

NOTES ON TABANIDAE (DIPT.) FROM PANAMA

VIII. THE GENERA PITYOCERA, SCIONE AND ESENBECKIA

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Genus *Pityocera* Giglio-Tos

1896, Bol. Mus. Zool. Anat. Comp. Univ. Torino, XI, No. 224, p. 3, (Monotypic for *P. festae* Giglio-Tos.). Enderlein, 1922, Mitt. Mus. Berlin, X, 2, p. 339; 1925, Op. cit., XI, 2, p. 298. Kröber, 1930, Zool. Anz., LXXXVIII, 11-12, p. 310.

The genus remains monotypic for a peculiar species known so far only from Panama, where it is quite abundant locally. The genus is placed in the tribe *Pityocerini* with *Elaphella* Bezzi and *Pseudelaphella* Kröber by Enderlein and Kröber. These two genera certainly seem its closest relatives, and form transitions between it and *Fidena*. The long-stalked first posterior cell seems characteristic of the group.

Pityocera festae Giglio-Tos

(Figs. 7, a, b)

1896, Bol. Mus. Zool. Anat. Comp. Univ. Torino, XI, No. 224, p. 4, fig. (♀; forest of Lake Pita and of the Rio Lara, Darien); 1897, Op. cit., XII, No. 276, p. 1 (♀). Hunter, 1900, Trans. Amer. Ent. Soc., XXVII, p. 135. Ricardo, 1900, Ann. Mag. Nat. Hist., (7) V, p. 99. Aldrich, 1905, Cat. North Amer. Dipt., p. 200. Kertész, 1908, Cat. Dipt., III, p. 147. Surcouf and Gonzalez-Rincones, 1912, Dipt. Vulner. Venezuela, II, p. 86 (♀). Surcouf, 1921, Gen. Insect., Taban., p. 101, Pl. III, figs. 11a, 11b. Kröber, 1930, Zool. Anz., LXXXVIII, p. 311, fig. 5; 1934, Rev. Ent., IV, 2, p. 235.

This insect is immediately recognizable by the remarkable pectinate antennae. In general appearance it is a brown *Fidena*-like fly with smoky wings and dark concolorous brown thorax and abdomen, with small silvery hair tufts on the sides of the last few segments. The legs are pale yellowish, the face snout-like, largely shiny, and the proboscis nearly as long or longer than the whole insect.

The species is not at all uncommon in certain localities in Panama, but the season of flight is very short, my material showing dates from July 29 to Sept. 1. While collecting on the Pequeni river at the head of Madden Lake, C. Z., in August, 1940, I found the species very abundant. It was definitely crepuscular, not appearing much before 6 P. M., and continuing

to fly long after it was too dark to see; only the loud and rather characteristic buzzing of the hovering flies told of their presence. The flies would alight readily on one's person, seeming to prefer the body below the waist, and while they would attempt to bite, they seemed to be dissatisfied with some factor, and seldom remained long enough to draw blood. Visits to the same locality at several other times of year have always failed to reveal their presence.

Distribution: So far known only from Panama.

Panama records: 1 ♀, Gatun, C. Z., July, 1919 (D. E. Harrower). 1 ♀, Quipo, July, 1922 (J. P. Chapin). 10 ♀, Sta. Rosa, Chagres River region, Aug., 1936 (L. E. Rozeboom). 5 ♀, Moja Pollo, Chagres River region, Aug. 18, 21, Sept. 1, 1940. Rio Pequeni, Aug. 18, 1940 (20 ♀), July 29, 1941 (1 ♀).

Genus *Scione* Walker

1850, Insect. Saund., Dipt., I, p. 10 (with *incompleta* as sole species). Coquillett, 1910, Proc. U. S. Nat. Mus., XXXVII, p. 604. Ferguson, 1924, Bull. Ent. Res., XIV, 3, p. 253. Surcouf, 1921, Gen. Insect. fasc. 175, Dipt. Taban., p. 113. Enderlein, 1925, Mitt. Mus. Berlin, XI, 2, p. 299. Kröber, 1930, Stett. Ento. Zeit., XCI, p. 141. Borgmeier, 1933, Rev. Ent., III, 3, p. 301. Kröber, 1934, Rev. Ent., IV, 2, p. 232.

