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DESCRIPTIONS OF NEW TRICHOGRAMMATID (HYMENOPTERA) EGG PARASITES FROM THE WEST INDIES.

By HERBERT L. DOZIER.

To date very little has been published concerning the representatives of the family Trichogrammidae in the West Indies. The present paper describes six new species of these interesting minute egg-parasites and gives a number of valuable distribution and rearing records, accumulated by the writer while Entomologist for the Service Technique de l'Agriculture at Port-au-Prince, Haiti.

**Trichogramma minutum** (Riley).

Hatte Lathan, Haiti, Nov. 28, 1930, numbers of the golden yellow strain of this species were reared from eggs of the Cotton Leaf Worm, *Alabama argillaceae*; a yellow strain having the vertex and abdomen darker was reared from red bean foliage at Damien, Haiti, March 4, 1931, and from sweet potato foliage at Port-au-Prince, Haiti, Dec. 28, 1929; an almost brown strain was reared in very abundant numbers from eggs of the Larger Canna Leaf-roller, *Calpodes ethlius* Cramer, on canna at Damien, Haiti, June 1, 1931, and was very effective in stopping the outbreak of this pest. This dark strain either represents an undescribed strain of *T. minutum* (Riley) or a distinct species.

**Megaphragma mymaripenne** Timberlake.

1924 Timberlake, P. H., Descr. of New Chalcid-Flies from Hawaii and Mexico, Proc. Haw. Ent. Soc., V, no. 3, pp. 412-415, fig. 7.

1931 Pemberton, C. E. An Egg Parasite of Thrips in Hawaii, Proc. Haw. Ent. Soc, Vii, no 3, pp. 481-482.

Port-au-Prince, Haiti, May 11, 1931, the writer reared numerous females of this species from croton foliage infested with a very minute species of pale thrips, *Microthrips* sp. close to *piercei* Morgan.

The species was originally described from specimens collected by C. E. Pemberton on leaves of an undetermined forest tree in association with an undetermined thrips in 1920 in Hawaii. At the time it was suspected of being a parasite of the eggs of



this thrips. He again noted this parasite on leaves of croton, *Codiaenum variegatum*, in Honolulu in association with small colonies of *Heliothrips haemorrhoidalis* Bouché. He located the eggs of the thrips in minute swellings on the leaves and dissected out numbers of *Megaphragma* pupae. In addition he reared out seventeen adults noting that the parasite cuts a neat, imperfectly circular exit hole at the point of emergence, measuring from .08 to .09 mm. in diameter. He suggests that this minute wasp is an important factor in the control of *Heliothrips haemorrhoidalis* in Hawaii. This thrips is a well-known pest of various ornamentals, especially croton, in greenhouses in Europe and the United States and appears to be a native of tropical America. The writer has observed this thrips working outdoors on magnolia foliage at New Orleans, La.

The Haitian material measures from 0.172–0.20 mm. in length, distinctly shorter than the measurements given in the original description, but this smaller size is at once explained by the smaller size of the eggs of the *Microthrips* in comparison with those of *H. haemorrhoidalis*. The small size of this species at once ranks it among the smallest of all known insects.

It seems very likely that this parasite can be successfully used against the notorious bean thrips, *Heliothrips fasciatus* Perg., particularly in the southern portion of its range, and seems well worth investigation.

***Abbella ducassei*, new species.**

Closest allied to *Abbella prima* (Perkins) recorded from Mexico and Porto Rico, differing from the description of that species in lacking "a yellow median line on the mesonotum, united with the yellow hind margin" and "the scutellum, postscutellum and propodeum (except on the sides) yellow." The type of *A. auriscutellum* Gir. (1916, Ent. News, vol. 27, p. 4—from Arizona), later synonymized with *A. prima* by Girault (1918, No. Amer. Hym. Trichogrammatidae, p. 4, Sydney), has been examined by the writer in the U. S. National Museum and is very distinct from the present new species.

