DIPTERA FROM THE LOWER RIO GRANDE OR TAMAULIPAN REGION OF TEXAS.—I.

By C. H. TYLER TOWNSEND.

The present paper is the first of a series to be published on the dipterous fauna of the region of the Lower Rio Grande, in Texas and Tamaulipas. The material described was collected by the writer, principally near Brownsville, Texas, while engaged as Field Agent of the Division of Entomology, of the U. S. Department of Agriculture.

The writer has already published, in the Transactions of the Texas Academy of Science, i, pp. 71 to 96, a paper on biogeography, which includes mention of the Lower Rio Grande district. This district forms a part of the *Tamaulipan* fauna, which may be recognized as extending from the Nueces river region in Texas to the central or southern part of the Mexican State of Vera Cruz. Several months' collecting done by the writer in the Lower Rio Nautla region of the State of Veracruz, since the above paper on biogeography was published, has shown that that locality must come within the limits of the *Tamaulipan* fauna, as possessing many temperate forms of insects. A considerable number of these temperate forms may range as far south as the Coatzocoalcos river, or even farther.

It is pointed out in the above mentioned paper that at best the insect fauna of Lower Rio Grande, from an examination of some 500 species of Coleoptera and Diptera, shows somewhat less than twenty-five per cent. of *Neotropical* forms. Probably the percentage will run lower on the examination of a greater mass of material. The district is mainly *Lower Sonoran;* but there is, beside the *Neotropical* (*Mexican* province of the *tropical transition* zone), a considerable element of *Austroriparian*, and even a few *Upper Sonoran* forms reach down to it from the west, while a maritime *Antillean* fauna reaches up the Mexican coast line and keys to Padre Island. The fauna of this district is therefore rich in forms, as particularly evidenced by the Coleoptera so far collected, for no less than five great life provinces tend here to meet and intermix their constituent elements to a greater or less extent.

For the determinations of the flowers on which the diptera mentioned in this paper were taken, I am indebted to Dr. J. M. Coulter and Mr. F. V. Coville.

SIMULIIDÆ.

Simulium tamaulipense, sp. nov.

♀. Length, 1½ mm. Near *S. meridionale*, but smaller and the outer one on

each side of the three thoracic lines not curved outward at posterior end. Eyes velvet black, face and front silvery; the front with usually a trace of a linear black vitta in one specimen very distinct, in another entirely wanting. Antennæ yellowish, with a silvery covering Thorax silvery, with three longitudinal lines; the middle one longest, very narrow and linear; the outer ones heavier, straight, slightly divergent posteriorly. Looked at from directly above, the outer lines appear curved, outwardly convex. Scutellum and metascutum below scutellum, both brownish in some lights, but in others they seem to be wholly silvery, the various portions appearing different in color to the view at the same time. Abdomen silvery, but the third and fourth segments wholly brownish, sometimes with a round median silvery spot on each. Legs yellowish, shaded with silvery, tarsi blackish or brownish; hind metatarsi yellowish, except at distal end. Wings clear, whitish, veins dilute pale yellowish. Halteres and wing bases pale dilute yellowish.

Four ♀'s, Reynosa, Tamaulipas. A small species taken on car windows of railway train, May 10th.

Described from four dried specimens.

SYRPHIDÆ.

Baccha clavata *Fab.*

One ♂ bred from pupa found in square of cotton at Carmen, about four miles up the river from Brownsville, May 24th. The pupa was fastened by its anal end to the inside of the square. It may be described as follows:

Pupa.—Length, 5⅔ mm. Pale greenish yellowish. Oval with a flat ventral surface, full and rounded on anterior end, more tapering and pointed on posterior end. A few short hair-like filaments of in, tegument on dorsal surface in five transverse rows, the first row being on anterior end above cephalic plate.

The adult was found issued May 31st. Facial stripe greenish black. Thorax dark metallic greenish. Scutellum greenish across the disk. Posterior border to the insertion of the antennæ dark greenish. Otherwise the coloring was normal.