Diclisia Schiner, 1867, Verh. k.-k. zool.-bot. Gesell., Wien, XVII, p. 311; 1868, Reise Novara, Zool., II, Abt. 1, B, Diptera, p. 101 (Type *Pangonia incompleta* Macq.).

Rhinotriclista Enderlein, 1922, Mitt. Mus. Berlin, X, p. 338; 1925, Op. cit., XI, 2, p. 302 (Type, *Diclisia maculipennis* Schin.). Kröber, 1930, Stett. Ent. Zeit., XCI, p. 141. Bequaert, 1931, Journ. New York Ent. Soc., XXXIX, p. 538.

This genus includes a fairly well defined group of Neotropical *Pangoniinae*, whose center of distribution is apparently the Andean region from Peru to Colombia. Several species range into Venezuela and into Central America as far as Southern Mexico, but they seem for the most part to be confined to higher altitudes.

The genus may be recognized by the following combination of characters: Hind tibiae spurred. Ocelli present. Eyes with dense and long pubescence. Face moderately to considerably produced. Palpi parallel to proboscis, rather short, generally less than one-fourth length of proboscis, flattened, appressed, and either broad or slender. Proboscis long, as long as head and thorax, the labium annulate, the labella short and sclerotized. Body rather short and stout, legs slender, neither swollen nor especially hairy. Wings with subepaulete bare, both the first and fourth posterior cells closed and generally petiolate. Wings generally smoky or mottled, occasionally hyaline.

The species are rather similar in appearance, and good specific characters seem to be few, most of the earlier descrip-

tions being nearly worthless. The group is in great need of revision, as Kröber's (1930) paper, the only attempt so far, does not seem to have been entirely successful. Five species have been recorded in the literature as occurring in Central America, but it is doubtful in some cases if the names used were correctly applied. I have before me specimens of four distinct species, three from Panama, and one from localities both north and south of Panama, and it is very likely that other species will be found when the mountains on the Colombian border become better known.

KEY TO FEMALES

1. Wings immaculate, either hyaline or fumose. 2
Wings with more or less distinct dusky clouds at base, apices of basal cells, fork of third vein and apex; remainder of wing faintly yellowish. Thorax brown, with well marked stripes. Abdomen with a row of small white haired middorsal triangles. *maculipennis*
2. Large blackish species, the wings brown fumose, the abdomen clothed with bright golden hairs. The thorax dark brownish black, nearly immaculate. Legs nearly black. *aureopygia*
Smaller brown or yellowish species. The thorax and abdomen with tufts of contrasting hairs, or the whole insect pale yellowish. 3
3. Thorax prominently whitish striped. Abdomen with white middorsal triangles. *claripennis*
Thorax unicolorous, dirty yellowish brown. *aurulans*

Scione aurulans (Wiedemann)

Pangonia aurulans Wiedemann, 1830, Auss. Zweifl. Insekt., II, p. 620 (♀; Mexico). Walker, 1854, List. Dipt. Brit. Mus., V, Suppl. 1, p. 120. Osten Sacken, 1878, Cat. Dipt. N. Amer., p. 52. Kertész, 1900, Cat. Taban., p. 16; 1908, Cat. Dipt., p. 152. Ricardo, 1900, Ann. Mag. Nat. Hist., (7) V, p. 170. Aldrich, 1905, Cat. N. Amer. Dipt., p. 193. Surcouf, 1921, Gen. Insect., p. 127. (*Pangonius*).

Scione aurulans, Hine, 1920, Ohio Journ. Sci., XX, 8, p. 314 (with *P. rostrifera* Bell. and *D. misera* O. S. as syns.); 1925, Occ. Papers Mus. Zool. Univ. Michigan, No. 162, p. 9. Bequaert, 1931, Journ. New York Ent. Soc., XXXIX, pp. 537-538.

Rhinotriclista aurulans, Enderlein, 1925, Mitt. Mus. Berlin, XI, 2, p. 302. Kröber, 1930, Stett. Ent. Zeit., XCI, 2, p. 147.