*Female*.—Length 0.459–0.617 mm.; expanse 0.918–1.076 mm.; greatest width of forewing 0.158–0.186 mm. General color rather dark brown in balsam mounted specimens by transmitted light, the abdomen crossed near base and on distal third with yellowish, marked with more golden yellow by direct light; antennae pale except the pedicel and joints 1 and 3 of the club which are brown; forewings bifasciate, with the venation brown; a very prominent grayish clouding extends from below the distal half of the marginal vein to the end of the stigmal vein and is continued entirely across the wing; the second fascia is a faint interrupted clouding beneath the submarginal vein; legs brown, lightening up on the distal third of the tibiae, the two proximal joints of the tarsi, pale.



Antenna rather long and slender, 9-jointed, consisting of scape, pedicel, two ring-joints, two funicle joints and a 3-jointed club. Scape long and slender, about two and a half times as long as the pedicel; pedicel distinctly wider than the scape and the two funicle joints and slightly longer than the last combined; two minute ring-joints, the proximal one about twice as wide as the second; the first funicle joint slightly longer than the second, subequal in width but slightly narrowed at base; the club distinctly wider than the funicle, at its greatest width about twice as wide, the second and third joints narrowing gradually to tip. Forewings only moderately long and broad, two and a third times longer than the greatest width; discal ciliation of the forewing distinctly more sparse than in *Abbella acuminata* (Ashm.), *americana* Gir. and *nympha* Gir., arranged in about 18–20 much confused lines of various lengths, counting across the widest portion of the wing; the cilia across the clouded area showing up quite definitely, especially a line of six to seven slightly longer ones running obliquely inwards from the end of the stigmal vein. Abdomen conic-ovate, about as long as the head and thorax combined, the ovipositor only slightly extruded.

Described from the type female reared from red bean foliage, infested with *Empoasca fabalis* De L. at Damien, Haiti, Jan. 20, 1930, and a paratype female (U. S. National Museum No. 43889) reared by the writer from sweet potato foliage infested with *Empoasca* n. sp. and *Protalebra similis* Baker at Port-au-Prince, Haiti, Dec. 28, 1929.

The writer takes pleasure in naming this species after Mr. Emmanuel Ducasse, Assistant Entomologist of the Service Technique, who rendered him valuable assistance in the collection and rearing of material.

#### ***Chaetostricha phaseoli*, new species.**

Differs greatly in shape of wing from *C. flavipes* (Gir.) from Georgia. It differs from *C. punctata* (Howard), described in 1896 from a single female collected on the island of Grenada, under the name of *Paracentrobia*, by its coloration. *C. punctata* is described as measuring 1.0 mm. in length and orange yellow in color with a black dot on the outer margin of each abdominal segment, with the legs and antennae pallid, the femora somewhat dusky in the middle.

*Male*.—Length, 0.545 mm.; expanse 1.12 mm.; greatest width of forewing 0.133 mm. General color orange yellow, the vertex, side of thorax and the distal half of the abdomen, fuscous; antennae and venation slightly smoky; legs dusky.

Rather elongate in form, the head about equal in width to the thorax. Eyes large and prominent, hairless. Antennae 7-jointed, composed of scape, ring-joint, pedicel, one funicle, and a 3-jointed club. Scape long and slender, twice as long as the wider bulbous pedicel; the ring-joint very minute and easily overlooked; the single funicle joint is slightly shorter than the pedicel and a



third narrower; club composed of three distinct joints, rather long and tapering somewhat to a rather blunt tip; second and third joints subequal in length, a third longer than the first; the setae rather sparse and inconspicuous. Forewings typical for the genus, in form agreeing most closely with the European *Chaetostricha wernerii* Kryger. The outer and lower half of the forewing is covered with numbers of cilia arranged in very indefinite confused lines. There is a border of long marginal cilia running around the distal half of the forewing, longest at the apex, is over two-thirds as long as the greatest width of the wing. A very light shading beneath the stigma only confuses its proper outline. Abdomen distinctly shorter than the thorax, of nearly equal width at the base, narrowing for its distal half to a rather acute tip.

