paragraph, the body sculpture was seen to be a fine reticulation as with the other species of the genus, the occipital region lined with fine, curved lines; more than this could not be seen in this respect. These specimens were nearly entirely black, only the head and a streak on the thoracic notum showing yellowish. Hence, coloration here varies nearly as much as in *minutum* but I have seen no specimens which were intensely yellow, quite common if not usual with *minutum*.

Also in the series above it will be noticed that there were two winged males, a form not present in the first series of specimens. These males are the same in size and otherwise as the females, excepting of course the secondary sexual characters which are usual; they are colored like the females first described. The antenna has the funicle-club shorter than usual with the winged males of the other species and the funicle joints are not distinctly indicated by constrictions but the whole appears more like a solid piece. As usual, it bears long setæ which, however, are irregular and the nodular areas are not conspicuous.

Genus **WESTWOODELLA** Ashmead.1. **Westwoodella americana** (Ashmead) Girault.

Oligosita americana Ashmead—Girault, 1909, pp. 106–110.

This species was described recently; it is removed to this genus because of the substigmatal fumated spot which it bears on the fore wing.

In addition to what has already been written concerning it, in the original description, I desire to place on record the fact of having seen the original slides bearing the specimens from which Ashmead named the species and to add one or two important notes. The original specimens were found in a collection of slides kindly loaned to me for study by Dr. L. O. Howard. Amongst this collection I found four slides labelled in Ashmead's handwriting "*Oligosita americana* Ashm." and bearing two distinct species of this genus, *W. americana* and *W. sanguinea* nova, described beyond. The labels of these slides were in detail as follows, merely the scientific names of the parasites being in Ashmead's handwriting: (1). "W. No. 1892^a F. M. Webster, Wooster, Ohio; Urbana, Illinois. Reared with *E. eragrostidis*. *Oligosita americana* Ashm. *Polynema citripes* Ashm." This slide bears 2 ♂'s, 2 ♀'s of *Westwoodella sanguinea* Girault and 1 ♂, 1 ♀ of *Polynema longipes* (Ashmead) Girault. (2). "Webster No. 1892. *Oligosita americana* Ashm. ♀." This slide bears three female specimens of *W. sanguinea*. (3). "Webster No. 1892. *Oligosita americana* Ashm. ♀." This slide bears single male and female specimens of *W. sanguinea* Girault. And (4). "Webster No. 1895^d. *Oligosita americana* Ashm. ♀." These specimens were 6 males and 3 females of *W. americana*, hence forming all of the original specimens.

In the original description of this species it was stated that the description was based on five female specimens but a re-examination of the slide bearing the type specimens shows that this was a mistake, there being in reality but a single female specimen present the other four being males. From this single female specimen and the three additional ones forementioned, it is seen that the males differ from the

females in having a plump ovate abdomen, blunt caudad, whereas in the other sex it is conic-ovate, obliquely truncate beneath caudad and hence pointed; the antennal structures are the same in both sexes but in the female the terminal club joint ends in two more or less prominent spines which are less conspicuous in the male; and colorationally, the females differ in having the three transverse black bands of the abdomen subobsolete, inconspicuous, if not absent, contrasting in this respect with the male. The genitalia of the male are not exerted in death. In the original description of this species, therefore, all that is given applies to the male which was mistaken for the female. It applies as well to the female with the exceptions noted. I have examined 18 specimens altogether, the four males and one female of the type, the three females and six males of the original specimens from which Ashmead named the species (Webster's No. 1895^d) and four female specimens taken on windows. These latter specimens were taken at Centralia, Illinois August 27 and September 6, 1909 and at Urbana, Illinois, a single female taken from the glass sides of a greenhouse April 30, 1910. The two lateral, outer teeth of the mandibles are strong, fuscous, the third tooth weak, pallid.

In regard to the Webster number of this species, No. 1895^d, Professor F. M. Webster in a letter dated March 12, 1910 wrote :

"No. 1895 was reared from *Elymus canadensis* growing along the Illinois Central Railroad, north of Champaign. This *Elymus* grows quite abundantly on the west side of the track at the second crossing north of town. I think that the specimens that Robert reared and turned over to you about a year ago, came from this same locality, only of course at a later date."

The following additional notes are added concerning the female :

The abdomen is stout and conic-ovate, slightly longer than the head and thorax combined; eyes ovate-reniform; the few discal cilia of the fore wing proximad of the stigmal vein, caudad of the marginal vein consists of two short inconspicuous longitudinal lines of about three minute cilia each, and another line disto-cephalad of the others or

nearly *en echelon*; the group of discal cilia in the distal third of the wing contains about 12 lines; fore wings slightly infuscated throughout but not uniformly. Antennæ 7-jointed, the joints as in the male; pubescence sparse, the setæ moderately long and soft, most numerous on the club. Scape slender, cylindrical, subequal to the club in length; pedicel obconic, distinctly longer than the funicle, subequal in length to the intermediate club joint or longer and nearly as wide; ring-joint abruptly smaller, nearly as wide at its base, however, as the base of the funicle joint which is longer than wide and oval in shape, the smallest antennal joint excepting the ring-joint and the proximal club joint; the latter subequal to the funicle in length, hemispherical, wider than long and about a third shorter than the intermediate club joint, which is subquadrate and slightly longer than the conical terminal joint; the latter bears at its apex two long spine-like setæ which are not as long as the distal club joint; they adhere closely and often appear as one. Club ovate, forming the larger of the two halves of the flagellum.

What is known further concerning this species may be found in Girault (1909). I have since captured the following specimens: Six females July 8, 1910 and 3 ♀'s July 27, 1910 from the sides of a greenhouse on the campus of the University of Illinois, Urbana.

2. *Westwoodella sanguinea* species nova.

Oligosita americana Ashmead MS. (partim).—See preceding and following.

Normal position.

Female.—Length, 0.55 mm.; moderately small. General color uniformly deep blood red or sanguineous*: Antennæ, legs including the coxæ†, shoulders and a portion of the venter of the mesothorax, dusky, in life the antennæ dusky and pallid alternately, the legs pallid marked with blackish; trochanters, articulations of the legs and antennæ and the proximal two tarsal joints, the occiput, genæ and face‡, pallid; apical joints of the tarsi deeper dusky. Venation pallid. Fore wings hyaline with the exception of a conspicuous rounded dusky or sooty spot|| under or caudad of the stigmal vein and a very slight cloudy streak across the wing in the same place, a faded continuation

* In balsam the color fades to a beautiful pink or else becomes carmine.

† Excepting the brown-black cephalic coxæ in one specimen.

‡ In two specimens the genæ ventrad of the eyes across the clypeus were brown-black.

|| This spot is considerably faded in some specimens.

of the sooty spot*. Posterior wings hyaline. Tegulae neutral. Eyes dark reddish; ocelli the same color. Outer teeth of mandibles fuscous. Sculpture of body not conspicuous. Eye with sparse hairs, subreniform or rounded with its caudo-lateral margin concave, their surface coarse, much coarser than the fine longitudinal striation of the thoracic nota and pleura or the transverse striation of the vertex, that of the occiput and face; abdomen with fine polygonal sculpture. Ocelli in a nearly equilateral triangle in the center of the vertex near the occipital margin, the lateral ones distant from the eyes, the distance between them being slightly greater than the distance between each and its respective eye margin. Fore wing narrowed, at least four times as long as its greatest width, widest just before its apex, the latter rounded, the whole wing spatulate in shape, not linear but narrower than that of the species *americana*; discal cilia of the fore wing apparently absent but (high power) in the distal half of the blade, beyond the fumated spot, a similar longitudinal line on each side, the caudal line longer, the cephalic line containing about six or seven cilia all widely separated in the line and a few irregularly placed similar cilia distad; the usual line of cilia arising on the disk of the wing from nearly between the bases of the marginal cilia, disappears, after rounding the apex of the wing from the cephalic margin, at the distal end of the caudal margin. Marginal cilia of fore wing long, dark, most conspicuous and longest at the wing apex where they are about equal in length to the greatest width of the wing. Marginal and submarginal veins linear, the latter slightly longer than the former; postmarginal vein absent; stigmal vein very short. The marginal vein proper bears four large setae from its surface. Posterior wing naked discally, with the exception of the faintly indicated longitudinal line along the cephalic wing margin; its venation narrow and continuous; its blade portion linear with an obtusely pointed apex and the marginal cilia short on the cephalic margin but long conspicuous and dark on the caudal margin, especially distad; here they are nearly three times as long as the wing is wide but not as long as the longest marginal cilia of the fore wing.

