

posterior tibiae, brown; abdomen scarcely as long as thorax; petiole not scale-like, broadening behind, more than half as long as broad at apex.

*Type-locality*.—Douglas, Arizona.

*Type*.—No. 44286, U. S. N. M.

Six females and one male reared by W. W. Jones from *Opuntia spinosior* (Engelm.) Toumey, on which it is said to form galls.

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THE IDENTITY OF CERTAIN WHITEFLY PARASITES OF THE  
GENUS *ERETMOCERUS* HALD., WITH DESCRIPTIONS OF  
NEW SPECIES (HYMENOPTERA : APHELININAE).

By HERBERT L. DOZIER.

The discovery of *Eretmocerus serius* Silvestri, a parasite of the notorious Citrus Black Fly, *Aleurocanthus woglumi* Ashby, at Singapore, and its introduction and successful establishment by Dr. Clausen in Cuba in 1930, in Panama in 1931, and by the writer in Haiti in 1931, creates immediate interest in the genus *Eretmocerus*. All members of this genus that have been reared in various parts of the world have proved to be primary parasites of aleyrodids.

The genus now contains the following described species: *Eretmocerus corni* Haldeman, *californicus* Howard, *paulistus* Hempel, *haldemani* Howard, *australis* Girault, *diversiciliatus* Silvestri, *serius* Silvestri, *orientalis* Silvestri, *mundus* Mercet, *portoricensis* Dozier, *pallidus* Dozier, and *illinoisensis* Dozier.

The type species of the genus, *Eretmocerus corni* Haldeman, was described in 1850 and since that date has remained a lost species. Although careful search has been made the original type material has never been located and it is the purpose of this paper to establish the validity and easy recognition of the genotype, of *E. paulistus*, and to describe three interesting additions.

*Eretmocerus corni* appears to be limited in distribution to the northeastern portion of the United States and is the most northern in distribution of any of the known members of the genus. The species was originally described briefly by Haldeman in the following statement: "Two mutilated specimens of another species of parasite were raised with the preceding and imperfectly examined. The color is pale flavous; the wings have a subcostal nerve not quite straight, ending in a short stigmal branch about the middle, the wings in all other respects as in *Amitus*; feet slender and apparently pentamerous; eyes black, covered with numerous short erect bristles, more distinct than in *Chelonus*; head, thorax, and abdomen closely united, thorax large, abdomen with sides parallel and the apex obtusely rounded; in one specimen ( $\sigma$ ?) the abdomen seems but half the



width of the thorax, and in the other its sides form straight lines with it; antennae (see annexed figure) 5-articulate, shorter than the body, scapus narrowed toward its apex, second articulation obconic, third and fourth very short, fifth oar-shaped (whence the generic name), longer than all the preceding united, widened toward the apex, which is obtusely rounded. It may possibly be parasitic in the larva of the *Amitus* described above, as it is somewhat less in size. I propose to name the genus *Eretmocer* and the species *E. corni*."

The inadequate description and original drawing of the female antenna accompanying same has led to much confusion. In order to establish the true identity of *Eretmocer corni* Hald., the writer made a special endeavor to collect and rear out material from Pennsylvania, as the species was originally described from that state. Haldeman's statement that the eyes are hairy refers undoubtedly to the hairs on the margin of the vertex adjacent to the eyes, although these hairs are not very conspicuous in balsam-mounted specimens. The eyes appear hairless except when examined under high magnification when they are seen to have sparse very short setae that are scarcely visible. He also mentions that in what he dubiously concluded was the male, that the abdomen seems but half the width of the thorax and this is true in one of the three males of the present series.