Described from a single male, reared by the writer from red bean foliage, infested with *Empoasca fabalis* DeL., *Frankliniethrips vespiformis*, etc., at Damien, Haiti, Jan. 22, 1930.

***Ittys platycotis*, new species.**

Distinguished at once from the North American *Ittys cerasareum* (Ashm.), a parasite also of the eggs of a membracid, by its distinctly smaller size, thicker venation and darker coloration.

*Male*.—Length 0.66 mm.; expanse 1.448 mm.; greatest width of forewing 0.272 mm. General color dark brown, the head, basal third and sides of the prescutum, the scutellum, portions of the scapulae and axillae, the postscutum and propodeum, orange-yellow; the antenna light brown, except the pale scape; eyes red; legs with the femora more or less brown, the remainder yellowish; venation grayish. The forewing lacks the distinct substigmal fuscous spot present in *Ittys cerasarum* but the basal half of the wing appears very faintly clouded.

Antenna only 8-jointed, consisting of scape, pedicel, one very distinct ring-joint, two funicle joints, and a 3-jointed club. The scape is very long and broad in comparison with the remainder of the antenna, widest at the middle, two and a half times longer than its width; pedicel less than half as long as the scape, subconical, widest at its apex; ring-joint very distinct; the two funicle joints are closely joined, nearly subequal in width and length; club at base subequal in width to the funicle joints, gradually tapering to a rather pointed tip; the third joint about equalling in length that of the first and second combined, furnished with a single visible long corneous sensorium that extends completely to the tip; funicle and club joints provided with numerous bristle-like hairs. Forewings long, fairly broad but regularly rounded at the apex, with a marginal fringe of moderately long hairs. Discal ciliation is arranged in about 19–20 lines; some of these lines are confused and short but most of them are regular. Submarginal vein distinctly shorter than the marginal, with two long setae, widest at its proximal end where it equals the greatest width of the marginal vein, then narrows slightly towards the marginal; marginal vein thick, about twice as long as the stigmal, provided with three conspicuous large setae and



nine smaller ones; stigmal vein rather thick, provided on outer margin near its base with a distinct uncus composed of four minute pustules. Hind wings normal for the genus, provided with three distinct lines of cilia.

Described from two males, reared by the writer from eggs of the tree hopper, *Platycotis* (*Lophopelta*) *tuberculatus* Fairm. in avocado twigs in the mountains at Kenskoff, Haiti, Nov. 5-6, 1930. The egg masses of the host were abundant at the time but for the most part hatched, and yielded only the two specimens.

One male paratype, mounted in balsam on slide, is deposited in the U. S. National Museum, No. 43890.

#### UFENS Girault.

1911 Girault, Trans. Amer. Ent. Soc., vol. 37, p. 32.

As pointed out by Mr. P. H. Timberlake (Proc. Haw. Ent. Soc., VI, no. 3, p. 525, 1927) there are two ring-joints present in the genus *Ufens*, making the antennae 9-jointed, the second ring-joint often being very obscure and closely joined to the base of the funicle. In the female the two wide funicle joints are usually very large, having a peculiar twisted appearance, and there are a number of very conspicuous long corneous sensoria that project more or less beyond the distal ends of the joints. The antennae are dissimilar in the male sex, being provided with whorls of long hairs, the club not being well differentiated from the funicle; the sensoria are less numerous and prominent; the terminal joint of the club is provided with an apical bud-like appendage. The forewings are short and broad, oblately rounded at the apex, shaped somewhat like a broad flat paddle; venation rather straight and not forming a regular arch or bow. The ovipositor only slightly exerted.