Pangonia rostrifera Bellardi, 1859, Sagg. Ditt. Messicana, I, p. 47 (♀, ♂; Mexico). Osten Sacken, 1878, Cat. N. Amer. Dipt., Smithson. Misc. Coll., No. 270, p. 52. Williston, 1901, Biol. Centr.-Amer., Dipt., I, Suppl., pp. 252, 253. Aldrich, 1905, Cat. N. Amer. Dipt., p. 193. Ricardo, 1900, Ann. Mag. Nat. Hist., (7) V, p. 169 (*Erephopsis*). Kertész, 1908, Cat. Dipt., III, p. 166 (*Erephopsis*).

Erephopsis rostrifera, Surcouf, 1921, Gen. Insect. Taban., p. 120.
Scione lurida End., 1925, Mitt. Zool. Mus. Berlin, XI, 2, p. 301 (♀; Colombia; Brit. Honduras). Szilady, 1926, Biol. Hung., I, 7, p. 28.

Fidena rostrifera Kröber, 1933, Arch. Naturg. (N. F.) II, p. 284.
Diclisia misera Osten Sacken, 1886, Biol. Centr.-Amer., Dipt., I, pp. 47-48. (♀; Guatemala).

Hine (1920) synonymized *misera* with *aurulans* but Enderlein (1925) and Kröber (1930) claim that *aurulans* has the abdomen wholly light haired, *misera* with considerable black hair. Kröber records specimens from Orizaba, Mexico, and Laristal, Peru, a peculiar distribution, and says that the black

hairs are apparently easily lost, and often are entirely lacking, while the yellow hairs are always present. It would seem rather difficult to separate the species, at least on this character. The species has been recorded from Mexico to Peru, and should occur in Panama, if all these records apply to the same species, but I have seen no Panama records and have not taken the species myself.

Scione aureopygia n. sp.

(Figs. 4, a)

Female—Length 17-18 mm., of wing 15-16 mm.

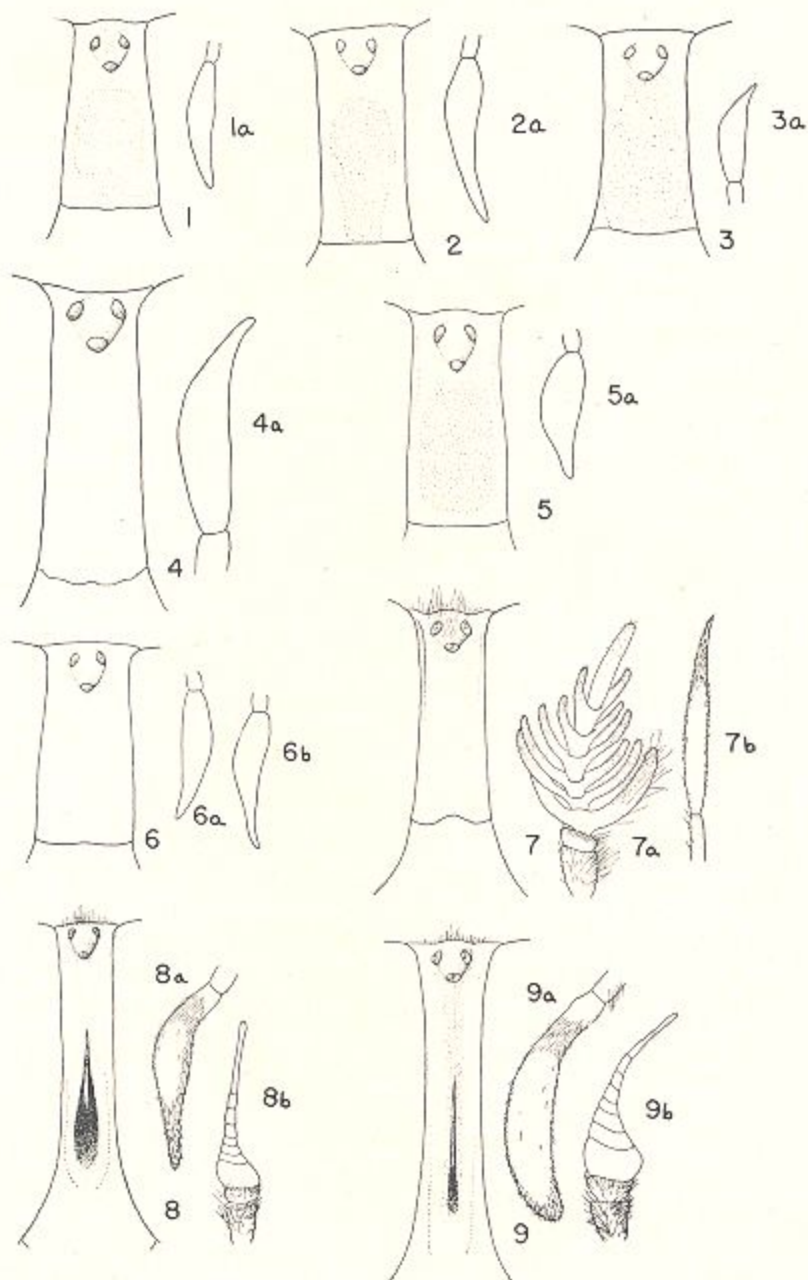
Frons about two and one-half times as high as wide, narrowest at the level of the median ocellus, dark brown pollinose, and with rather sparse short black hairs. The basal suture dividing the frons from the antennal eminence is quite faint. Eyes with unusually short pilosity. Face protuberant, snout-like, dark brown pollinose. Antennae dark brown, the first two segments reddish, the third, of eight annuli, nearly black. The first annulus is much the widest and longest, the segment tapering to the fourth annulus. Terminal palpal segment long, as long as third antennal segment, leaf-like, the margins thickened, and tapering to a sharp point. Proboscis longer than head and thorax, orange brown, the labium not annulate, the labella very small, black and shiny. Beard sparse, blackish.