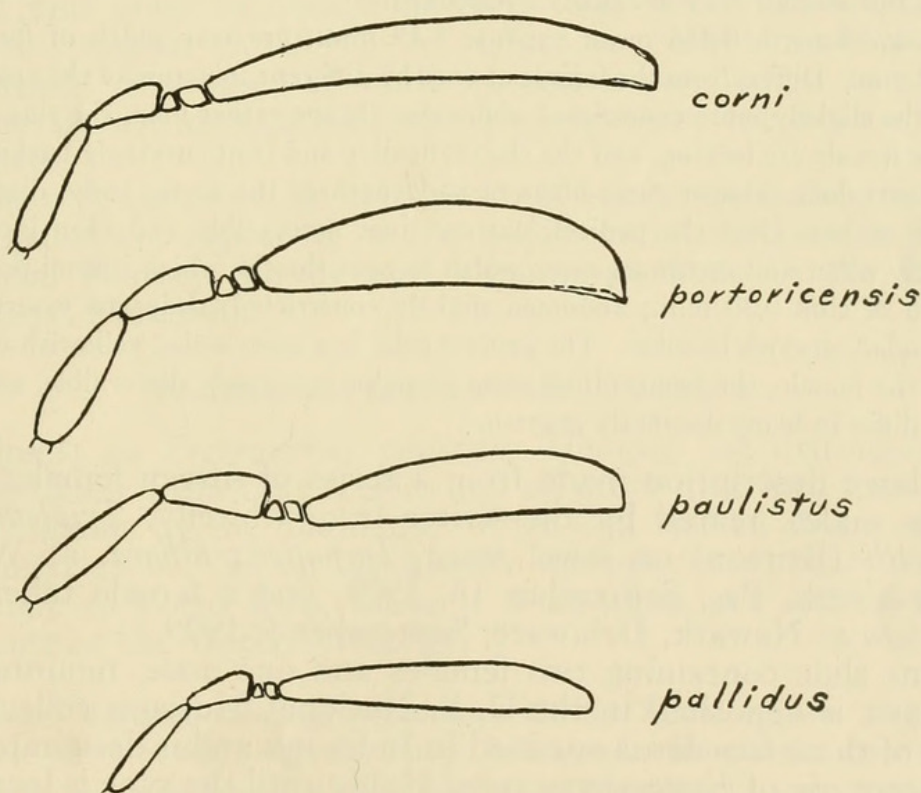


FIG. 1.—Outline drawings of female antennae of *Eretmocer corni* Haldeman, *portoricensis* Dozier, *paulistus* Hempel, and *pallidus* Dozier (made with camera lucida).



**Eretmocerus corni** Haldeman.<sup>1</sup>

*Female*.—Length, including the ovipositor, 0.544–0.616 mm.; expanse 1.29 mm.; greatest width of the forewing 0.178 mm. General color of fresh living material a distinctly golden yellow; mounted in balsam the color becomes yellowish-orange, lighter on the sides and tip of abdomen; a median longitudinal vitta or stripe extending the entire length of the thorax and onto abdomen to tip of the endophragma, and short oblique vitta covering the parapsides, of a much lighter or lemon yellow; the contents of the alimentary tract show through to soil or darken the color of the abdomen; legs and antennae pale yellowish; eyes black; ocelli reddish. Antennae five-jointed, long and well built; scape long and rather slender, enlarging to base; pedicel short, triangular, distinctly wider, followed by two short and narrow ring-joints; club with faint longitudinal sensoria present, very long, about four and a half times longer than the pedicel, narrow at base and starting slightly wider than the ring-joints, gradually widens and then narrows just before the truncated apex; along the anterior and posterior margins near the tip narrow clear areas can be noted under high magnification; length of the club 0.201 mm., its greatest width 0.029 mm. Apex of the vertex slightly incised or notched at the middle; a grouping of inconspicuous hairs or setae on margin of the vertex adjoining the eyes. Under high magnification, the vertex and thorax appear distinctly reticulated. All tarsi four-jointed. The ovipositor rather short but distinctly exerted beyond the abdomen. The eyes appear to be bare but under high magnification show the presence of very short and inconspicuous setae, very sparse in numbers, and very difficult to make out so that they are easily overlooked.

*Male*.—Length 0.488 mm.; expanse 1.19 mm.; greatest width of forewing 0.172 mm. Differs from the female at once by different structure of the antennae and the slightly more constricted abdomen. Scape rather long, the ring-joints of the female are lacking, and the club is flexible and bent curvingly backwards; club very long, almost three-fifths of the length of the entire body, distinctly wider at base than the pedicel, narrows just perceptibly and then increases slightly wider and continues same width to near the tip, which is semi-pointed; length of club 0.30 mm.; abdomen slightly constricted; oedeagus exerted or protruded, grayish in color. The general color is a more soiled yellowish-orange than the female, the longitudinal vitta or stripe is scarcely discernible, and the tarsi differ in being distinctly grayish.

Above description made from a series of fifteen females and three males, reared by the writer from whitefly, *Trialeurodes morrilli* (Britton) on jewel weed, *Impatiens biflora*, at White Clay Creek, Pa., September 16, 1929, and a female taken on window at Newark, Delaware, September 5, 1929.

One slide containing two females and one male, mounted in balsam, is deposited in the U. S. National Museum collection. One of these females is outlined in India ink and is designated as the neotype of *Eretmocerus corni* Hald. until the type is located, which is unlikely.

<sup>1</sup>1850, Haldeman, American Journal of Science, vol. IX, May, pp. 110–111, fig.



**Eretmocerus illinoisensis**, new species.

Differs at once from the other described American members of the genus by having the basal portion of the forewing faintly infumed out to the beginning of the marginal vein. In fresh living material the color is a rusty yellow instead of the golden yellow of *E. corni*.