Baccha tropicalis, sp. nov.

♂. Length, nearly or quite 12 mm. Eyes of a beautiful soft yellowish-olive color, frontal triangle rust-yellow except sides which are pale greenish-yellow, with a round or slightly oval black spot anteriorly near basis of antennæ, and a pointed spot before posterior angle. Front with thin black hair. Antennæ rust-yellow, the third joint with a brownish tinge, arista same color as third joint. Face pale greenish yellow. Ocellar area soft deep black, a brassy-yellowish space behind it between eyes. Occiput gray-cinereous. Thorax on the sides, and scutellum, the same color as the whole pluræ, bright clear yellow with hardly a greenish tinge, the scutellum and posterior sides of thorax with slightly more of a greenish or olivaceous tinge. Pectus

with a slight rosy tinge to the yellow. Disk of thorax abruptly rust-yellowish brown; with a narrow black vitta near border on each side, interrupted at suture and bordered on inside with a rust-yellow margin, but on outside with a hardly perceptible one between the vitta itself and the rust-yellowish brown line belonging to the ground color; in the middle with a pair of narrow uninterrupted vittæ, both narrowly margined inside and out with rust-yellow. Semicircular area below scutellum blackish, yellowish next scutellum. First segment of abdomen almost wholly yellow with a greenish tinge. (N. B.—The above description was made from fresh specimens just captured. What follows is drawn from dried specimens.) The colors change somewhat in dried specimens. Two broad blackish vittæ often appear on mesoscutum after specimens have become dried. The semicircular area of metathorax below scutellum is divided into two crescent-like portions, the lower one and lower half of upper being brown, and the rest yellowish. Abdomen yellowish-red or reddish-yellow, but I believe it is more of a rust-yellowish in fresh specimens, and certainly much lighter; first segment broad, lunate, with yellowish hairs; hind border of each segment darker, also base of second segment same except extreme base which is yellowish. Third, fourth and fifth segments with a median pair of narrow, closely approximated, longitudinal, parallel, brown lines. Legs yellow, the distal half of hind tibiæ brownish. Anterior-basal half of wings yellowish, extending on outer border distally to end of third costal cell, inner border of yellow thence extending back somewhat irregularly to middle or basal third of anal cell, except that it runs down the inner border of apical cell inside of spurious vein; inner-apical half, or rest of wing, dilute fuscous, the centers of the two posterior, anal, discal and submarginal cells being dilute or sub-clear. A wrinkle in distal end of second basal cell, extending into discal cell; three whitish spots in transverse line, one on proximal end of this wrinkle, one on spurious vein which is here slightly enlarged, and one opposite in margi nal cell. Halteres yellowish, with a brownish tinge on knobs.

♀. Length, 11 mm. Differs from ♂ as follows: Eyes not contiguous. Rust yellowish of front extending back nearly to ocellar area, a narrow median blackish vitta on its posterior half. Posterior portion of front brassy-yellowish, narrowly enclosing ocellar area in front. Wings with the yellow as in ♂, but with no fuscous except at end of submarginal cell, very narrowly in end of marginal, on vein at distal end of anal cell, and faintly on small cross-vein. Abdomen with the two median lines on third to fifth segments heavier, with slightly oblique more or less faint brown lines on sides, and with lateral edges of third to sixth segments brown. Second segment pale brownish with a broad yellowish curved anteriorly convex fascia across middle. The ♀ has the abdomen wider than the ♂.

Nineteen specimens, as follows: One ♂ and two ♀ 's, Brownsville, June 21. Taken on flowers of *Clematis drummondii* Torr. & Gray, and *Monarda clinopodioides* Gray. Nine ♂ 's and five ♀ 's, Brownsville, June 22. Taken on flowers of *Clematis drummondii*. Also one ♂ not on flowers. One ♂, Roch's Resaca, about three miles up the river from Brownsville, June 25. On flowers of *Clematis drummondii*, in opening of heavy timber—big trees with hanging moss.