#### *Ufens beneficus*, new species.

Closest allied in both structure and habits to *Ufens elimaeae* Timb., a species reared from the eggs of the orthopteron, *Elimaea punctifera*, in Hawaii, but differing in its larger size and stouter antennae.

*Female*—Length 0.50-0.573 mm.; expanse 1.089 mm.; greatest width of forewing 0.272 mm. General color very dark brown, the vertex a shade lighter, the oblique lateral margins of the prescutum posteriorly, the scutellum, hind margins of the axillae, marked with yellowish-orange; the propodeum very pale, scape pale, the funicle and club dark brown, eyes red; legs grayish-brown, the femora slightly pale at their distal ends, the tibiae with the distal third pale, all tarsi pale; venation grayish.

Short and rather stout. The head about as wide as the thorax, the vertex broad. Antennae 9-jointed, the scape short and distinctly widened, about one-



third as wide as long; pedicel very short, almost as wide as long, under high magnification lineately reticulated; two ring-joints present but very minute and easily overlooked; the first and second funicle joints very closely fused, separated by fine suture, appearing at first glance to be one, very wide and prominent, about twice as wide as the pedicel, provided with numerous conspicuous corneous sensoria arranged obliquely outwards; the club 3-jointed, inserted towards ventral edge of the apex of the funicle, the second club-joint appearing to be longer than the first, separated by a distinct suture; the corneous sensoria are very conspicuous, those of the first club-joint arranged obliquely outwards in the opposite direction from those of the second, projecting slightly beyond the tip of the joint; club 1 subequal in width to that of the funicle; club 2 distinctly narrower and directed inwardly; terminal joint decidedly narrow, being at base only about one-half as wide as the second club-joint, pointed. In addition to the prominent sensoria the antenna is provided rather sparsely with a number of bristle-like setae. Forewings large and broad, rounded at the apices. Typical for the genus. Marginal fringes very short and dense, the discal setae arranged in 17 lines, three of which are more prominent than the others, namely, lines 1 and 7 which start at the stigmal vein; line 16 which continues inwardly a short distance from the posterior margin to a point opposite the proximal end of the marginal vein; about four times as long as wide, widening towards its apex; stigmal vein about one-third as long as the marginal, constricted at base for a very short distance and then widens out into a somewhat rectangular form, appearing very short and broad; the subrectangular part is provided on distal margin, just before the middle with an uncus, formed of four distinct pustules, arranged in a line, decreasing in size toward the apex; a slight gap between the first two pustules and the remaining two.

*Male*.—Length 0.720 mm. The single male specimen associated with the above females appears almost like a different species, being distinctly larger, of a totally different coloration and having the antennae dissimilar. General color yellowish, the head more orange, the prescutum, scutellum, axillae and propodeum and tip of abdomen suffused with brown; legs pale yellowish with exception of two-thirds of the posterior tibiae. Antennae very pale brownish, the club more yellowish, and there is an indication of reddish pigment at base of the first funicle joint; the scape compressed, over twice as long as wide; the pedicel subtriangular, only about half as long as the scape; provided with bristle-like setae, but the corneous sensoria are less numerous than in the female and less distinctly defined. Forewings quite similar to those of the female, the marginal and stigmal veins appearing somewhat thicker and the latter is less rectangular, the inner apical point being more drawn out.

Described from a series of 59 females, mounted in balsam on nine slides, and a single male, all reared by the writer from eggs of an orthopterous insect, presumably a small katydid, on the Haitian oak, *Catalpa longissima*, at Damien, Haiti, Feb. 27, 1931. Two slides containing eleven paratype females deposited in the U. S. National Museum No. 43891.

