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## Annals and Magazine of Natural History: Series 6

Publication details, including instructions  
for authors and subscription information:  
<http://www.tandfonline.com/loi/tnah12>

### IV.—Contributions from the New Mexico Biological Station.—No 11. (continued). On a collection of Diptera from the Lowlands of the Rio Nautla, in the State of Vera Cruz. 11

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Published online: 06 Oct 2009.

To cite this article: C.H. Tyler Townsend F.E.S. (1897) IV.—Contributions from the New Mexico Biological Station.—No 11. (continued). On a collection of Diptera from the Lowlands of the Rio Nautla, in the State of Vera Cruz. 11, *Annals and Magazine of Natural History: Series 6*, 20:115, 19-33, DOI: [10.1080/00222939708680597](http://dx.doi.org/10.1080/00222939708680597)

To link to this article: <http://dx.doi.org/10.1080/00222939708680597>

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*C. nicomache* appears to be confined to North-east Continental India, and the species here described is its near Burmese congener.

*Pomponia cuneata*, sp. n.

Head black, some marginal testaceous streaks to front and the same at base; eyes brownish ochraceous; pronotum ochraceous, with two central longitudinal fasciæ and the incisures black; two castaneous spots on outer basal margin; mesonotum ochraceous, with a central fascia, four obconical spots—the outermost largest—and a spot in front of each anterior angle of the basal cruciform elevation black; abdomen above castaneous, the three basal segments posteriorly narrowly ochraceous at the lateral margins. Sternum and opercula pale ochraceous; face, legs, and abdomen beneath brownish ochraceous.

Tegmina and wings pale hyaline, the venation either ochraceous or castaneous, the tegmina with the transverse veins at the bases of the second and third apical areas darkly infuscated.

The opercula are somewhat acutely triangular, their narrowed apex reaching the second abdominal segment; the rostrum just passes the apex of the intermediate coxæ.

Long. excl. tegm. 25 millim.; exp. tegm. 66 millim.

This species may be placed near *P. scitula*, Dist.

*Calcagninus marginatus*, sp. n.

Body and legs ochraceous; apex of the abdomen black.

Tegmina pale ochraceous hyaline, the outer margin somewhat broadly infuscated. Wings paler hyaline, their apical margins narrowly and obscurely infuscated.

Opercula short, subquadrangular; rostrum about reaching the base of the posterior coxæ.

Long. excl. tegm. 15 millim.; exp. tegm. 38 millim.

IV.—*Contributions from the New Mexico Biological Station.*

—No II. (continued). *On a Collection of Diptera from the Lowlands of the Rio Nautla, in the State of Vera Cruz.*

11.\* By C. H. TYLER TOWNSEND, F.E.S.

**Psychodidæ.**

23. *Psychoda punctatella*, sp. n.

One male, Paso de Telaya, March 30.

Length 1 millim., of wing 1.5 millim.

\* Section I. appeared in Ann. & Mag. Nat. Hist. ser. 6, vol. xix pp. 16–34.

A very distinct species, which approaches in structure *P. angustipennis*, Will. (Dipt. St. Vincent, p. 284), but the wings, while quite as narrow, are not so acutely pointed at tip. Brownish or greyish brown, the thorax clothed with a thick tuft of white hair. A smaller thick tuft of white hair at base of abdomen; rest of abdomen with short hair, appearing brownish when viewed from above and white when viewed obliquely. Head with some blackish hair. Legs greyish brown. Wings nearly three times as long as greatest width, quite thickly clothed with white or yellowish-white hair, forming a thick fringe on border, which is of even and only moderate length on whole anterior border of wing, but grows gradually longer from tip to base on posterior margin, until at base it lacks but little of being as long as greatest width of wing. The hairs of this longest fringe are directed straight backward at a right angle to long axis of wing. Eight small black spots on margin of wing as follows:—One on front margin at extreme base; two faint linear central ones on base of wing, indistinctly separated; a large elongate one opposite on inner margin; two smaller distinct ones opposite each other on margin, one on front, the other on hind margin a little beyond middle of wing; a somewhat less distinct one on extreme tip, and a still less distinct one on hind margin between the apical one and the middle hind-marginal one. The wing-spots are seen with the compound microscope to touch only the veins, the basal spots appearing as a basal fascia to the wing. Outline of the wing bilaterally symmetrical, not elongate-pointed at tip, but the margins evenly curved on each side to meet in an acute angle, the curves of apical portion being nearly the same as those of basal portion. Antennæ much longer than thorax, reaching to or beyond middle of abdomen, comparatively stout, thickly clothed with white hair.