Thorax and abdomen normal, the parapsidal furrows complete; ovipositor not exerted. Legs normal; proximal tarsal joints lengthened somewhat, not quite equal in length to the two distal joints combined; the intermediate tarsal joint a fourth longer than the distal joint which is about a third shorter than the proximal joint. Abdomen conic-ovate, obliquely truncate caudad, nearly as long as the head and thorax combined. Mandibles apparently 3-dentate, the two outer, lateral teeth strong, dark, acute.

Antennae (fig. 1) 7-jointed—scape, pedicel, single ring-joint, single

* More pronounced in some specimens than in others, being nearly invisible in many.

funicle joint and a 3-jointed club; inserted slightly below (ventrad) an imaginary line drawn between the ventral ends of the eyes. Scape obclavate, longer than the combined lengths of the pedicel, ring-joint and funicle joint, straight; pedicel obconic, distinctly longer than wide, slightly longer and larger than funicle joint and about as long as the intermediate club joint, moderately stout; ring-joint distinct,

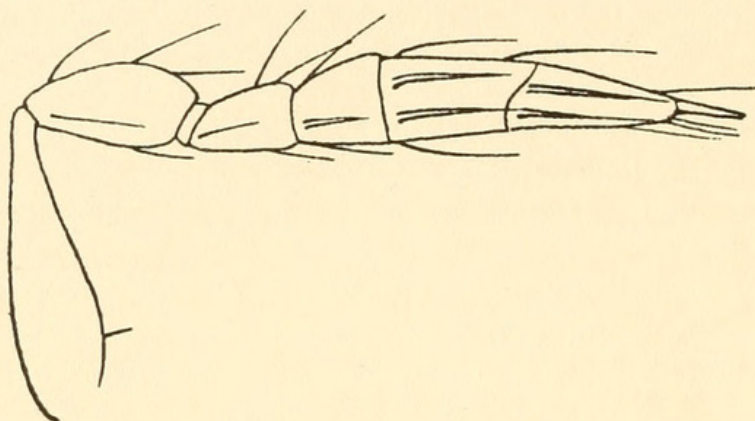


FIG. 1.—Antennæ of the ♀ *Westwoodella sanguinea* Girault, the pubescence indicated only; greatly enlarged.

minute, subquadrate or rectangular; funicle joint ovate, longer than the following joint, the 3-jointed club ovate-acuminate, pointed and widest at its proximal fourth across the base of its intermediate joint and terminating in what appears to be a long stiff dark seta*. Proximal joint of the club short, subquadrate, widening distad, the shortest antennal joint excepting the ring-joint; the intermediate club joint rectangular, longer than wide, slightly narrowing distad and slightly longer than the distal joint, the latter subequal to, but yet somewhat longer than the funicle joint. Club longer than the combined lengths of the funicle and pedicel (including the ring-joint); longer and wider than the scape. Pubescence of antennæ sparse, consisting of scattered, moderately long cilia. Articulation of the antennæ very distinct.

From 13 specimens, $\frac{2}{3}$ -inch objective, 1-inch optic, Bausch and Lomb.

Male.—The same in general body structures as the female but very distinct in coloration, being nearly uniformly dusky yellowish, the malpighian vessels alone colored pinkish or reddish as in the general body color of the female, the eyes, ocelli and apical tarsal joints dusky and also portions of the abdomen dorsad; the abdomen more uniform in shape, ovate, rounded caudad, not conic-ovate and beneath obliquely truncate caudad as in the female. The antennæ are similar but the club is somewhat shorter and more compact, its termination not being a distinct single stiff spine-like bristle or seta but more generally hav-

* In reality two setæ, one pallid and inconspicuous.

ing the appearance of two fine moderately long cilia. The genitalia are not exerted in death.

From 3 specimens, $\frac{2}{3}$ -inch objective, 1-inch optic, Bausch and Lomb.

Described from the following series of 16 specimens: Four females mounted in balsam and two females killed with chloroform and unmounted, captured August 25 (2), September 3 (3) and 9 (1), 1909 while running over a small window pane in an empty pig-shed on a farm at Centralia, Illinois; and 1 female mounted in balsam, captured April 30, 1910, at Urbana, Illinois while running over the glass sides of a greenhouse. And the following specimens in the U. S. Department of Agriculture collections, all mounted in balsam—3 slides as follows (see ante, *W. americana*): (1). "W. No. 1892^a. F. M. Webster, Wooster, Ohio; Urbana, Illinois. Reared with *E. eragrostidis*. *Oligosita americana* Ashm. *Polynema citripes* Ashm." 2 ♂'s, 2 ♀'s; and 1 ♂, 1 ♀ of the renamed mymarid. (2). "Webster No. 1892. *Oligosita americana* Ashm. ♀" 1 ♂, 1 ♀. (3). "Webster No. 1892. *Oligosita americana* Ashm. ♀" 3 ♀'s.

Habitat.—United States: Centralia, Urbana, Dalton City, Butler, DuBois and Mattoon, Illinois; Wooster, Ohio; Washington, D. C.

Type.—Accession No. 41,681, Illinois State Laboratory of Natural History, Urbana, Illinois, 1 ♀ in xylol-balsam (Centralia, Ill., Aug. 25, 1909). *Cotypes*.—Cat. No. 13,629, U. S. Nat. Museum, Washington, D. C., 3 ♀'s in xylol-balsam, 1 slide (Webster No. 1892).

Since writing this, I have also examined 8 females captured by sweeping grass, May 25, 1910; 6 females by sweeping blue grass and wheat, May 26, 1910, Urbana, Illinois; and 10 females, same place, June 8, 1910. Also a ♀ taken from a window of a stable at Dalton City, Ill., June 15, 1910, and 1 ♂, 1 ♀ taken at DuBois, Ill., June 23, 1910 by sweeping blue grass adjoining wheat. Finally a ♀ taken July 1, 1910 by sweeping blue grass at Urbana; 1 ♀ taken at Butler, Ill., July 14, 1910; 3 ♀'s at Mattoon, Ill., July 16, 1910, the

two latter captures on the windows of stables; and 3 ♀'s July 27, 1910 at Urbana, on the sides of a greenhouse. One of the last three females was large, twice the size of either of the others. In the National Museum collections also a tagmounted female labelled "Washington, D. C., Sep. 5, H. Barber, Collector;" and 1 ♂, 1 ♀ labelled "*Oligosita americana* Ashm.. Urbana, Ill., F. M. Webster. Bred from *Eratomocharis eragrostidis*"; and a third ♀ labelled "137" and placed with *Abbella acuminata* (Ashmead).