*Male*.—Length, exclusive of the exerted oedeagus, 0.545 mm.; expanse 1.39 mm.; greatest width of the forewing 0.214 mm. In life the color is distinctly rusty yellow instead of the golden yellow of the eastern species, *E. corni* Hald.; mounted in balsam the color becomes dark brownish, the legs almost concolorous but with the tarsi darker and gray. The apex of vertex slightly incised or notched at the middle; margin of vertex with grouping of inconspicuous hairs; the eyes, under high magnification, supplied with short inconspicuous setae; these are more distinct, however, than in the case of *E. corni* Hald. Antennae characteristic of the males of the genus, having the scape rather long, peicel short, the club flexible and bent curvingly backwards; club slightly wider at base than the pedicel, increasing in width gradually, provided with numerous long, conspicuous sensoria. Forewing with from 9–10 long setae in bare area beneath the marginal vein. Oedeagus distinctly exerted.

*Female*.—Unknown.

Described from six males taken by the writer sweeping low weed and grass in middle of creek bed near Elizabethtown, Illinois, August 5, 1932. An effort to collect females was fruitless. A number of adult whiteflies were taken sweeping at the same time and undoubtedly represent the host of this parasite.

The type male on slide in balsam and a paratype male mounted in euparal are deposited in the collection of the Illinois State Natural History Survey and a paratype male in the U. S. National Museum.

**Eretmocerus portoricensis**, new species.

Closest to *Eretmocerus paulistus* Hempel but distinguished immediately from that species and all other described members of the genus by the distinctive width and beaked shape of the antennal club. So far as known the species appears to be endemic to Porto Rico, where it is an abundant and effective parasite of the Woolly Whitefly.

*Female*.—Length, including ovipositor, 0.459–0.617 mm.; expanse 1.18 mm.; greatest width of forewing 0.20 mm. General color of material mounted in balsam is yellowish-orange with a faint dirty olive cast in some specimens; a lighter median longitudinal vitta or stripe extends the entire length of the thorax and to tip of the endophragma, and an oblique vitta on the parapsides; legs distinctly paler; ocelli prominently reddish. Eyes very prominent, black.



Apex of vertex distinctly incised or notched at the middle. Antennae presenting a short and compact appearance; the scape slightly over twice as long as the pedicel, somewhat flattened and broad; pedicel subtriangular, followed by two ring-joints; club comparatively short and compact, wider than in all other known species, commencing narrow at base, about width of the second ring-joint and enlarging to its greatest width about the middle, then gradually rounding to apex; the apex shaped somewhat like a parrot's beak, differentiating it immediately from all other species; along the posterior margin near the tip a clear area can be noted under high magnification that accentuates the beak-like resemblance; the club shows inconspicuous longitudinal sensoria but these are decidedly less distinct than those present and so characteristic of *E. californicus* Howard; length of club 0.129–0.143 mm.; greatest width 0.036 mm. The mesonotum and scutellum show slightly granular under high magnification and with the reticulation much less distinct than in the case of *E. corni* Hald. All tarsi four-jointed. Forewings, including the venation, clear. Ovipositor short and only slightly exserted but plainly visible from above.

*Male*.—Unknown.

Described from a series of forty-five females mounted in balsam on three slides, reared from *Aleurothrixus floccosus* (Maskell) on "Almacigo," *Elaphrium Simaruba* (L.) at Bayamon, Porto Rico, January 21, 1925; and eighteen females on three slides, reared from the same aleyrodid on *Lignum-vitae*, *Guajacum officinale* L., at Central Aguirre, Porto Rico, July 23–26, 1925, by the writer.

Type slide containing thirteen females, reared from *Aleurothrixus floccosus* (Maskell) on *Elaphrium simaruba*, Bayamon, Porto Rico, January 21, 1925, is deposited in the U. S. National Museum collection.

This species was erroneously determined for the writer in 1925 as *Eretmocerus californicus* Howard, but upon comparison with the type material of that species in the U. S. National Museum since it appears to be very distinct and easily separated from that species on antennal characters alone. The statement in Circular No. 88 of the Porto Rican Insular Experiment Station, in regard to the efficient work of *E. californicus* in checking the Woolly Whitefly on that island should refer to the above new species.

#### ***Eretmocerus pallidus*, new species.**

The smallest known member of the genus and recognized immediately by its small size, very pale color, and shape of antennal club.

*Female*.—Length, including ovipositor, 0.359–0.430 mm.; expanse 0.846–0.918 mm.; greatest diwth of forewing 0.108–0.129 mm. General color of living or freshly mounted material in balsam is very pale yellowish-white, distinctly



lighter than in any known species; the head is distinctly darker with a faint indication of reddish tint in the pale brown; the scape pale, the pedicel and club pale-yellowish; legs pale. Antennae long and slender in general appearance, the scape slightly over twice as long as the pedicel, slender; pedicel short, subtriangular, distinctly longer than wide; two ring-joints small; club comparatively long, rather slender, commencing with same width at base as the second ring-joint, gradually widening with a slight bulge and then narrowing to the somewhat truncated tip; length of club 0.116–0.129 mm.; its greatest width 0.022 mm.; tip of club with distinct setae. Mesonotum longer than the scutellum; under high magnification the surface of the mesonotum, scutellum, and endophragma with a characteristic longitudinal effect of being striated. Wings hyaline, the venation pale. All tarsi four-jointed. Ovipositor rather short but distinctly exerted.