This species seems allied to the European *P. albipennis*, Zett., the description of which is strikingly similar in some points. But *punctatella* differs abundantly, not only in other characters but particularly in the spotted wings, the wings of *albipennis* being without spots. It may belong in the *albipennis* group, as would seem to be indicated by the description of the latter in the characters of the elongate antennæ, elongate wings, hair and fringe of wings, small size, and general coloration.—I may mention here that I have identified *P. albipunctata*, Will., in specimens taken at Frontera, Tabasco.

### Rhyphidæ.

#### 24. *Olbiogaster tæniatus*, Bell.

*Rhyphus tæniatus*, Bellardi, Sagg. Ditt. Mess. Append. p. 5, pl. fig. 15.

One male, San Rafael, June 26. In sweepings.

Length about  $7\frac{1}{2}$  millim., measuring the curve of the abdomen.

Agrees perfectly with Bellardi's description and figure, except that the middle femora are mostly yellowish. It also agrees perfectly with Osten Sacken's description of the genus *Olbiogaster*, and bears out his remarks on the genus at the end of the description (see Biol. C.-A., Dipt. i. pp. 20-21). Osten Sacken has there pointed out that *R. tæniatus*, Bell., is an *Olbiogaster*. This is the first record of the finding of this species since Bellardi described it in 1862.

This very curious dipteran exactly resembles at first sight some of the smaller Hymenoptera, the general form, aided by the markings of the abdomen and the long slender antennæ, giving the appearance presented by some of the small Ichneumonidæ.

### Tabanidæ.

#### 25. *Tabanus mexicanus*, var. *limonus*, n. var.

One male, on flowers of the *Cordia* sp., San Rafael, July 17.

Length  $11\frac{1}{2}$  millim., not including antennæ; wing 10 millim.

Entirely of a tawny lemon-yellow colour, including the narrow costa of wings on basal two thirds. Eyes in life wholly pale yellowish olive, abruptly more glassy on lower one third; in the dried specimen rich brown. Antennæ, palpi, and legs with a slightly deepened tawny tinge. Second antennal joint one half as long as first; first as long as its apical breadth; second shorter than wide, with an anteriorly-directed apical spur on upper edge; third joint about twice as long as first and second together, with a well-marked acute process on base above, the process ending in an acute angle but not produced; this process makes the basal width of joint about one third greater than width of first and second joints. Annulate portion of third joint rather slender and pointed. Face, palpi, breast, thorax, trochanters, and abdomen rather thickly clothed with brassy-yellow hair, that on the thorax and breast being longest and that on abdomen the shortest, the hinder two thirds of abdomen being rather sparsely clothed above. Tarsi and ends of tibiæ slightly tinged with brownish, most pronounced on tips of tarsi. Proboscis tinged with

brown, the labella shining dark brown. Face, thorax, and scutellum brassy-yellow pollinose; abdomen shining tawny yellow, the apical portion (in the dried specimen) slightly tinged with brownish, but yellow in life. Knobs of halteres greenish yellow. Eyes bare, contiguous from the small tubercle-like yellow vertex to near base of antennæ, leaving a small, bare, brassy-yellow pollinose frontal triangle, the upper angle abruptly tapered and acute. Anterior branch of third vein with a long stump at its basal angle, the stump being three times or more the length of basal section of branch. Wings, except costal border above mentioned, pure hyaline, wholly without sign of spots; veins yellow. The yellow of costa reaches from the elongate slightly oblique stigma, which is more deeply yellow, to base of wing, filling out the portion basad of the basal cells with a tinge of the yellow. Posterior cells all open, none of them narrowed, except that fourth is narrowed a little on border from its greatest width in middle. Difference in size of facets of eye marked, abrupt; the small facets extend up to a little short of the anterior or inner angle of eye, but the line of separation extends backward from this point at a slight upward angle off the horizontal. In life this specimen had little of the green tinge, except on the eyes as described.