The beautiful red color of the females is the principal characteristic of the species but the nearly naked fore wings are also peculiar to it, the discal ciliation being sparse and very minute, nearly invisible.* The antennæ especially in the drawn-out shape of the club also differ from those of any other species known, though not to a very great extent, merely in being relatively longer.

It is clear from the labels on the slides recorded just now and in foregoing that Ashmead considered this species and *americana* to be the same, dimorphic forms of the same species but surely such characters as the marked differences exhibited in the shape and ciliation of the fore wings between the two species, not to mention the differently shaped antennæ and the fact that the males are known of both species, agreeing in detail with the females excepting in coloration, are the best specific characters obtainable for the separation of the species of any group; and in this case, assuredly, if one should hold to the opinion that these two forms were one species, actual proof should be required in the shape of breeding records that this is true. For an opinion contrary to an obvious fact requires evidence for its support. The species is most probably parasitic upon jassid eggs in wheat straw or grasses. Professor F. M. Webster has kindly written the following letter concerning them:

* In a single female of six captured at Urbana, Illinois, May 22, 1910, it was visible and distinct. This specimen also had a distinct line of cilia on the posterior wing. Otherwise, it could not be separated from the others.

MARCH 12, 1910.

DEAR MR. GIRAULT:

Replying to your questions put forth in your memorandum of March 10, I will say that No. 1892^a was reared from *Eragrostis poaoides* taken from near the Big-4 passenger station in Urbana. This, clearly, was collected July 30, 1902, on account of its being infested by *Isosoma* and also by Dipterous larvæ, developing to *Oscinis sorer*. The rearing of these minute parasites was entirely accidental. They simply appeared in the breeding jar, there being two colorial forms, one reddish and the other yellow. I think that both ♂ and ♀ of the red form was reared but only ♀'s of the yellow form. Doctor Ashmead determined both forms as the same species.

I also reared other specimens but I do not recall of which color form, material collected at Princeton, Ind. So far as I know, ♂'s only of the red form have been observed. The two forms emerged at the same time from the same lot of grass secured at Urbana and numbered 1892 and 1892^a.

Yours truly,

F. M. WEBSTER.

In Charge of Cereal and Forage
Insect Investigations.

3. *Westwoodella subfasciatipennis* species nova.

Normal position.

Female.—Length, 0.80 mm. Tarsi 3-jointed. Fore wings with a fumated stigmal band in addition to the substigmal fuscous patch; colors inconspicuous, sordid and yellowish.

General color sordid marked with sordid yellowish, the whole of the thoracic dorsum sordid yellowish green, most of the abdomen dark, the scutellum pallid yellowish as are also the antennæ, the legs dusky, the tips of the leg joints pallid yellow as are also the two proximal tarsal joints; eyes and ocelli dark, the portion of the head surrounding the eyes with some yellowish. Fore wings nearly hyaline, with a distinct, short substigmal subquadrate, fuscous dot or dash nearly as in *americana* projecting nearly caudad (but with a distinct inclination proximad) from the knob of the stigmal vein and in addition, in the same region, a distinct though not pronounced, subtriangular fumated area forming a smoky band across the wing at the stigmal vein very much as in *subfasciata*, though not as distinct as figured for that species, the area originating at and embracing the stigmal knob and the substigmal dash and proceeding caudad across the disk of the wing to the caudal margin where it is broadest. Proximad, caudad of the submarginal vein there is also some duskiness, more visible at the distal end of the submarginal vein. Blade of the posterior wing dusky, indistinctly maculate. Venation concolorous with the antennæ. Distal tarsal joint dusky.

Fore wings nearly as broad as in *americana* broader than those of *subfasciata* as figured or of *sanguinea*, the longest marginal cilia distinctly shorter than the greatest wing width which is a little more than half way distad of the distance between the stigmal knob and the wing apex; whereas in *subfasciata* as figured and *sanguinea* the longest marginal cilia are about equal to the greatest wing width which is still more than half way distad between the stigmal knob and the wing apex; in *americana* these arrangements are very similar to those described for this species, but the fore wings are still broader in relation to the length of the longest marginal cilia. Discal ciliation of the fore wing somewhat as in *americana* but somewhat less conspicuous, the individual cilia somewhat smaller, the whole consisting of about nine longitudinal lines across the widest portion of the wing; the discal ciliation extends back to the stigmal knob, to a point caudad of it, and proximad, caudad of the marginal vein, at its center nearly, in the center of the wing, is a longitudinal row of three or four cilia. Marginal cilia longest disto-caudad, on the caudal wing margin extending around to a point slightly proximad of a point opposite (caudad) the stigmal vein. Posterior wing normal, acute at the end of the marginal vein where three hooklets arise, its blade acuminate, bearing one principal line of discal cilia extending the whole length of the blade, nearer to the cephalic than to the caudal margin and as usual the line of discal cilia arising near the cephalic margin between the bases of the marginal cilia; this line of cilia is not, however, directly at the cephalic margin and is minute and inconspicuous; it is not present along the caudal margin of the wing ($\frac{1}{6}$ -inch objective). Marginal cilia of the posterior wing minute, uniform, inconspicuous on the cephalic margin, as is usual, but at the wing apex and along the caudal margin very long, longest at the center of the caudal margin, nearly as long there as twice the greatest wing width and nearly as long as the longest marginal cilia of the fore wing. Venation normal to the genus, the long straight marginal vein subequal to or slightly longer than the submarginal vein, the short rounded stigmal vein nearly sessile, the knob rounded, thickened and with a small usual uncus. Postmarginal vein absent.

Legs normal, the proximal tarsal joint subequal to the distal joint of the tarsus, the intermediate joint somewhat shorter. Tibial spurs of intermediate and posterior legs minute, in the first apparently single, straight. Tibial spurs of posterior legs apparently double. Antennæ similar to those of *americana* or nearly.

From 1 specimen, $\frac{2}{3}$ -inch objective, 1-inch optic, Bausch and Lomb.

Male.—The same; antennal club somewhat more compact, shorter; abdomen rounded caudad.

From 1 specimen, $\frac{2}{3}$ -inch objective, 1-inch optic, Bausch and Lomb.

Described from one male and one female mounted in balsam, received through Dr. L. O. Howard and labelled respectively "3969^w. Wheat. Jassidæ. Pullman, Wn., 18 October, 1909. Reared from green eggs. G. I. R." (♂); and the same data "13 September, 1909. Reared from yellow eggs." (♀).

Habitat.—United States: Pullman, Washington.

Type.—Type No. 13,630, United States National Museum, Washington, D. C., 1 ♀ in balsam.

Cotype.—Accession No. 44,191, Illinois State Laboratory of Natural History, Urbana, Illinois, 1 ♂ in balsam.

Professor F. M. Webster has kindly furnished me the following notes concerning this species:

"3969.	Jassidæ.	Det. Herbert Osborn.
Wheat.	Pullman, Wash.	Coll. Geo. I. Reeves.

April 10, 1908.—Collected many brown and a few green Jassids in wheat stubble and volunteer wheat, by sweeping. Found eggs in masses of 2 to 5 in net, and found that they came from areas where only stubble was, as well as other areas. Examining stubble found eggs tucked under edge of sheath, often indicated externally by slight lifting of the edge, sometimes showing ends of eggs which lie side by side perpendicular to edge of sheath, lightly stuck together and slightly or not at all adhering to sheath. Usually 4 to 10 in one straw, sometimes more, always above topmost node of stubble. Eggs pale red and green opalescent, club shaped with sort of pedestal at edge nearest edge of sheath. Collected eggs and stems to rear and photograph.