Mesonotum and scutellum chocolate brown, clothed with sparse blackish hairs, the former with three faint dark stripes. Pleura and coxae dark, black haired, the hairs on the antecalar callus reddish brown. Femora black, or nearly so, black haired, fore and mid tibiae and tarsi orange brown, with orange and black hairs; hind tibia and tarsi darker. Wings brownish hyaline, first and fourth posterior cells closed and petiolate; a short appendix on the upper branch of the third vein in one specimen, none in the other. Abdomen above dark mahogany brown, entirely clothed with appressed golden rufous hairs, beneath blackish, the golden hairs sparser.

Holotype ♀ and 1 ♀ Paratype from Police Station, upper Pequeni river, Madden Lake, C. Z. Holotype to be deposited in the M. C. Z., Harvard Univ., Cambridge, Mass. There are also 2 ♀, Porto Bello, April 22, 1912 (Busck coll.) in the U. S. Nat. Mus., determined as *Sc. rufescens* Ric. by me in 1938, which are almost certainly the present species.

EXPLANATION OF PLATE I

Fig. 1, a. *Scione albifasciata* Macq. Sta. Marta, Colombia. 2, a. *Scione maculipennis* Schin. Restrepo, Colombia. 3, a. *Scione claripennis* Ric. El Valle, Panama. 4a. *Scione aureopygia* sp. nov. Paratype. 5, a. *Scione maculipennis* Schin. Chiriqui, Panama. 6, a. *Scione distincta* Schin. Venezuela. 6 b. *Scione maculipennis* Schin. El Valle, Panama. 7, a, b. *Pityocera festae* Gig.-Tos. Panama. 8, a, b. *Esenbeckia mejiai* sp. nov. Holotype. 9, a, b. *Esenbeckia chagresensis* sp. nov. Paratype.



This species is exceedingly close to *S. rufescens* Ric., from which it may be distinguished by its smaller size and darker coloring. It shows in the structure of the palpi and antennae a condition approaching the species of the genus *Fidena*, for one of which it might well be taken, except for the closed fourth posterior cell.