I give this full description of this very handsome variety of a well-known species, because existing descriptions of the species are lacking in detail. The points of difference between this variety and the typical form, as well as several other varieties of *mexicanus*, are given in the table below.

A considerable number of forms of this group have been described by various early authors—Fabricius, Meigen, De Geer, Beauvois, Macquart, and Walker—and classed as synonyms of *mexicanus* (see Osten Sacken, Cat. p. 59). The typical form has the wings spotted with brown. Only one of the others has the wings absolutely unspotted, namely, *inanis*, Fabr., which I consider a good variety on this character. It is at once distinguished from *limonus* by the tomentum being wholly cinereous instead of yellow. These forms should be separated as follows:—

*Table of Tabanus mexicanus and Varieties.*

1. Wings spotted.....	2.
Wings wholly without spots .....	4.
2. Spots only on cross-veins and bifurcation of third vein.....	3.
Spots also on margin of wing at ends of longitudinal veins .....	<i>olivaceus</i> , De G. (S. America.)

3. Tomentum yellow or greenish yellow . . . . . *mexicanus*, L. Typ. form.  
(Mexico, Florida, &c.)  
Tomentum cinereous . . . . . *punctatus*, Fabr.  
(Cayenne.)
4. Tomentum yellow to lemon or greenish  
yellow . . . . . *limonus*, Towns.  
(Mexico.)  
Tomentum cinereous . . . . . *inanis*, Fabr.

Bellardi described the female of var. *limonus* (Ditt. Mess. i. p. 59), but gave it no distinctive name. The *mexicanus* group will be distinguished from *T. luteoflavus*, Bell., and the group of *T. fulvus*, Meig. (Europe), by the process of third antennal joint being only moderately developed, not deeply excised and strongly angulate as in *T. luteoflavus*.

### Asilidæ.

#### 26. *Leptogaster pictipes*, Loew.

One female, San Rafael, June 21. In sweepings.  
Length 7 millim.

I am quite confident that this is the same species as the male specimen described by Loew from Illinois. Loew's *L. varipes*, described from a female specimen, is doubtless the same species, probably not even constituting a variety. Both are very similar to *L. cubensis*, Bigot, but, I believe, distinct from the latter in the colouring of the legs (see von Roeder, Dipt. Porto Rico, Stett. ent. Zeit. 1885, p. 340). Yet it is quite possible that *pictipes* may have to be considered but a variety of *cubensis*.

In my specimen the antennæ are blackish, the knob of halteres as well as stalk yellowish, and the posterior femora whitish on proximal two thirds, with all the metatarsi whitish. The wings are almost insensibly tinged with fuscous.

The species from Durango, mentioned by Osten Sacken in the 'Biol. C.-A., Dipt.' (i. p. 167), is probably *pictipes* or a variety of it peculiar to the tableland.

### Syrphidæ.

#### NAUSIGASTER.

In Section I. of this paper I described as new a neotropical species of this genus, *N. meridionalis*, Towns. (no. 5), long suspected to be distinct, but not heretofore separated from *N. punctulata*, Will. Since then I have taken further specimens of this genus in New Mexico and Texas, in the latter case securing abundant material. From a careful study of this material I am convinced that there are several distinct

species of *Nausigaster* occurring in North America, three of which Dr. Williston had before him when writing his 'Synopsis of Syrphidæ.' These are mentioned on pages 21-22 under the name of *N. punctulata*. Dr. Williston has been loth to separate the forms as distinct, on the picture of the wings alone; but when material from several widely separated localities shows a constant pattern for each locality, supplemented by differences in the thoracic vittæ, I think they may properly be separated and accepted as good species. In connection with *N. meridionalis* from the Rio Nautla, therefore, I wish to present here the following notes on the separation of the forms of *Nausigaster*, although three of the species concerned belong to the fauna of Texas, New Mexico, and California.