Belongs to the neotropical group of *phœtoptera* Schin., *livida*

Schin., *flavipennis* Wied., etc., which occurs from Brazil to the tropical portions of Mexico.

Volucella esuriens, var. **mexicana** *Mcq.*

Brownsville, April 7. Ramirez and San Miguel, Tamaulipas, on the Matamoras and Monterey Railway, May 10th; and same date numbers seen hovering constantly about a large wood pile of well-seasoned mesquite near La Mesa, a wood stop west of Ramirez. They were probably seeking an opportunity to oviposit where their grubs could find longicorn larvæ on hatching from the egg.

San Tomas, about seven miles down the river from Brownsville, June 7. At this date this species was found extremely numerous in the palmetto thicket at San Tomas, but always flying high up amongst the tops of the palmetto (*Sabal mexicana*) moving very swiftly, and in such numbers making altogether a noise like a swarm of bees.

Brownsville, June 23. Two ♂'s and two ♀'s taken on flowers of *Gaillardia pulchella* Fong. Also taken up to July 14th.

Point Isabel, Texas, on the coast, June 29. One ♂ taken on flower of a composite near beach. This species ranges from the Texas and Mexican coast line at sea level to the table lands of the Northwest, reaching the top of San Francisco mountain in Arizona, nearly 13,000 ft. above the sea. It thus extends from the tropical to the boreal life-zones, which is an exceptionally wide range and one not often attained.

Eristalis furcatus *Wied.*

One ♂, Brownsville, June 24, on foliage. This species may be distinguished by its velvety black vittate thorax.

The present specimen has the spots on each side of second and third segments very distinct, of good size, and yellow, with a faint tinge of reddish brown on the hinder pair. There is no trace of the median whitish spot near the hind margin of second segment. Schiner (Nov. Reise, 362) has pointed out that this whitish spot is not visible in the ♂; the third and fourth segments have each a pair of metallic shining spots, separated by the median velvety black, which unites the anterior median triangular velvety black spot with posterior marginal fascia of the same color. The pale golden pile of frontal triangle is mixed with black pile posteriorly. Antennæ brownish yellow. Length, 9 mm.

This is a tropical species, ranging from Rio Janeiro and Argentina to tropical Mexico. It has been taken at an altitude of 6,000 feet at Amula in the mountains of Guerrero (Williston, Biol. C. A. Dipt., III, p. 62).

Eristalis tricolor *Jaenn.*

Thirty-three ♂'s and eight ♀'s, as follows: San Tomas, one ♂ June 16, and one ♀ June 23, in palmetto jungle. Brownsville, six ♂'s and one ♀ taken on flowers of *Lippia lanceolata* Michx, June 22; one ♂ taken on flowers of *Gaillardia pulchella* Fong, June 23; twenty-four ♂'s and six ♀'s taken on flowers of *Lippia lanceolata*, June 24; and one ♂, June 28.

The ♂ taken June 16 shows a very faint line of brown on posterior half of edge of second abdominal segment, and a still fainter trace on third segment. Face silvery-white, with whitish-brassy pile. Front a little cinereous, with longer hair of same color as that on face. Antennæ brownish yellow. Front and middle knees yellowish, extending half way down tibiæ, the rest of middle tibiæ yellowish brown, only the extreme proximal end of hind tibiæ yellowish. Wings very faintly flavous tinged on antero-basal position. Length, 10½ mm.

The other specimens measure from 8 to 11 mm. in length. They are all quite constant in abdominal coloration. All the ♀'s, however, and a very few of the ♂'s, show gradations to a variation (♀ of June 22) in which the black thoracic band is rather deeply invaded anteriorly in the middle by the cinereous, and also has an arcuate border of cinereous behind next the scutellum and entending to wing bases on each side. This makes the thorax wholly cinereous excepting a pronounced lunate band of black before hind margin, with its concavity forward. The scutellum is yellow as in other specimens.