Scione claripennis Ricardo

(Figs. 3, a)

1900, Ann. Mag. Nat. Hist., (7) VI, p. 292 (♀; Peru); 1902, Op. cit., IX, p. 435. Surcouf, 1921, Gen. Insect., p. 114. Enderlein, 1925, Mitt. Zool. Mus. Berlin, XI, 2, p. 300. Szilady, 1926, Biol. Hung., I, (7), p. 28. Kröber, 1934, Rev. Ent., IV, 2, p. 233 (Peru, Bolivia, Ecuador, Panama).

Rhinotriclista claripennis Kröber, 1930, Stett. Ent. Zeit., XCI, 2, p. 154, fig. 5. *Rhinotriclista brevipalpis* Enderlein, Mitt. Zool. Mus. Berlin, XI, 2, pp. 303-304 (♀; Bolivia). Kröber, 1930, Stett. Ent. Zeit., XCI, 2, p. 155. (= *claripennis* Ric.).

Rhinotriclista strigata Enderlein, 1925, Mitt. Zool. Mus. Berlin, XI, 2, p. 303 (♀; Sta. Inez, Ecuador). Kröber, 1930, Stett. Ent. Zeit., XCI, 2, pp. 152-153, fig. 4.

Scione strigata Kröber, 1934, Rev. Ent., IV, 2, p. 235. *Scione costaricana* Szilady, 1926, Biol. Hung., I (7), p. 29, (♀; Turrialba, Costa Rica). Kröber, 1934, Rev. Ent., IV, 2, p. 233. *Rhinotriclista costaricana* Kröber, 1930, Stett. Ent. Zeit., XCI, 2, p. 156 (Yungas de Coroico, Bolivia; Sta. Inez, Ecuador).

From the descriptions, it seems impossible to separate the above species, and as I lack any South American material, it is better for the present to use the oldest name. Szilady's description of *costaricana* is somewhat ambiguous, as his key gives the wings unspotted, but his description states that they have brown spots around the cross-veins. Kröber determined specimens as *costaricana*, *claripennis* and *brevipalpis* from Yungas de Coroico, Bolivia. All the species except *costaricana* were described from Bolivia, Peru or Ecuador, and neither Kröber nor Enderlein apparently saw Central American material.

A very well preserved specimen from El Valle, Panama, has the following characters: Length, 11.5 mm. Frons about two times as high as wide, very slightly narrowed at vertex, brown in the middle, whitish at sides. Palpi as figured. Beard yellow. Thorax dark brown, the usual *Scione* stripes distinct, whitish. Pleura mostly dark haired, pre-alar tuft dark, post-alar tuft yellow. Hairs on sides of notum yellowish brown, becoming long, silky and golden on each side of scutellum. Scutellum brown with long erect pale golden hairs. Wings nearly hyaline, the costal and first basal cells yellowish. Legs dark brown, densely black haired, the hind tibiae practically black. Abdomen brown on first two tergites, the remainder nearly black. Sides of first tergite behind with white hairs, a fairly broad white haired hind marginal band on second tergite, and tergites one to five with prominent silvery white median triangles. Tergites 3 to 5 all have small

silvery white tufts at the sides. Beneath the sternites are dark brown, with sparse white hairs at the sides. The second and fifth sternites appear to have entire white haired hind margins. Specimens from Chiriqui, though not well preserved, seem to have more white on the abdomen, in one case complete white bands on tergites 3-6. The palpi are also somewhat broader and blunter.

Panama records: Panama (Kröber). Buena Vista, Chiriqui Mt., 1000 ft. March, 1926, (J. D. Smith). El Valle, Coclé Prov., 2500 ft., Jan. 24, 1941 (G. B. Fairchild).