The single female from New Mexico, from which Williston's description of *punctulata* was drawn, is the only specimen of that species so far recorded. I have seen another from Rincon, N.M., taken by Cockerell on flowers of *Chilopsis linearis* (Cav.), DC., July 5, which agrees with Williston's description in the wing picture.

The five males from California, together with the additional males and females from the same place (see Will., Synop.), constitute another well-marked species, the specimens all agreeing with each other. For this species I propose the name *unimaculata*. It is distinguished by the single spot of the wings and the five thoracic vittæ.

The male from the Isthmus of Tehuantepec forms a third species, which I have considered to be the same as *meridionalis*. It should be stated that I have not seen the Tehuantepec specimen nor the Brazilian specimens referred by Williston to the same species, but that I refer them to *meridionalis* on the statements of Williston regarding the picture of the wings.

A fourth species from Texas I describe below. These four species may be separated as follows:—

*Table of Species of Nausigaster.*

1. A single spot on the wings; five thoracic vittæ .....	<i>unimaculata</i> , sp. n. (California.)
Two spots on the wings, the spots not confluent; only two thoracic vittæ .....	<i>punctulata</i> , Will. (New Mexico.)
The two wing-spots confluent, forming a more or less well-defined and extensive picture; four thoracic vittæ. (Lowlands of Texas to Brazil.) .....	2.



2. The second basal cell mostly filled with the  
 picture ..... *meridionalis*, Towns.  
 (Vera Cruz, Tehuantepec, Brazil.)  
 The second basal cell almost wholly hyaline . . . *geminata*, sp. n.  
 (Texas lowlands.)

27. *Nausigaster geminata*, sp. n.

Twenty-seven specimens, male and female, Beeville and Kenedy, Texas. All taken on flowers of *Parthenium hysterophorus*, L. (det. Wooton), August 30 to Sept. 14.

Length 5 to 6 millim. (rarely 7 millim., female), the male being the smaller.

Differs from Williston's description of *punctulata*, female (Syn. pp. 21-22), as follows:—On mesonotum there are four distinct less pollinose stripes. There is also the beginning of a narrower one just above base of wings. The two median ones are narrowly separated, and sometimes appear as one owing to the effacing of the pollinose line which normally separates them. Lower part of face same colour as antennæ (yellowish red), only a shade or two lighter. The two black spots of wing are united, filling all of submarginal cell except distal end. There is also a blackish cloud on the cross-veins at distal end of second basal cell, and a slightly yellowish infuscation in first and second costal cells and base of marginal cell. Legs are yellowish red; femora as in *punctulata*; tarsi all more or less brownish, especially hind pair. Scutellum in both sexes, and abdomen in male, more or less tinged with yellowish red (fresh specimens).

Described from 20 males and 7 females, as follows:—Beeville, Texas, 1 male and 1 female, Aug. 30; 3 males and 2 females, Aug. 31; Kenedy, Texas, 1 female, Sept. 11; and 16 males and 3 females, Sept. 14. These numerous specimens are all constant in the wing picture, with the single exception of the female taken Sept. 11, in which the two spots are very faintly but still perceptibly united. The second basal cell in all shows a tendency toward a very slight fuscous-yellow tinge, but is not enough to appreciably affect its hyaline appearance when held up to the light. Only two of the specimens (both females) measure 7 millim., the others all being from 5 to 6 millim. This species differs from *meridionalis* not only in the less extensive picture of the wings, but in the smaller size, the very distinct thoracic vittæ, &c.

*Volucellas of the amethystina Group.*

There are six species of *Volucella*, taken on the flowers of the *Cordia* sp. at San Rafael, which by their general metallic

colouring and closely similar form show that they all belong, with one exception, to the same group. One of them possesses no prescutellar row of bristles, and further differs in being pronounced metallic green including head, with coppery on abdomen and showing but little if any violet. It inclines to the *obesa* group. The others belong to the group of *V. amethystina*, Bigot, which also includes *comastes*, Will., *chætophora*, Will., &c. To the last-named species I refer one of the six above mentioned, while the other five are new. These species may be distinguished by the following table. They are all distinct from *Volucella*, n. sp.?, Will., Synop. p. 150.