Sept. 13, 1909.—Collected Jassid eggs in wheat stubble, in third field north of Mr. Priest's orchard on Military Hill. There are two kinds of eggs, one the same as those studied and photographed April 10, 1908, the other brown, with no distinct micropylar armature, placed similarly to the former but less regularly. Rear and describe. Swept 2 adults from the same spot. The eggs were collected not on the stubble itself but on green and partly green second growth shoots.

Sept. 14.—Observed two insects within eggs collected Sept. 13 cutting round holes like some that were observed in the eggs when they were collected; time, 10:23 a.m. Issuance from egg completed, 11:12 a.m. This parasite was determined by Crawford as the trichogrammid *Oligosita* sp.

Oligosita sp.: General color pale green; abdomen pale yellow; ocelli and eyes reddish-brown; stigmata dark brown; antennæ, legs,

hairs on wings and marks on pleuræ, fuscous. Dimensions ($c=0.0333$ mm.): Entire length 19c.; length of head 3 c, thorax 7c, abdomen 11c, antennæ 4 c (measured alive, hence not consistent), width of head 5c, thorax 5c, abdomen 5c. See drawings by Hyslop.

The rows of yellow eggs are inserted between the sheath and its own inner epithelium and each egg is enclosed in a delicate glue-like case which adheres to the epithelium. The eggs are imprinted with the striæ of the stem where they rest against it. Color pale yellowish-brown. No micropylar structures. Length 0.97 mm., width 0.21 mm.

Jan. 6, 1910.—Hyslop writes from Washington that the alcoholic and balsam specimens which he took to Washington have been turned over, with those of the National Museum, to Mr. Girault."

4. *Westwoodella comosipennis* species nova.

Normal position.

Female.—Length, 0.75 mm.

This species is closely related to both *americana* and *subfasciatipennis* in having the greatest width of the fore wings distinctly greater than the length of the longest marginal cilia of the fore wing, in having the general shape of the fore wings similar and in habitus but differs from both in its distinct discal ciliation, the discal cilia longer, moderately dense, conspicuous; besides this the fore wings are uniformly and somewhat more noticeably clouded throughout and there is a slight stigmal fuscous dash (as in the others) which is dart-shaped, giving the knob of the stigmal vein an acute, spine-like prolongation apparently; this stigmal spot points more caudad, less proximad, than that in the other two species and the stigmal uncus is decidedly stronger, pointing directly distad. There are still other differences, for instance the proximal club joint being longer than wide and the caudal tarsal joints distinctly slenderer.

General color deep-orange yellow, the legs yellowish-brown excepting the distal tarsal joint and the lateral aspect of the caudal coxæ and femora which are dusky black; eyes dark garnet. Antennæ and the venation concolorous with the legs. Caudal tarsal joints slender, the proximal longest, nearly twice the length of the distal joint, the intermediate joint also long and slender, a fourth shorter than the proximal joint which is about ten or more times longer than wide. Intermediate tarsal joint of the caudal legs distinctly longer and slenderer than the distal joint. Otherwise as in *americana*. (Mandibles with at least two distinct teeth.)

Male.—Unknown.

Described from two female specimens in the U. S. National Museum collection, tagmounted and labelled "6745. Ithaca, N. Y. June 5-10-95", 1 ♀, and the other "*Trichogramma*." The former is the type, the latter the cotype specimen. Remounted in balsam, two slides. Description from the balsam mounted specimens.

Habitat.—United States: Ithaca, New York.

Type.—Type No. 13,631, United States National Museum, Washington, D. C., 1 ♀ in xylol-balsam.

Cotype.—Accession No. 44,187, Illinois State Laboratory of Natural History, Urbana, Illinois, 1 ♀ in xylol-balsam.

5. ***Westwoodella clarimaculosa*** species nova.

Normal position.

Female.—Length, 0.65 mm.; moderate for the genus. Similar to *comosipennis* in coloration but agreeing with *sanguinea* and *subfasciata* in having the narrower pattern of fore wing the greatest width of which is about equal to the longest marginal cilia of the fore wing. The substigmatal spot of the fore wing is dense and clear cut, crescentic, its cephalic end involving the knob of the stigmal vein; besides this smoky spot, the part of the fore wing immediately surrounding it is slightly clouded, the cloudiness extending to the caudal wing margin; and proximad there is also a clouded streak across the narrow portion of the wing at the distal bend of the submarginal vein. The discal ciliation of the fore wing is sparse as in *sanguinea* but distinct not apparently absent, minute, as in that species. The fore wings are somewhat wider than in that species. The posterior wings have one complete longitudinal line of discal cilia (excluding the line of minute cilia at the cephalic edge). The antennæ are built as in *sanguinea* and together with the legs are similarly colored; the antennal club terminates in a long spine. The mandibles have at least two teeth, both of which are strong and distinct. Proximal joint of posterior tarsi long and slender, distinctly longer than either of the two distal joints. Eyes naked. Cephalic tibiæ without tibial spurs, the spurs of the posterior tibiæ single. As with the other species with the exceptions as noted.

From a single specimen, $\frac{2}{3}$ -inch objective, 1-inch optic, Bausch and Lomb.

Habitat.—United States: Pulaski, Illinois.

Type.—Accession No. 44,193, Illinois State Laboratory of Natural History, Urbana, one female in xylol-balsam.

Captured by sweeping along the margin of a cypress swamp (C. A. Hart and A. A. Girault).

Genus **POROPŒA** Foerster.1. **Poropœa attelaborum** species nova.

As both sexes of this genus are well known and do not differ excepting in the secondary characters present in the antennæ and abdomen and also since the host of this species is definitely known I do not hesitate in describing it from this single male specimen.

Normal position.

Male.—Length, 1.05 mm.; moderately large, short, robust. General color shining black; meson of scutellum yellowish, forming an acuminate sagittate yellow mesal area with its truncate base cephalad and with its slender acute apical end caudad. Eyes dark garnet. Head wider than the thorax, the vertex thin, acute, wide, the mesonotum large, nearly as long as the remaining portions of the body combined, slightly convex, with no median carina or impression, the median line smooth, the deep parapsidal furrows very widely separated, in the dorso-lateral aspect. Scutellum distinct, rounded in outline, convex, but shorter than the long scutum. Dorsum of the thorax distinctly reticulated and shining, the sculpture moderately coarse, not punctate. Abdomen very short, triangular, acute, nearly hidden (dorsal aspect); short, subquadrate (lateral aspect). The proximal two tarsal joints and the apex of the tibiæ white, the distal tarsal joint black. Eyes dark garnet. Face reticulated. Cephalic knees and the caudo-lateral aspect of the cephalic tibiæ honey-yellow. Lateral ocelli their own width from the eye margins. Wings wholly hyaline, the venation pallid yellow. Eyes coarse, the face concave. Antennæ inserted slightly ventrad of the middle of the face, distinctly dorsad of an imaginary line drawn between the ventral ends of the eyes, the scape long, slender, reaching up as far as the cephalic ocellus. Ocelli in a mere curved line, nearly in the cephalic aspect. Body short, robust, somewhat humped. The tibial spurs single, the tarsal claws present but concealed from above.

Fore wings transparent, clear, so clear that they are barely visible in balsam mounts, the yellowish venation of the fore wings, however, distinct, exactly as figured by Foerster (1851) for the type species but less regular in outline; the arch formed by the venation is much broader, its true apex pointed more disto-cephalad and there acute, with a seta at its extremity; the stigmal vein is long, slender, narrowing distad until the ovate knob is reached and the latter is not turned back upon the neck of the vein but is a direct continuation and termination and besides bears a distinct uncus like a tooth; the knob of the stigmal vein is moderately large. The venation of the fore wing bears about six distinct setæ widely separated, unequal in length and from distinct setigerous spots; these are borne by the marginal vein and the

distal and proximal ends of the submarginal and stigmal veins respectively. The marginal vein does not touch the costal wing margin but nearly does so. The marginal fringes of the fore wing are about as figured for the type species and the wing is broad, its broadest portion at the distal fifth, far distad from the end of the venation and there are about twelve longitudinal lines of discal cilia, the lines distant from each other and the ciliation colorless, not clearly visible at all excepting with the brightest of lights and then but faintly. Apparently very similar to that of the type species.