Eristalis vinetorum *Fab.*

Brownsville, June 1, two specimens, ♂, ♀. One ♂ on flowers of *Verbesina encelioides* Benth & Hook., June 18. One ♂ on flowers of *Monarda clinopodioides* Gray, and two ♂'s on flowers of *Lippia lanceolata* Michx., June 22. Three ♂'s and four ♀'s taken on flowers of *Gaillardia pulchella* Fong. Also ♂, ♀, July 3. San Tomas, four ♂'s June 9 and 23, in palmetto jungle.

Length, 11 to 13 mm. All agree closely with Williston's description, except that the fourth abdominal segment in his specimens was a little retracted, thus hiding the opaque black transverse fascia on anterior border.

CONOPIDÆ.

Zodion albonotatum, sp. nov.

Two specimens; one, Brownsville, June 24; the other, woods back of Fort Brown, July 3. Both taken on flowers of *Lippia lanceolata* Michx.

Length, 7–8 mm. Differs from all described species by the whitish markings of the thorax. Face, cheeks and front light yellowish, covered with a silvery-white bloom; a little less than posterior half of front abruptly velvety dark brown or blackish, the anterior portion of front being more yellowish than the face. Antennæ brown, the tip of second joint often with a yellowish tinge, and the third joint with a reddish-brown tinge. Occiput fuscous or blackish, with some thin blackish hairs. Thorax and scutellum soft velvety brownish-black, with a medain pair of rather closely approximated ashy-whitish vittæ extending little more than half way or at most two-thirds way to scutellum, and with silvery-whitish pollinose spots as follows: A round one on humeri, a transversely elongate one just back of humeri cleft and widened below and notched anteriorly; the whole posterior border of scutellum, widest in the middle; and two rather rounded spots, forming really one longitudinally elongate marking but divided by a suture, immediately in front of each lateral corner of scutellum. First abdominal segment soft brownish-black, with a few black hairs on sides; second segment black on basal half on sides, but on only front border in middle, and with a pair of transversely elongate narrowly coalesced oval black spots near hind margin, the rest of middle portion of segment being of a shade between fuscous and golden yellow, the posterior half of sides broadly deep golden-yellow, pollinose continued narrowly along hind border, the black of anterior lateral angles of segment with a patch of black hairs; third segment wholly deep golden yellow pollinose, except a pair of large sub-lunate black spots rather deeply notched on outside, widened behind, reaching anterior margin, coalesced anteriorly, separated posteriorly by a golden-yellow median line running half way to front border, narrow hind border of whole segment golden-yellow; fourth and fifth segments wholly deep golden-yellow, except a pair of well-separated median black spots near hind margin, those on fourth segment being of good size, those on fifth small and dot-like; sixth segment wholly deep golden-yellow; two segments composing anus blackish, with a silvery sheen. Legs blackish brown, the whole with a considerable silvery sheen especially the under sides of tibiæ which are more yellowish, pulvilli and claws except the tips yellowish. Wings a little fuscous, the antero-basal half yellow. Halteres pale-yellowish. The black of abdomen has a slight olive tinge; and in old specimens the deep golden-yellow pollen sometimes becomes greased, and shows then only a blackish color.

TACHINIDÆ.

Ocyptera euchenor *Walk.*

Eleven specimens, Brownsville, as follows: One ♂, June 22, on flowers of *Lippia lanceolata* Michx. The front in this specimen was not fully developed, indicating recent issuance from pupa. Six ♂'s and four ♀'s, June 24, also on flowers of *Lippia lanceolata.*

Length of ♂'s 8–9 mm.; of ♀'s 8½–9 mm. Although there is only one millimeter difference in the length of the ♂'s, there is a marked difference in their comparative size and stoutness. Nearly all of the specimens have the prevailing color of the abdomen red, but one ♀ has it more black than red. Most of the specimens, including all

the ♀'s, have the tip of abdomen distinctly blackish, but several ♂'s have it more or less reddish.