1. No prescutellar row of bristles present; thorax and scutellum bright metallic green; abdomen coppery .....	<i>viridana</i> , sp. n.
Prescutellar row of bristles present; metallic colouring bluish, dark green, or violet .....	2.
2. Wings hyaline, with only a milk tinge in oblique lights .....	<i>chætophora</i> , Will.
Wings strongly shaded with brown and yellowish .....	3.
3. Scutellum metallic, nearly or quite the colour of the thorax .....	4.
Scutellum wholly (dull or clear) brownish yellow, contrasted in colour with the thorax; face and cheeks with stripes .....	5.
4. Face and cheeks without stripes, abdomen without yellow .....	<i>opalina</i> , sp. n.
Face and cheeks with pronounced stripes; abdomen yellow at base .....	<i>rafaelana</i> , sp. n.
5. Second abdominal segment in most part the same colour as the scutellum; rest of abdomen without yellowish or with but a trace on anterior corners of third segment .....	<i>cordie</i> , sp. n.
Second and third abdominal segments same colour as scutellum in a nearly equal sub-triangular patch on anterior corners, with a smaller patch usually distinct on anterior corners of fourth .....	<i>nautlana</i> , sp. n.

I have no specimens of *amethystina*, Big., and therefore do not include it in the table. It is described by Bigot as having the scutellum the same metallic violet as the thorax, the cheeks with a stripe, but facial stripe apparently absent, and with differences in the abdomen and wings which preclude my referring any of the present species to it. It may be added that all of these species have the second vein regular and the margin of scutellum with bristles.

## 28. *Volucella chætophora*, Will.

Two females, San Rafael, July 7 and 10. On flowers of the *Cordia* sp.

Length 9 and 12 millim.

I cannot separate these two specimens satisfactorily. The larger one has no whitish hair on front, while the other has the hair of front all whitish except at vertex. I cannot believe that these differences are of specific value in this case, though they may be considered varietal. Without more specimens of both forms, however, I hesitate to define the variety. The larger specimen also seems to differ in the wings being more distinctly dilute brownish at base. The third antennal joint in the larger one is a little longer and more abruptly narrowed on middle.

The specimens differ but little from Williston's description of *chaetophora* (Syn. pp. 149-150, and Biol. C.-A., Dipt. iii. p. 52). I should call the third antennal joint somewhat emarginate. The antennæ are brownish yellow, with most of third joint brown. Two median vittæ on thorax are conspicuous by the hair being darker, subappressed, and directed backward, while the rest is white, suberect, and directed a little forward. Scutellum with coppery reflections; thorax with only blue, green, and purple reflections. Legs black. Abdomen bluish black; the anterior half of segments 3 to 5, above and below, with white pubescence, the posterior half with black. This is even to be noticed on the sixth segment in the larger specimen.

29. *Volucella cordiæ*, sp. n.

Fourteen female specimens, San Rafael, June 30 to July 13. All on flowers of the *Cordia* sp.

Length 9 to 12 millim.

Thorax behind with a prescutellar row of bristles. Wings fuscous brown on outer distal half, becoming dilute fuscous toward internal border extending to alula, yellowish on basal portion. Scutellum wholly clear brownish yellow, second abdominal segment same, except narrow hind border and wide median vitta; rest of abdomen metallic purplish black, with blue, green, and violet reflections. In some specimens there is a faint yellow shade, more or less distinct, on anterior corners of third segment. Anterior half or less of fourth segment, anterior third or more of third segment, and anterior two-thirds of second segment with short white pubescence; rest of abdomen with black pubescence. Venter with about same proportions of white and black hair, but longer, with hair of second segment nearly all white. Face and cheeks with well-developed stripes, but facial stripe usually narrower than that of cheeks. Legs black or brown, paler at knees and tips of tibiæ. Antennæ pale brown; third joint narrowed