From 1 specimen, $\frac{3}{8}$ -inch objective, 1-inch optic, Bausch and Lomb.

Described from a single male specimen formerly tag-mounted now remounted in balsam, from the U. S. National Museum collection, Washington, D. C., labelled as follows: "Poropeus sp. from eggs of *Attelabis analis*".

Habitat.—United States (east).

Type.—Type No. 13,632, United States National Museum, Washington, D. C., 1 male in xylol-balsam.

Girault (1907 b) records a *Poropæa* from the eggs of *Attelabus bipustulatus* Fabricius and the record may refer to the above specimen; but I have reason to think otherwise. I remember seeing at least one of the specimens of that record in Dr. A. D. Hopkins' office and if my recollection is right, it was mounted in balsam. Dr. Hopkins was the one who reared it and according to him the specimens cannot be found now.

Genus **LATHROMERIS** Foerster.

1. **Lathromeris fidiæ** (Ashmead).

Brachysticha fidiæ Ashmead—Webster, 1894–1895, p. 169.

Brachysticha fidiæ Ashmead, 1894–1895, pp. 171–172.

Brachystichta fidiæ Ashmead—Webster, 1896, p. 69.

Brachista fidiæ Ashmead—Girault, 1907 b, p. 29.

Brachista fidiæ Ashmead—Schmiedeknecht, 1909, p. 482.

Lathromeris fidiæ (Ashm.)—Johnson and Hammar, 1910, pp. 51, 56–57, fig. 27.

An examination of some trichogrammatines recently reared from *Fidia viticida* at North East, Pennsylvania, the host from which this species was originally described, leads to the belief that they are really *fidiæ* and if so that species was wrongly described.

I am unable to separate these specimens generically from the type of *Lathromeris cicadæ* Howard. As far as can be determined the antennæ are similar, bearing the characteristic 4-jointed club and the minute ring-joint and the wings are very similar having the same venation and ciliation, the discal cilia in regular longitudinal lines but not very conspicuously so.

Originally the species was described exactly as quoted herewith.

“ *Brachysticha fidiæ*, sp. n. ♀.—Length 0.65 mm. Head, except eyes and thorax, pale brown or brownish-yellow; the conical-shaped but depressed abdomen dark fuscous or black; wings hyaline, broad, pubescent, with a short marginal fringe, the pubescent not arranged in regular rows; legs brown or fuscous, the tips of femora, tips of tibiæ and tarsi yellowish.

The head antero-posteriorly very thin, with a facial impression; the antennæ inserted far down on the face, 6-jointed (scape, pedicel, ring-joint and a 3-jointed, fusiform, pubescent club); thorax with a longitudinal median impressed line; while the abdomen is long, conically-pointed, but depressed above.

Hab.—Euclid, Ohio.*

Described from specimens bred by Prof. F. M. Webster, August, 1894, from the eggs of *Fidia viticida*, on grape-vine.

This species comes nearest to *Trichogramma acuminatum*, Ashm., Can. Ent., 1888, p. 107, which should probably be referred to this genus, but differs decidedly in the color of the legs and abdomen.” Pp. 171–172.

From the five male specimens mentioned in foregoing I add the following important descriptive details:

Normal position.

The club of the antennæ is 4-jointed, the joints obliquely truncate, the first joint subhemispherical, obliquely truncate distad, longest and broadest, the second joint wedge-shaped or triangular, wedged in between the first and third joints, obliquely truncate at both ends, the base and apex converging, about equal in shape and size to the third joint, which, however, has its apex and base converging in the opposite direction the two joints being complementary, the pointed end of the third joint on the side opposite to that end of the second joint; fourth or distal joint slightly shorter, obtusely conical, its base however obliquely truncate. The ring-joint is abruptly minute but yet distinct. The scape is about equal to the club in length and is cylindrical but

* End of p. 171.

broadened slightly at its middle; pedicel stout, somewhat over one-half as long as the scape or club but narrower than the club, conic, broadest at apex; club long-ovate. Pubescence sparse, consisting of scattered long setæ on the apical two club joints, several less conspicuous whorls on the proximal half of the club and a few scattered setæ on the pedicel.

Fore wings as in the male of *Lathromeris cicadæ*, as far as the marginal ciliation is concerned and other characters but the stigmal vein is more sessile and somewhat more stout; the discal ciliation is arranged in about 18 lines across the greatest wing width which is at the distal sixth of the wing; the discal ciliation is moderately dense, but the majority of the lines are plainly in regular rows; there is no oblique line running proximo-caudad from the end of the stigmal vein. Posterior wings also similar to those of *L. cicadæ*. Legs dusky, tarsi pallid. Tibial spurs single.

Two-thirds inch objective, $\frac{3}{4}$ -inch optic, Bausch and Lomb.

The foregoing notes were made from the following specimens received from Professor A. L. Quaintance through the kindness of Dr. L. O. Howard, all labelled as follows: "Fidia viticida. Parasitized by dipterous insect, possibly secondary. North East, Pa. A. G. Hammar. Col. Aug. 30, 1909. Bred Feb. 1910."—2 ♂'s (1 slide), 2 ♂'s (1 slide) and 1 ♂ (1 slide). The specimens were all mounted in balsam.

Since, I have examined the type in the National Museum collection. They consist of two tagmounted specimens labelled "Type No. 1448, U. S. N. M. Ohio. *Brachista fidia* Ashm." One male, one female; the former without name label but with the additional number "1796"; the female specimen missing. the ♂ specimen was in poor condition only a portion of the fore wing remaining which showed the venation of the specimens mentioned in foregoing. There can be but little doubt that the species is correctly defined here.

Habitat.—United States: Euclid, Ohio and North East, Pa.

2. *Lathromeris cicadæ* Howard.

Lathromeris cicadæ Howard, 1898, pp. 102-103.

Lathromeris cicadæ Howard—Marlatt, 1898, pp. 97-99, fig. 42, a-d.

Lathromeris cicadæ Howard—Girault, 1907 b, p. 31.

Lathromeris cicadæ Howard—Marlatt, 1907, pp. 130-132, fig. 53, a-d.

I quote the original description of this species by Howard (1898) exactly as it was published.

“*Lathromeris cicadæ*, new species.

Female.—Length, .74 mm.; expanse, 1.48 mm.; greatest width of fore wing, .21 mm. Body long and slender, abdomen acuminate and longer than head and thorax together; antennæ short, clavate, scape rather stout, pedicel still stouter and half as long as scape, ring-joint very minute, almost imperceptible, club stouter than pedicel and as long as scape, compact but rather plainly divided into 4 subequal joints, the apical one being slightly the longest, fusiform in shape and with rather long delicate hairs, especially toward the tip; wings ample, with short marginal cilia; stigmal vein not curved and extending into disk of wing at an angle of about 45 degrees from costa. Colour sordid yellowish, occiput black; pronotum dusky, black at sides; abdomen dark at sides; eyes coral red, almost claret coloured; antennæ slightly dusky.

Male.—Slightly shorter than female; abdomen with parallel sides and rounded at tip; antennæ with a dark blotch at base of club.