*Male*.—Unknown.

Described from a series of forty-two females reared by the writer from one of the smallest known aleurodids, *Tetraleurodes* n. sp., on "Cachiman canelle," *Annona squamosa*, at Port-au-Prince, Haiti, April 11–17, 1931. These were reared in association with a very small species of *Thysanus* that greatly resembles *T. aleyrodus* (Ashm.), but which is apparently distinct, and is most probably secondary.

Type slide, containing four females mounted in balsam, is deposited in the U. S. National Museum; paratypes in the collection of the Museo Nacional de Ciencias Naturales, Madrid, Spain, and the writer.

#### ***Eretmocerus paulistus* Hempel.<sup>2</sup>**

This long lost species was described in 1904 in Portuguese, from two males and a female reared from *Aleurodes horridus* Hempel (= *Aleurothrixus floccosus* Maskell) in Brazil. Since that date the description has been overlooked. Haitian material, reared from the same host, agrees well with the original description and figure of the female antenna.

*Female*.—Length, including ovipositor, 0.473–0.559 mm.; expanse, 1.16 mm.; greatest width of forewing 0.172 mm. General color yellowish, in some balsam-mounted specimens there is a slight dirty olive cast, the head becoming a pale reddish-brown; a median longitudinal vitta of a lighter color runs the entire length of the thorax to the endophragma, and a short oblique vitta on the parapsides as in *E. corni* Hald. Apex of vertex slightly incised or notched at the middle. Antennae with the scape nearly twice as long as the triangular pedicel; first ring-joint somewhat triangular, narrower than the second; club five times as long as greatest width, starting at base with same width as the second ring-joint, gradually widens, reaching its greatest width just slightly beyond the middle, then gradually curving to the rather broad, truncated apex; faint

<sup>2</sup>1904, Hempel, Bol. Agr. Sao Paulo, Brazil, Ser. 5, No. 1, p. 19, fig. 2.



sensoria are present; apex with inconspicuous pale setae; length of club 0.129-0.143 mm.; its greatest width 0.028 mm. Under high magnification the mesonotum and scutellum present a somewhat granular appearance with only a very faint indication of reticulation in contrast to the distinct reticulation that is present in *E. corni* Hald. Ovipositor short, slightly exerted but plainly visible from above.

*Male*.—No males have been reared by the writer but Hempel states that the male is also pale yellow in color and figures the male antenna as being three-jointed; the pedicel triangular, the club long and cylindrical with numerous sensoria present.

The above description is based on six females reared from *Aleurothrixus floccosus* (Maskell) at Damien, Haiti, June 17, 1930, and fifteen females reared from the same aleyrodid on *Lignum-vitae*, *Guaiacum officinale*, at Sarthe, Haiti, January 31, 1931 by the writer.

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## TWO UNDESCRIBED CHALCID PARASITES OF THE WOOLLY WHITEFLY, *ALEUROTHRIXUS FLOCCOSUS* (MASKELL), FROM HAITI.

By HERBERT L. DOZIER.

The two new species described in the present paper were reared as primary parasites of the Woolly Whitefly, *Aleurothrixus floccosus* (Maskell), by the writer while Entomologist for the Service Technique de l'Agriculture at Port-au-Prince, Haiti. Both species are abundant at times in that country and are second only to *Encarsia cubensis* Gahan in efficiency in checking the increase of their host.

In addition, a full description is given of both sexes of *Prospaltella brasiliensis* Hempel, reared from the same host. This represents the rediscovery and first recognition of this species since the description of the female in 1904, published in Portuguese and in an obscure and inaccessible publication. Both Drs. Howard and Mercet seem to have overlooked the description of this species. The male is now associated with the female and described herewith. The species appears to be correctly placed in *Prospaltella* and the writer suspects that what Prof. Stuardo records (Carlos Stuardo, *Revista Chilena de Historia Natural*, vol. xxxii, pp. 154-157, 1928) as *P. conjugata* Masi, reared from *Aleurothrixus porteri* Quaint. in Chile, represents the male of this species.

### *Encarsia haitiensis*, new species.

Belongs to the group of *Encarsia* having the middle tarsi 4-jointed. In general appearance and size very close to *E.*



Dozier, Herbert L. 1932. "The identity of certain white fly parasites of the genus |Eretmocerus| Hald., with descriptions of new species." *Proceedings of the Entomological Society of Washington* 34, 112–118.

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