on apical third to about half its basal width. Arista longer than antennæ, thickly plumose. Face brownish yellow, silvery pollinose on sides, black-hairy on region of tubercle, with some white hairs on sides. Front shining greenish black, with yellowish hair except some black at vertex, yellowish pollinose on each side in front, with a black patch next antennæ in middle. Thorax dark bluish or greenish, with coppery or violet reflections and more or less of a milky tone over all, this tone sometimes wanting, leaving the disk shining dark green; clothed with quite thick, short, yellow, anteriorly-directed pubescence; a pair of median vittæ, more distinct in front, formed by longer finer pubescence directed backward. Pleuræ with yellow hairs. Six strong bristles on scutellum, apical pair rather distant, also a smaller bristle on each side near anterior corners. In some specimens there are four nearly equal bristles on each side beside the weaker one. Scutellum clothed with yellow hair, with some rather inconspicuous black hairs on posterior half of dorsum.

30. *Volucella rafaellana*, sp. n.

One female, San Rafael, July 1. On flowers of the *Cordia* sp.

Length 11 millim.

Differs from *V. cordiæ* as follows:—Scutellum without yellow, wholly opalescent-cupreous with a faint bluish-milky tinge like that of thorax. Scutellum with black hair on disk, yellow hair confined to the edges. Third abdominal segment laterally pale yellow on anterior margin. Wings nearly hyaline basally instead of yellow, and less fuscous on internal border, with the first and second posterior cells largely hyaline.

This is at least a good variety of *cordiæ*, if not distinct as a species.

31. *Volucella nautlana*, sp. n.

Six males, San Rafael, June 28 to July 7. All on flowers of the *Cordia* sp.

Length 10 to 11 millim.

Differs from *V. cordiæ* as follows:—Antennæ somewhat shorter, third joint proportionately not so much narrowed. Frontal triangle black, shining anteriorly in middle, a little yellow-pollinose on sides, with thick black hair. Thorax with the longer posteriorly-directed hairs black, thickly clothing whole dorsum, seen above the shorter anteriorly-directed thick golden-yellow vestiture. Scutellum not so clear brownish yellow, more of a flesh tinge, with a slightly

opalescent cupreous reflection, but still entirely contrasted in colour with the thorax; clothed with yellow hair only on base and edges, with black hair on whole dorsum. Second and third abdominal segments broadly dull brownish yellow on anterior corners, in a triangular form on second but little separated from hind margin, in a subquadrangular form on third confined to anterior half. Fourth segment with a smaller less distinct triangle of same colour on anterior corners. Pubescence of abdomen somewhat longer and thicker, that of the light parts being yellow.

32. *Volucella opalina*, sp. n.

Three female and five male specimens, San Rafael. The males, one each, July 6, 7, and 9, and two, July 10. The females, two July 9 and one July 17. All on flowers of the *Cordia* sp.

Length nearly 10 to 11½ millim.

Differs from *V. cordix* as follows:—Face and cheeks entirely without stripes. Front shining brighter greenish, with silvery pollen on each side, extending in narrow border along orbital margin to vertex. Frontal triangle of male as in *nautlana*. Antennæ in both sexes considerably smaller, the third joint not so much narrowed apically. Pubescence of thorax of male as described for *nautlana*, with the black pubescence more conspicuous than the shorter yellowish or whitish; in the female the yellow pubescence is, if anything, more conspicuous than the black, being exactly the same as in male of *nautlana*. In two of the females the short pubescence is whitish and the longer black is much less conspicuous, but is seen to be present; these same females differ further from the other in hair of front being whitish, and they may be considered to constitute a variety. Scutellum as in *nautlana*, both as to colour and pubescence, but even more nearly concolorous with thorax, with greenish, cupreous, and violet reflections. Abdomen wholly without yellowish; with brilliant green, violet, and purple reflections, especially on third and fourth segments. Underside of second and third segments with mostly black hair in male, the white hair being confined to basal edge, but the white more extensive in female. Wings often with the yellow invading and tinging the brown, and with some of the cells hyaline in the centre.

Var. *splendens*, var. n.

I propose this name to distinguish the two females (both July 9) above mentioned as having the hair of front white.

This character must be taken as indicating varietal rank, since the hair of front in the other female is wholly black like that of the males.

33. *Volucella viridana*, sp. n.