Described from two males, two females, reared from eggs of *Cicada septendecim*, collected by T. Pergande, in Virginia, just across the Potomac River from the City of Washington, in July, 1895. All four specimens mounted on a single slide. Type No. 3850, U. S. Nat. Mus.” Pp. 102–103.

In the same year of its original description it was figured by Marlatt in his bulletin on the Periodical Cicada and later again by the same author (Id., 1907); both accounts, including the figures are identical. Girault (1907 b) listed the species from its only host, *Cicada septendecim* Linnæus.

Through the kindness of Dr. Howard, whose original description of the species has just been quoted, I have been able to examine the type specimens of this species from the United States National Museum. The species is exactly as is described (Howard, 1898) and figured (Marlatt, 1898, 1907), though in the figure the submarginal vein of the fore wing is drawn somewhat too broad. From the four type specimens I add herewith the following supplementary descriptive details:

In the female the antennal club is distinctly longer and less stout than in the male as figured, but one antenna of one of the females on the type slide has the club shaped exactly as in the two males of the type,

and on the other hand, one of the male antennæ is noticeably more slender than the others though not as slender and as long as any of the female antennæ. Caution should therefore be taken in considering this secondary sexual character as the differences may be due to different antennal aspects or to the mount. I hardly believe this to be true, however, for everything here leads to the belief that the differences are real and true ones and they certainly agree with Arnold Foerster's description of the male of the genus. The segmentation of the antennæ is now indeterminable in two of the specimens of the type, a male and a female, but in the remaining male and female it is quite as described. The pubescence of the antennæ is the same in both sexes; the ring-joint is perceptible though exceptionally minute and narrow; the scape in the male is somewhat shorter than in the female and slightly dilated distad and ventrad. Fore wings moderately broad, built somewhat as in *Ufens* Girault but not pronouncedly broadened distad, its apex regularly convexly rounded, broadest at the point about midway between the distal end of the stigmal knob and the wing apex, its marginal cilia short and close but not exceedingly dense and becoming distinctly longer at the extreme disto-caudal apex of the wing, there about thrice the size of the other marginal cilia but not long, short as compared to the apical marginal cilia of the genus *Abbella* Girault for instance; in the male, however, these longer cilia extend around the whole wing apex, and hence the marginal cilia of the fore wing of the male cannot be described as short but moderately short, shorter for instance than those of *Trichogrammatoidea* Girault.

The marginal cilia of the posterior wings are short, minute, uniform on the cephalic wing margin but moderately long on the caudal wing margin, there centrally being longest, distinctly longer than any of the marginal cilia of the fore wing, their greatest length slightly shorter than the greatest width of the posterior wings at the distal end of the marginal vein; the end of the marginal vein bears three pale spine-like hooklets. The posterior wing is broad, subobtuse at apex but the blade acuminate. Discal ciliation of the fore wing moderately dense, short, arranged in regular lines but not very distinctly so some of the lines being confused; there are from 16 to 20 lines of them counting around the apex from the end of the venation. A subtriangular portion of the discal ciliation extends proximad past the stigmal knob, entering the usual naked wing portion caudad of the marginal vein. Discal ciliation of the posterior wing consisting of two well defined parallel longitudinal lines near to the cephalic wing margin in the blade and a third fainter line nearer the caudal wing margin and extending farther proximad; the cephalic and caudal lines are not especially near the edges of the wing between the insertions of the marginal cilia but from their general appearance and position are evidently homologous with the lines of cilia usually present there. Submarginal vein of fore wing distinctly longer than the marginal, straight,

narrow, then suddenly broadening to the width of the marginal and curving up to it; the marginal vein straight, broad, broken at the place where it is joined by the submarginal by a colorless area, one and a half times longer than the stigmal vein, moderately long, obliquely truncate distad, the caudal angle of the truncation bearing the clavate, nearly straight stigmal vein which bears the usual uncus and has a very short petiole. There is no oblique line of discal cilia running proximo-caudad from the stigmal vein. Both sexes colored alike; lateral ocelli distant from the eye margins. Median line of mesoscutum lighter in color; also the postscutellum. Wings hyaline. Body sculpture very slight reticulation.

The slide bearing the 2 male and 2 female type specimens is in excellent condition as are also the specimens themselves, and besides the type number label of the U. S. National Museum and a label bearing the name of the insect in Dr. Howard's handwriting, there is also a small label bearing the number "246⁰⁶".

In the National Museum collections I have also found seven tagmounted specimens of this species, so labelled in Dr. Howard's writing, each specimen bearing the additional label "246⁰⁶. From eggs of Cicada? Issued July 29, '85." All of these specimens have been remounted in balsam and studied. Very little could be obtained from them otherwise. They bear out the foregoing descriptive matter.

Genus **CENTROBIA** Foerster.

1. **Centrobia odonatae** Ashmead.

Centrobia odonatae Ashmead, 1900, pp. 616-617.

" " " —Needham, 1903, p. 230.

"(4) *Centrobia odonatae* n. sp.

♀.—Length, 0.8 mm. Black, slender, the abdomen much acuminate, ending in a prominent ovipositor. Mouth parts brownish-yellow. Antennæ short, 6-jointed without a ring-joint, brown-black, the flagellum tapering off at apex, not ending in a distinct club. Wings hyaline, the pubescence arranged in radiating rows, the margins with a distinct but short cilia, the marginal and stigmal veins brown the latter oblique, shorter than the marginal. Legs brownish-yellow, the femora more or less obfuscated. Abdomen elongate, sessile, strongly acuminate towards apex and more than twice longer than the thorax.

Hab.—Lake Forest, Illinois.

Type.—Cat. No. 5321, U. S. N. M.

Host.—Odon.: Eggs of *Lestes* sp. Bred August 12, 1900, by Prof. James G. Needham." Pp. 616-617.

I have examined the types of this species in the United States National Museum consisting at the time of two tag-mounted females bearing the following labels: "*Centrobia odonatæ* Ashm. ♀ type."; "Type No. 5321, U. S. N. M."; and "8604⁰⁵. Aug. 12, '99." The following descriptive notes were taken from them:

The fore wings have moderately short marginal fringes, the discal ciliation moderately dense but arranged in regular radiating lines, the abdomen conic-ovate, longer than the head and thorax taken together and attenuate caudad into an exerted ovipositor as long as, or slightly more so, the half-length of the abdomen; marginal and submarginal veins straight, the latter much longer than the former; postmarginal vein absent. Stigmal vein short but not sessile, well defined, straight, not quite half as long as the marginal vein. Wings shriveled. Body with a scaly surface. Antennal club 3-jointed, long acuminate, the funicle 1-jointed; not able to see the other joints.

The specimens were somewhat shriveled. In addition to the types as found originally, stated in the preceding lines, there has also been made a balsam slide from one of them bearing a female antenna and labelled "Hym. slide No. 111" (U. S. N. M.).

Genus **CHÆTOSTRICHIA** Haliday.

1. ***Chætostricha flavipes*** (Girault).

Paracentrobia flavipes Girault, 1905, pp. 287-288.