A large number of the host egg masses were collected Feb. 25, 1931, on two young Haitian oak trees. These for the most



part were glued on the upper surface of the leaf, always at its base along the main vein, but some placed on stems just at the joint. The masses contained from seven to eleven rather elongated eggs (measuring 1.50 mm. in length), each in a layer of flat dried skin-like parchment. These are placed overlapping each other, somewhat scale-like, and the mass appearing as only a slightly elevated glistening chitin colored object that easily escapes observation. The entire mass measured about 3.50 x 4 mm. The eggs within the glued mass were of a dirty grayish color with an olive cast. On February 27, large numbers of the parasites issued, one to each egg, leaving small round exit holes. Four specimens of an undetermined entodonine wasp parasite were reared at the same time from the egg masses but their status is unknown.

***Ufens ormenidis*, new species.**

Easily separated from the known North American and West Indian species of the genus by its small size, coloration, antennal and venational characters.

*Female*.—Length 0.487 mm.; expanse 0.903 mm.; greatest width of forewing 0.229 mm. General color orange-yellow, marked with fuscous beneath, on the sides of the thorax, and the posterior border of each abdominal segment is marked with a fuscous band; the antennae pale brown, the scape distinctly paler; eyes red; legs with the proximal two-thirds of the femora and tibiae more or less fuscous, the remainder pale to a soiled yellowish.

Rather short and robust in appearance, the head about equal in width to the thorax. Scape rather short and compressed, a third longer than the pedicel; two very minute ring-joints present; the two funicle joints closely joined, separated only by a fine suture, the first joint being distinctly the shorter and only about half as long as the second; the two combined funicle joints are about equal to the pedicel in length and are slightly wider; the club 3-jointed. Each joint diminishing successively in width, the first being distinctly wider than the funicles, the terminal joint at base about half the width of the second club-joint; all the funicle and club joints are provided with the conspicuous corneous sensoria so characteristic of the genus; in this case these are not developed to the extent of those in *Ufens osborni*, reaching only very slightly beyond the distal margins of the joints. The forewings are typical for the genus, being large and rather broad, rounded at the apices; the discal cilia arranged in about 19–20 lines, less regular than in *Ufens beneficus* Dozier and more regular than in *Ufens niger* (Ashm.) and *Ufens osborni* Dozier. Hind wings with three regular lines of setae. The darker portions of the body and legs appear elongately reticulated, under high magnification.

*Male*.—Length 0.574–0.659 mm. Similar to the female in color but distinguished at once by the dissimilar antennae and the presence of bulbous internal genital organs that show through the wall of the abdomen in balsam mounted specimens; under direct light these appear distinctly orange. The male



antennae do not show as much difference between those of the female in this species as is the case with *Ufens beneficus* and *osborni*. Composed of nine joints, the scape nearly twice as long as the pedicel; first and second funicle joints closely joined together but separated by a distinct suture, the first joint being very short, only about one-fifth as long as the second, the two combined being longer and wider than the pedicel; the second joint with revolving or twisted sensoria; the club 3-jointed, the first joint narrowest at its base, then widening to its juncture with the second where the club presents its greatest width, from that point tapering to the terminal apex; the sutures dividing the club-joints are very irregular; club joints provided with numerous bristle-like hairs and a few corneous sensoria.

Described from twelve females and three males, mounted in balsam on seven slides, reared by the writer from cottony covered eggs of the common fulgorid, *Ormenis* sp., on red-flowered ornamental shrub on the Ecole Centrale grounds at Damien, Haiti, Feb. 19-24, 1931; four females and one male, reared from eggs of undetermined *Ormenis* on large-leaved *Bunchosia* on hillside at Tapion, Haiti, Feb. 20, 1930; one female reared from *Stigmatophyllum lingulatum* vine material at Damien, Haiti, May 11, 1930; one male from *Malphigia glabra*, infested with *Ormenis* sp. at Port-au-Prince, Haiti, Aug. 3, 1931; one female from white cottony covered fulgorid egg mass on *Stigmatophyllum* at Cazeau, Haiti, Jan. 6, 1930.

Three slides containing two paratype males and three paratype females are deposited in the U. S. National Museum No. 43892.