One male, San Rafael, July 7. On flowers of the *Cordia* sp. Length  $9\frac{1}{2}$  millim.

Front, face, thorax, scutellum, pleuræ, and base of abdomen brilliant shining green, with slight cupreous reflections on the thorax. Antennæ brownish yellow, reaching about two thirds way to summit of tubercle, third joint scarcely wider at base. Face strongly concave above tubercle, and strongly produced downward below. Cheeks with a black stripe, behind which is a triangular yellowish area. No facial stripe, thin pubescence of face whitish. Frontal triangle with whitish hairs, mixed with dark ones behind. Thorax without prescutellar row of bristles, with the golden vestiture and longer blackish hairs as described for *nautlana*, but the black hairs not so conspicuous behind. Scutellum clothed with yellow hairs, with ten weak bristles on border, the apical pair more approximated than in the preceding four species. Abdomen shining cupreous violaceous brown, blended in with the bright green on second segment, so that latter appears mostly bright green from before and wholly brownish cupreous from above. Pubescence of abdomen white on first segment and anterior portions of second, yellow on rest of second and all of third, and black on fourth. Bright green of pectus extending over first and second segments of venter. Legs black; femora shining dark green on underside; tarsi brownish. Wings with whole anterior or outer half fuscous yellow, inner half more nearly hyaline.

This species belongs to the *obesa* group by its coloration and absence of prescutellar bristles, but approaches in form the *amethystina* group.

Phasiidæ.

34. *Hyalomyia ecitonis*, sp. n.

Nine males and seven females. Paso de Telaya, March 29. All taken hovering over the front ranks of a moving army of *Eciton Foreli*, in company with the *Stylogasters* as described in Section I. of this paper (p. 23).

Length of males 6 to 7 millim., of females 5 to 6 millim.

♂. Front equilateral, not trigonal. Frontal bristles rather

strong and thick, decussate; vibrissæ moderately strong and decussate. Wings very broad at base, 3 millim. broad in the larger specimens by about 5 millim. long, rather strongly but irregularly yellowish fuscous on costal half, whitish on inner portion, rather blunt and rounded at tip. The costal fuscous area contains three whitish or hyaline streaks, the darkest fuscous being in vicinity of stigma and containing but one streak of hyaline. The other two streaks are in second costal cell and tip of submarginal. Third vein bowed inward on apical portion, so that the long petiole of apical cell forms a right angle with apical cross vein. Hind cross vein distinctly but not strongly sinuate, distinctly nearer to bend of fourth vein than to small cross vein, the bend of fourth being sharply or abruptly rounded, with the two sections running from the bend at right angles and of equal length. The petiole of apical cell ends well behind the actual centre of wing's tip, owing to its bending posteriorly out of a straight line on apical portion. The hind cross vein is oblique, and with its peculiar curvature, aided by the curvature of fourth and fifth veins, gives the discal cell a shape very similar to that of a gunstock.

Front about as wide as eyes anteriorly, hardly or but slightly narrower posteriorly, with a wide velvet-black vitta slightly wider behind. Orbital margins of front and whole of face silvery white, the orbits with a slight golden shade, especially on front. Antennæ blackish, reaching but little more than halfway to oral margin; third joint hardly twice as long as first. Palpi brownish, slender, clubbed at the end. Occiput and pleuræ brassy-silvery pollinose. Thorax shining black, so marked with pollinose as to show on præscutum five silvery and four rust-black or deep black vittæ, the three silvery and two black median ones being the most clearly defined, and the lateral silvery ones terminating in the humeri. The silvery vittæ are sometimes golden-tinged. These vittæ are more or less distinctly continued on mesoscutum behind suture, the scutellum showing some silvery pollen apically when not discoloured. Abdomen blackish or brownish, elongate-oval, flattened, the whole with more or less of a metallic purplish tinge, with more or less of a thin coating of very fine pale brassy or ashy pollen, with first two segments more or less pale subtranslucent brownish yellowish, except a median vitta which is continued indistinctly on other segments. The yellowish colour is often faint, sometimes obsolete; when present it leaves normally a narrow posterior margin of brown on second segment. Legs black or brownish black, the knees, tibiæ, and tarsi sometimes varying to lighter

brownish or pale. Claws and pulvilli elongate. Tegulae large, translucent smoky-yellowish, halteres yellow.