A re-examination of the types of this species shows that the antennæ were wrongly described as bearing a ring-joint. The following descriptive details are added from them:

The parapsidal furrows are complete; ovipositor not exerted; abdomen short, conic-ovate, pointed from lateral aspect; lateral ocelli distant from the eye margins. Antennæ (fig. 2) clavate, the joints

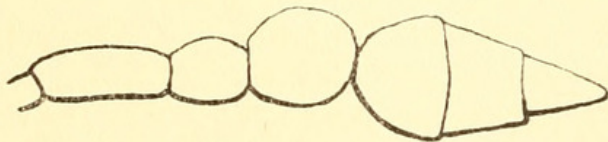


FIG. 2.—Antenna of the ♀ of *Chætostricha flavipes* (Girault), the pubescence omitted; greatly enlarged.

irregular in shape in relation to each other, 6-jointed—scape, pedicel, one funicle joint and a 3-jointed club, the segmentation distinct, the ring-joint absent. Fore wings (fig. 3) broad and short, at their widest point nearly two-thirds their length, very broadly oblately rounded at

the apex, the lines of the discal ciliation peculiarly distinct, the ciliation dense, the cilia short, the marginal cilia short and close; marginal vein short and stout, the stigmal vein neckless, thick, about half the length of the marginal vein and placed nearly at right angles to it, both taken together resembling a short stout rough walking-stick of which the stigmal vein would form the handle; the marginal vein widens distad; it is shorter than the submarginal vein and both are straight. Caudal wings with the blade also shorter and broader than usual, the discal ciliation consisting of five longitudinal lines of cilia all about equal but the third and fourth lines are somewhat confused;

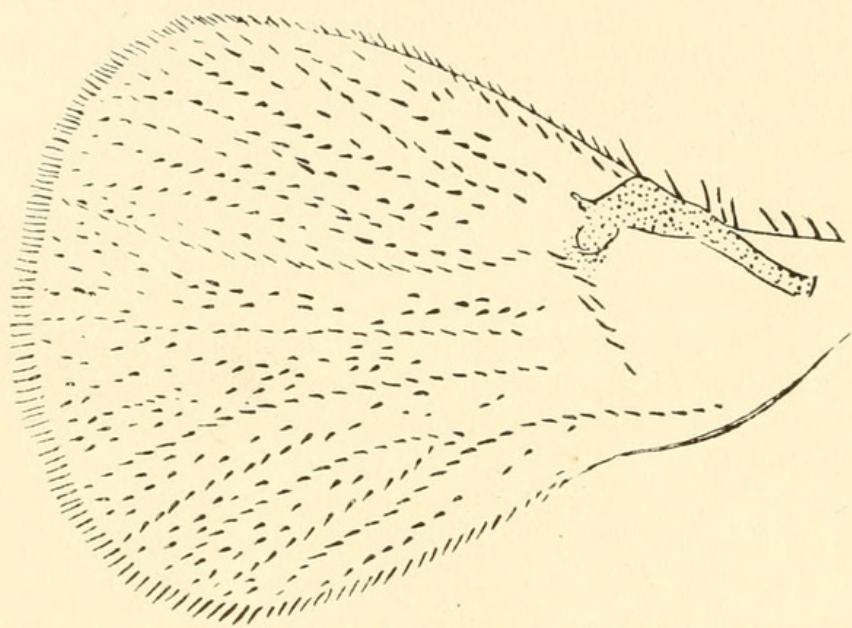


FIG. 3.—Fore wing of the ♀ of *Chætostricha flavipes* (Girault), the extreme base omitted. Discal ciliation indicated only; greatly enlarged.

the marginal cilia of the caudal margin of the posterior wing is not as long at their longest as the greatest width of the wing blade, the cephalic margin of the blade straight, the caudal margin broadly convex. Fore wings with a line of about seven discal cilia running obliquely proximo-caudad from the extreme apex of the stigmal vein, bare proximad of that line in the center. The male antennæ do not differ from those of the female. The funicle joint is stout, as wide as the club. The fore wings are very slightly fumated proximad. The tarsal claws comparatively prominent.

In the National Museum there are one male and one female tagmounted type specimens the former labelled "*Paracentrobia flavipes* Girault. Type No. 8942, U. S. N. M. J. H. Beattie, collector. Fort Valley, Georgia, VI. 12. 05., ♂. No. 90." The female is labelled simply "type No. 8942, U. S. N. M., ♀." The "No. 90" of the first specimen is simply a private number. In my own collection I find three slides

of this species, two of them labelled "90", a male and a mount of the female head; they emerged at Washington, D. C., June 23, 1905 from material collected several weeks previously at Fort Valley, Georgia. The third specimen is a female in balsam labelled "91" and "*Paracentrobia*) *Chaetostricha flavipes* (Girault). U. S.—Georgia. ♀ cotype." Reference to the number 91 in my notebook shows that this specimen issued on June 25, 1905 from the same lot of material. It has been deposited in the collections of the Illinois State Laboratory of Natural History at Urbana and given the accession No. 44,194.

Genus **ABBELLA** Girault.

1. **Abbella acuminata** (Ashmead).

Trichogramma acuminatum Ashmead, 1888, p. 107.

? *Brachysticha acuminata* (Ashmead), 1894–1895, p. 172.

Brachista pallida (Ashmead), 1900, p. 616.

Brachista pallida (Ashmead)—Needham, 1903, p. 230.

Brachista acuminata (Ashmead)—Schmiedeknecht, 1909, p. 482.

Normal position.

Female.—The same as *Ittys ceresarum* (Ashmead) in general aspect and all characters but differing from it in the following: About a third smaller, moderately large in size; the general color is pallid greenish yellow (blue green) with the occiput, pronotum (excepting the caudal third) and much of the thoracic pleura velvety black, the velvety black bands of the abdomen indicated along the sides only, not completely crossing the abdominal dorsum; the fumated spot of the fore wing, the substigmal spot, is a crescentric black spot placed like a continuation of the stigmal vein and not reaching farther caudad than half-way to the caudal wing margin or slightly more than half-way; the rest of the fore wing is practically hyaline; the fumated substigmal spot nearly clear cut not diffused across the wing as in the species mentioned; it is also darker in color.

In structural characters, the antennæ differ in being relatively shorter, the scape and club shorter but the pedicel about the same size, very much larger than the funicle joints taken together; the funicle joints are smaller, both being wider than long, the second funicle joint only about half the length of the first and flat somewhat like a ring-joint; the latter is distinct; the club is the same but shorter, more ovate-conic. Antennæ bearing scape, pedicel, ring-joint, two funicle joints and three club joints. The fore wings differ in the minute details of the venation, mostly in regard to the size of the stigmal vein and the discal cilation. The stigmal vein is distinctly shorter and nearly with-

out a distinct neck being more uniform in width and the apex truncate, not especially broadened, the uncus acute, arising near the apex and casually, making it appear to be broadened and sharpened at one end. Further, the fore wing is narrower, the venation does not reach half-way to the extreme apex as it does in the other species and the discal ciliation is denser and more uniform, does not extend proximad of the distal end of the stigmal vein and the oblique line of cilia running proximo-caudad from the stigmal vein, prominent in the other species, is absent here. The discal ciliation is nearly normal but 3 or 4 lines strictly being in regular rows longitudinally. The posterior wings are narrower, with nearly parallel margins, slender, not moderately stout; otherwise the same but the caudal line of discal cilia is slightly more distinct, the cilia somewhat closer in the line. Mandibles with three acute teeth.

From 1 specimen, $\frac{2}{3}$ -inch objective, 1-in choptic, Bausch and Lomb.

Male.—Unknown.

Redescribed from a single female specimen taken on the glass sides of a greenhouse on the campus of the University of Illinois, Urbana, Illinois, April 30, 1910. Since drawing up this description I have captured, on the small windows of stables, a female at Litchfield, Illinois, July 13, 1910, and one at Butler, Illinois the day following (see following).

Habitat.—United States: (Lake Forest, Urbana and Butler) Illinois.

Types.—Type No. 13,633, United States National Museum, Washington, D. C., 2 slides, 2 ♀'s and ♀ head in xylol-balsam respectively, both originally on tags labelled "134," and "*Trichogramma acuminatum*"; also 1 homotype ♀ in xylol-balsam (Litchfield, Illinois, July 13, 1910). The original specimens are less fit for study than the homotype.