***Ufens osborni*, new species.**

Distinctly larger than all described members of the genus. A superficial study would seem to warrant the erection of a new genus to contain this species but a detailed examination shows that the species falls into *Ufens*, the most distinctive features being the greater development of the corneous sensoria of the antennae and the greatly shortened marginal vein.

*Female*.—Length 0.760 mm.; expanse 1.30 mm.; greatest width of forewing 0.329 mm. General color yellowish-orange, the head distinctly darker, the pronotum infuscated on the dorsum; the dorsum of the abdomen marked on its basal half with fuscous, appearing almost like two transverse bands in balsam mounted specimens; another transverse band of fuscous present nearer the tip; eyes red; antennae pale brown; legs pale yellowish.

Antennae 9-jointed, consisting of long scape, pedicel, two minute but distinct ring-joints, two funicle joints, and a 3-jointed club. Scape rather long and only slightly compressed; pedicel subtriangular, slightly over a third as long as the scape; the two funicle joints subequal in length and width, exceeding slightly in combined length that of the first club joint; club composed of three joints, the second distinctly longer than the first and slightly narrower; last club joint



distinctly long and narrow with a terminal narrow extension; the funicle and club joints are provided with conspicuously developed long corneous sensoria that project considerably beyond the distal ends of the joints and flaring outwards visibly from the sides; in addition there are numerous strong bristle-like setae present. Forewings typical in shape for *Ufens* being rather large and broad, rounded at the apices; marginal fringe very short and dense; the discal setae arranged in 24 or more lines, so irregular that it is impossible to say accurately how many lines or rows there are; two lines appear slightly more prominent than the others, namely, the third which runs on a line with the uncus and another extending from the distal end of the stigmal vein; the submarginal vein is somewhat triangular in shape, with a pair of very strong setae; the marginal vein remarkably short and broad, almost as wide as long; stigmal vein also very short, distinctly shorter than the marginal to which it is joined by a short constriction, subquadrate in shape with an uncus present at upper distal end, composed of four minute but distinct pustules. Rather robust in general form, the abdomen being subequal in length to the thorax. The front and middle femora long and narrow, the hind femora distinctly more robust and thicker. The ovipositor barely extruded beyond the tip of the abdomen.

*Male*.—Length 0.78 mm. Similar to the female in coloration but differing in antennal structure greatly. Antennae 9-jointed, there being no great differentiation between the funicle and club joints, each having one to two whorls of prominent long verticillate hairs; the funicle and club joints decrease slightly and successively in width and length.

Described from a series of specimens, reared by Herbert T. Osborn at Central Aguirre, Porto Rico, in 1930 from eggs of the Sugar Cane Root Weevil, *Diaprepes abbreviatus*, and kindly given the writer for study and determination by Dr. J. G. Myers, and a slide containing four females and three males in the U. S. National Museum, also reared by H. T. Osborn at Central Aguirre in October, 1928. The female holotype and male allotype on the above mentioned slide, mounted in balsam, is in the U. S. National Museum Type No. 43893.

The writer takes pleasure in naming this valuable parasite after its discoverer, Dr. H. T. Osborn, former Entomologist for the Aguirre Sugar Company.

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## A NEW THRIPS FROM PLUMMER'S ISLAND, MARYLAND.

By J. DOUGLAS HOOD, *University of Rochester.*

Nearly nineteen years have elapsed since the first specimen of the thrips here described was collected in early spring beneath loose bark on a living sycamore tree on Plummer's Island, Maryland; and in the eighteen years which have passed since the last accessions were made, I have constantly hoped to discover something of its habits during the summer season, and to learn upon what plant or plants it feeds—for, of course, it is





Dozier, Herbert L. 1932. "Descriptions of new trichogrammatid (Hymenoptera) egg parasites from the West Indies." *Proceedings of the Entomological Society of Washington* 34, 29–37.

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