♀. Differs in front being about one fourth width of head, frontal stripe and orbital margins in consequence narrower, the silvery of orbits with less of a golden sheen; wings not so broadened or large, evenly fuscous hyaline, without patch of dark fuscous on costa. Abdomen without purplish reflection, shining black or with slight greenish reflection, the brassy-ashy pollen much more conspicuous, forming more or less distinctly a pair of triangular spots on anterior part of second, third, and fourth segments, leaving the median vitta apparent. The pollen varies in its intensity and shade of brassy. It is, together with the thoracic vittæ, sometimes obscure and indistinct in both sexes. Foot-claws and pulvilli moderately short, about as long as last tarsal joint.

Although these two forms (male and female) are in general facies so different, the fact that they were all taken together over the ants, without a single specimen of any other *Hyalomyia* being present, one series being all males while the other is all females, convinces me that they are the two sexes of one species.

It seems probable, from the circumstances under which this *Hyalomyia* was found, that it also, as well as the *Stylogaster*, is parasitic on ants (genus *Eciton*). In all my collecting in this locality, I met with no other specimens of *Hyalomyia* than the above, excepting only the single specimen next described.

### 35. *Hyalomyia violascens*, sp. n.

One male, San Rafael, June 26.

Length  $4\frac{1}{2}$  millim.

Belongs in the group with *punctigera*, Towns., *purpurascens*, Towns., &c., in which the front is trigonal, the eyes of male moderately or closely approximated, and those of female nearly or quite contiguous. Differs from my description of *purpurascens*, ♂ (Pr. Ent. Soc. Wash. ii. p. 137), as follows:—Orbits silvery pollinose, face subsilvery; eyes closely approximated in front of ocelli, nearly obliterating the narrow brownish frontal vitta, which is thus elongate-triangular in front and narrowed to a line behind. Frontal bristles weak. Antennæ black, third joint oval, a little longer and wider than first, silvery in some lights. Palpi very small, filiform, brownish. Thorax silvery only on humeri and pleuræ. The apical pair of scutellar bristles decussate. Abdomen wholly very polished deep violet-black, reticulations of the ashy pollen showing faintly in



scattered places behind. Tegulae large, pure white; the wings whitish hyaline, well tinged with tawny fuscous on basal half or third.

This may prove to be conspecific with *purpurascens*, but it will at least form a good variety of that species.

Neither of the above species belongs to any of Wulp's Mexican *Hyalomyias*.

[To be continued.]

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V.—*The Species and Subspecies of Zebras.* By R. I. POCKOCK, of the British Museum of Natural History.

PART I.—*Introductory Remarks.*

FOR some years past, during periodical visits to the museum at Bristol, my attention has been attracted by a stuffed specimen of a zebra-like animal, which, in addition to being labelled "Quagga," possessed special interest, inasmuch as it differed strikingly in the character of its markings from all the zebras in the collection of the British Museum and from all that I had seen in menageries and elsewhere. The true Quagga, as is now admitted on all hands, is extinct, and only a few specimens have been preserved in the various museums of Europe. Consequently the example in question, if correctly named, would be of great zoological interest and of very considerable value as a museum possession. I therefore undertook, with the consent of Mr. Edward Wilson, F.G.S., the curator, who kindly gave me every facility in the way of examining and sketching the specimen, to identify it, if possible, and ascertain as nearly as might be its affinities with regard to the known forms of zebras. As is explained later on, the specimen, though of considerable interest, proved to have no proper claim to the title of quagga. But the task of identification entailed the looking up of a deal of the literature published on the subject by both naturalists and sportsmen and an examination of all the skins and living specimens to which access could be obtained; and since during the investigation a few structural points came to light which have apparently escaped notice until now, and since, with the exception of Dr. Paul Matschie's paper alluded to below, no paper dealing comprehensively with all the species has been published of late years, I have ventured to hope that the notes and observations contained in the following pages, though