Cotype.—Accession No. 44,192, Illinois State Laboratory of Natural History, Urbana, Illinois; 6 ♀'s in xylol-balsam, labelled "134" and "3756♂, Iss. Sep. 10, '85", all on a single slide remounted from tags; also a ♀ head in xylol-balsam taken from the other specimens. Also a homotypical ♀ bearing the same number (Urbana, Illinois, Apr. 30, 1910).

I first became acquainted with the species during April, 1910, when a single female was captured. The species was

thought to be new and was arranged with *Ittys* Girault. However, I am now convinced that it either belongs to *Abbella* Girault, or else is generically new; it agrees with *Abbella* excepting in wing ciliation, the fore wings normally densely ciliate with moderately long marginal cilia, and in the shape of the body, the abdomen being long and pointed. For the present I leave it with this genus but may transfer it to another subfamily if in my opinion the present subfamilies are good; it will then form a new genus.

The identity of this species did not become known to me until several months after I had captured the first specimen of it when I positively identified it with (*Trichogramma*) *Brachysticha acuminata* (Ashmead), the original specimens of which, together with another, larger series, were found in the National Museum collections. The species was erroneously described as a *Trichogramma* by Ashmead (1888) exactly in this manner:

“(19) *Trichogramma acuminatum* n. sp.

Female, length .03; male, .02 inch. Honey-yellow; eyes purplish-brown; legs pale or white. The abdomen in the female is acuminate-ovate, about twice as long as the head and thorax combined, with a lateral and a ventral row of five or six brown spots. In the male the abdomen is obtuse behind, not longer than the head and thorax combined. Antennæ pilose. The wings are strongly ciliate, the fore pair broadly rounded with a dusky blotch beneath the stigma, the hind pair rather narrowed and pointed at apex.

Described from two female and one male specimens, reared from a corn-leaf, and probably parasitic on the eggs of some leaf miner.” P. 107.

In 1895 (Ashmead, 1894–1895), Ashmead referred the species questionably to *Brachysticha* Foerster (= *Brachista* Haldy) when describing (*Brachysticha*) *Lathromeris fidiæ* (Ashmead); since, the species has remained in that genus but does not belong there as has already been intimated. Some years later Ashmead (1900) described a *Brachista pallida* which I am nearly certain is the same species which we have under consideration as the following account will show; at the least it is congeneric with *acuminata* and very similar to it but there were some difficulties in accurately examining the single tagmounted type of *pallida*.

During the late summer of 1910 I visited the National Museum collections and found therein three female specimens of this species mounted side by side on a card labelled "*Trichogramma acuminatum* Ashmead" in the well known handwriting of Dr. Ashmead and from these specimens I took the following notes :

Congeneric with *Brachista pallida* Ashmead. Wings similar to those of that species as is also the shape of the body, the abdomen long, slender, conic-ovate, longer than head and thorax united. Antennæ 8-jointed, as in *Ittys*—scape, pedicel, 1 ring-joint, 2 funicle joints and a 3-jointed club. Venation straight, marginal and submarginal veins about equal, the short stigmal vein with an ovate, fuscous spot leading from it; fore wings with about 17 longitudinal lines of discal cilia; marginal cilia moderately long at apex; no oblique line of discal cilia leading back from the stigmal vein. Posterior wings with two principal lines of cilia, the caudal line fainter and with its cilia farther apart in the line; in addition to the lines along both wing edges. Parapsidal furrows complete. Fore wings long and but moderately broad. Mesoscutum and scutellum bright pale lemon yellow, contrasting with the darker, soiled brownish of the rest of the body, the distinguishing characteristic of the species (i. e. in *re pallida*); *pallida* is uniform in general ground color. Otherwise the two species are similar. (Cf. 7 specimens labelled "134" and also "*Brachista fidiæ*.")

These undoubted original (not type, not so designated or labelled*) specimens were compared with a larger series of other specimens (mentioned and listed beyond) found in the same collection and these in turn were brought to Urbana, remounted in balsam and compared at leisure with the specimens captured in Illinois; all were identical. At the same time that the original specimens of *acuminata* were examined, as already intimated, I also examined the types of *Brachista pallida*, of which only one specimen of the original two tag-mounted types remained intact. The two type tags were labelled as follows: "8694⁰². Aug. 12, '99. Type No. 5320. *Brachista pallida* Ashm. ♀ type." for the one and the other the same and this "From eggs of *Lestes*, Lake Forest, Ill., Aug. 4, '99." From the first specimen, which was intact (the other was entirely missing) I made a balsam mount of

* But now remounted in xylol-balsam and deposited as types as stated in foregoing.

an antenna (Hym. slide 110, U. S. N. M) and obtained the following notes :

Cf. *acuminatum*. Wings as in *Ittys* Girault but densely ciliate, without regular longitudinal lines of discal cilia. Body long and slender as in *Ittys*, the abdomen longer than the head and thorax together, conic-ovate. Marginal and submarginal veins long and slender, subequal, the stigmal vein sessile, rectangular, a slight fuscous dash from it; otherwise wings hyaline; marginal fringes moderately long, Posterior wings slender, *apparently* with two principal lines of cilia, complete and additional to the line along each edge. Ocelli in an equilateral triangle in the center of the subquadrate vertex, the lateral ones distant from the eyes. Legs normal; ovipositor not exerted. Antennæ—scape, pedicel, one ring-joint, a single globular funicle joint and a 3-jointed club. Pedicel long obconic, thrice the length of the funicle joint, thrice longer than wide, over half the length of the club; the single ring-joint concealed but plainly evident when the antennæ are extended; the single funicle joint short, globular to subquadrate, a little over half the length of the proximal club joint; club acuminate, as long as the pedicel and funicle united, the three joints subequal in length. Antennæ with sparse long setæ. No oblique line of discal cilia leading back from the stigmal vein.

In regard to the sameness of *acuminata* and *pallida*. In the first place to give the reasons for considering them the same, the original descriptions of both will have to be disposed of, because a comparison of them will show that they do not agree, intimating of course that the species are distinct. Now if these original descriptions are compared with the descriptive notes taken from the original specimens themselves and with the whole description of the species *acuminata* given above—of course conceding the latter to be correct—it is obvious that both of them are erroneous and inadequate.

Secondly, conceding the proposition just made, then we must take at once the evidence furnished by the types :

1. The types were at once recognized to be congeneric and very similar.
2. The only specific difference observed between the types was a darker ground color of the mesoscutum in *pallida*, a very small difference indeed when one takes into consideration how often differences occur in individuals of the same species of the family.

3. The only generic difference between the two was in the antennæ of *pallida* where the funicle was recorded in the notes as being 1-jointed. Now, in the first place, the antenna was taken from a dried specimen; secondly, I have observed what was the same thing in a few dried specimens of *acuminata*; thirdly, another comparison of the two antennæ made for me by Mr. J. C. Crawford (comparing a single homotypical female *acuminata* in balsam with the type balsam-mounted antenna—Hym. slide 110, U. S. N. M.—of *pallida*) showed in his opinion that they were similar.
4. And certainly I shall include my own personal impressions.
5. The type localities of both species are practically identical.

For these reasons, I consider the species *pallida* identical with *acuminata*.

Besides the original specimens of *acuminata* mentioned above, in the National Museum collection were found six specimens all bearing the label "134", two of them also "3756°. Iss. Sep. 10, '85." These were all remounted in balsam (1 slide, 6 ♀'s, the cotypes). A seventh specimen proved to be a female of *Westwoodella sanguinea* Girault and has been recorded under that species.

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