Scione maculipennis (Schiner)

(Figs. 1, 2, 5 and 6)

Diclisia maculipennis Schiner, 1868, Reise Novara. Zool., II, Abt. 1, Vol. B, Dipt., p. 102, Pl. II, figs. 7, 7a (♀; South America, Venezuela). Osten Sacken, 1886, Biol. Centr.-Amer., Dipt., I, p. 47 (♀; Chiriqui Volcano, 3000-4000 ft., Panama). v. Roder, 1886, Stett. Ent. Zeit., XLVII, p. 262 (Colombia); 1892, Dipt. Gesamm. Sud-Amerika von A. Stübel, p. 8. Hunter, 1900, Trans. Amer. Ent. Soc., XXVII, p. 135. Kertész, 1900, Cat. Taban., p. 14. Surcouf, 1921, Gen. Insect. Taban., p. 113.

Scione maculipennis Ricardo, 1900, Ann. Mag. Nat. Hist., (7) V, p. 14; 1902, Op. cit., (7) IX, p. 435 (♀; Bogota). Hine, 1925, Occ. Pap. Mus. Zool. Univ. Michigan, No. 162, p. 9 (Boquete, Chiriqui, Panama). Szilady, 1926, Biol. Hung., I, 7, p. 28. Kröber, 1930, Stett. Ent. Zeit., XCI, pt. 2, pp. 144, 165, fig. 10 (♀; Ecuador, Peru, Venezuela, Mexico); 1934, Rev. Ent., IV, 2, p. 234.

Rhinotriclista maculipennis Enderlein, 1925, Mitt. Zool. Mus. Berlin, XI, 2, p. 302.

The identification of Panama material is tentative, as I lack the long series of specimens from neighboring territory necessary for elucidation of the limits of variation of the several forms which have been described. Specimens determined by Dr. Bequaert as *maculipennis* Schin., *albifasciata* Macq., and *distincta* Schin., are before me, and are figured here for comparison. Specimens from Chiriqui province are intermediate between *maculipennis* and *albifasciata* in many respects, while the specimens from El Valle, Coclé province, is the same as *distincta* in the proportions of the frons, though the palpi are rather different. The general color of the Panama material is rather brown, the beard yellowish and the legs dark brown, thus more like *maculipennis*, but more yellowish than *albifasciata*. The balance of the evidence seems to place the material nearest to *maculipennis*.

Specimens examined: 1 ♀, Restrepo, Dept. Meta, Colombia, 1936, (J. Bequaert coll.), (*maculipennis*) (Figs. 2, a). 1 ♀, N. W. Sierra N. de Sta. Marta, Colombia, 7000-8000 ft., July 21, 1928. (P. J. Darlington coll.), (*albifasciata*) (Figs. 1, a). 1 ♀, Aragua, Venezuela, Sept. 8, 1936 (*distincta*) (Figs. 6, a).

Panama records: Volcan de Chiriqui, (Osten Sacken). Boquete, Chiriqui, March, 1923 (Hine). 1 ♀, El Valle, Coclé prov., Jan. 24, 1941. 2 ♀ Rio Chiriqui Viejo, Llanos de Volcan, Chiriqui Prov., 7-7500 ft., Jan., 1939, (P. Allen coll.). 1 ♀, Boquete, Chiriqui, Jan., 1941. 5 ♀, Cerro Punta, Chiriqui, 6-7000 ft., Feb.-March, 1940.

Genus *Esenbeckia* Rondani

1863, Arch per la Zool., Modena, III, p. 83 (type by original designation: *Silvius vulpes* Wiedemann, 1828). Lutz, 1909, Zool. Jahrb., Suppl. X, pp. 625, 627, 661. Enderlein, 1925, Mitt. Mus. Berlin, XI, 2, p. 287. Kröber, 1931, Zool. Anz., XCIV, p. 245; 1932, Rev. Ent., II, 1, p. 82. Borgmeier, 1933, Rev. Ent., III, 3, p. 292. Kröber, 1934, Rev. Ent., IV, 2, p. 240.

Dyspangonia Lutz, 1905, Rev. Soc. Sci. Sao Paulo, I, 1, pp. 22, 27; 1906, Soc. Sci. Sao Paulo (separate publication), p. 3. Bequaert, 1924, Psyche, XXXI, 1, p. 28. (Type *Pangonia fuscipennis* Wied., 1828). Borgmeier, 1933, Rev. Ent., III, 3, p. 291.