Giglio-Tos makes this species a queried synonym of *O. dosiades* Walk. The specimens which I originally referred to *O. euchenor* (Pr. Ent. Soc. Wash., 1891) varied in length from 8–10 mm.; while those I referred to *O. dosiades* were not only much shorter, but proportionately much smaller in size, so that it seemed hardly probable that all belonged to one species. I am aware that size may be of no importance as a specific character, and since I have more recently found specimens of all gradations in size between the two forms, so that it was impossible to separate them into two series, I am inclined to believe in their identity. I advocate, however, the use of the name *euchenor*, instead of *dosiades* as used by Giglio-Tos, and this for the reason that the description of *euchenor* better applies to the normal specimens. Were we to take the name that comes first in the pagination of Walker's List, we would have to employ *epytus*, which is manifestly only a synonym of *euchenor*.

Jurinia apicifera *Walk.*

Eight specimens, Brownsville, as follows: Two, ♂, ♀, June 21; one ♂, June 22, and four ♀'s, June 24, taken on flowers of *Lippia lanceolata* Michx.; and one ♂, June 28. Length, 11½–14 mm.

The species which I have always recognized as *apicifera* Walk. may be distinguished by the following characters: The front (except vitta), thorax and scutellum are characteristically brassy-yellowish (sometimes grayish-brassy) pollinose; the abdomen is shining black, the fourth segment being conspicuously silvery (or grayish-ashy) pollinose.

One of the specimens above mentioned (♂, June 24), in which the thorax and scutellum have become greased, shows the ground color of the disc of thorax to be opaque black, while the humeri and lateral margins are tawny-yellowish, and the whole scutellum is brownish-yellow.

This species has the frontal vitta of a soft brick-yellow, sometimes ocher-yellow. The occiput is clothed with brassy-yellow hair of the same tinge as the pollen of thorax, sides of front, and scutellum. The whole face, including sides of face and usually most of cheeks, in these Brownsville specimens is pure silvery-white; while in northern specimens from Michigan it is usually very distinctly golden. I have already remarked on this peculiarity of difference between northern and southern specimens (Tr. Am. Ent. Soc., XXII, p. 70). There are four narrow

blackish vittæ on the thorax, all sub-equally separated from each other, the median pair being linear and more abbreviated behind than the others, which are more interrupted at the suture and curved inward behind. The hypopygium of the ♂'s is more or less reddish. The brassy pollen of thorax extends downward over the whole pleuræ, and on the underside of the front femora, in both sexes. The front tarsi of ♀ do not seem to be dilated. The scutellum bears three strong posteriorly appressed marginal bristles on each side, of which the middle one is the shortest; a short and weaker also appressed strongly decussate X-like pair in the middle on margin; and a shorter but sub-erect and straight pair immediately in front of the decussate ones. In the other points given by Williston (Trans. Am. Ent. Soc., 1888, p. 300), the specimens agree.

LOCALITY AND FOOD PLANT CATALOGUE OF MEXICAN COCCIDÆ.

By C. H. Tyler Townsend.

The following is a complete list, with full localities, distribution, and food plants, of all the scale insects so far identified from Mexico. The number, which in 1893 was but 18, now reaches 80, including varieties, and four species found at Brownsville, Texas, which must surely occur near Matamoros. The new species mentioned, have been described by Professor Cockerell in the Canadian Entomologist, Vol. XXIX, p. 265, who has recently worked up the last lot of material collected for the Department of Agriculture. That portion of the material collected between April 24 and May 10, 1896, in Yucatan, Campeche and Laguna, was secured while on a trip for the Department. The determinations of all the species of my own collecting have been made by Mr. Pergande and Professor Cockerell. Mr. Pergande determined most of the well-known species, while Professor Cockerell worked up new and less known forms.

Llaveia axinus *Llave.* (*a*) Halfway between Salina Cruz and Tehuantepec (Oaxaca). On unknown prickly bush, May 29, 1896. Coll. Towns. (*b*) Tlacotalpam (Vera Cruz). On *Jatropha* sp., and *Spondias* sp. Coll. by Llave.

Peculiar to Mexico. "I believe the genus *Llaveia* will prove to be identical with *Ortonia,* from Ecuador and Guatemala" (Ckll.).