Esenbeckia Surcouf, 1909, Bull. Mus. Hist. Nat. Paris, XV, p. 257. (lapsus).

Kröber (1934) lists 30 species and 6 varieties as belonging to the genus, of which but 5 are said to occur in Central America. Of these I recognize 3 in the material before me, *prasiniiventris* Macq., *translucens* Mac. and *illota* Will., the first two from Panama. Kröber's record of *filipalpus* Will. from Costa Rica needs confirmation, as the species was described from Paraguay. *E. fuscipennis* var. *minor* Kröber from Costa Rica I have not seen.

The four species I have taken in Panama are none of them rare, but all seem to have quite short seasons of flight. *Prasiniiventris* is the most abundant and widespread, and flies throughout the day. *Translucens* and *chagresensis* are more or less crepuscular, while *illota osornoi* is strictly crepuscular and nocturnal. In addition, I have added the description of an apparently new species from Honduras.

The genus as found in Panama may be characterized as follows: Eyes bare. Ocelli present. Frons with or without a bare frontal callus, often secondarily denuded. Face pollinose, rarely shining, flat or somewhat inflated, not snout-like. Antennae with first two segments short, the first at least twice as long as the second. Third segment of eight annuli, the first four tending to become fused, the last slender and spike like. Palpi about half length of proboscis, slender, curved, and flattened. Proboscis equalling or somewhat exceeding head height, the theca of the labium and the labella with shiny sclerotized plates, the latter one-third to one-fifth the length of the proboscis. Wings with subepaulet without macrotrichia, the costa and first longitudinal vein above and the costa beneath with macrotrichia, other veins all bare.

First posterior cell closed and usually petiolate. Upper branch of third vein with a moderate to long appendix. Legs slender, short haired, the mid and hind tibiae with a pair of well marked apical spurs. Abdomen moderately slender to rather broad.

KEY TO FEMALES

1. Wings heavily fumose. Body and legs largely black. 2
Wings hyaline or greyish. Body and legs not black. 3
2. Mesonotum and scutellum orange brown, with orange pubescence. **translucens**
Mesonotum and scutellum blackish, with black hairs and grey pubescence, **chagresensis**
3. Thorax and abdomen concolorous, pale yellowish brown. Palpi slender, sharp pointed. No tufts of white hair on sides of abdominal tergites 3 to 5. **osornoii**
Thorax purplish brown, abdomen deep jade to light yellowish green in life, fading in long preserved specimens to yellowish. Palpi slender, blunt pointed. Fairly prominent tufts of white hairs on sides of tergites 3-5, **prasiniventris**

Esenbeckia translucens (Macquart)

(Figs. 15, a, b)

Pangonia translucens Macquart, 1845, Mem. Soc. Sci. Lille (1844), p. 154, Pl. III, fig. 5 (♀; Brasil); 1846, Dipt. Exot., Suppl. I, p. 26, Pl. III, fig. 5. Walker, 1854, List Dipt. Brit. Mus. V, Suppl. I, p. 130. Rondani, 1863, Arch. per la Zool., Modena, III, 1, p. 85. Kertész, 1900, Cat. Taban., p. 24. Hunter, 1900, Trans. Amer. Ent. Soc., XXVII, p. 134. Ricardo, 1900, Ann. Mag. Nat. Hist., (7) V, p. 171. Hine, 1920, Ohio Journ. Sci., XX, No. 8, p. 312 (♀; Ecuador, Panama, Guatemala); 1925, Occas. Pap. Mus. Zool. Univ. Michigan, No. 162, pp. 4, 7.

Esenbeckia translucens Lutz, 1909, Zool. Jahrb., Suppl. X, p. 670. Surcouf, 1921, Gen. Insect., Taban., p. 115. Enderlein, 1925, Mitt. Mus. Berlin, XI, 2, p. 288. Kröber, 1931, Zool. Anz., XCIV, p. 249; 1932, Rev. Ent., II, 1, p. 71, fig. 19 (♂, ♀; Ecuador, Brasil, Peru); 1934, Rev. Ent., IV, 2, p. 243.

Pangonia fusiformis Walker, 1850, Insect. Saund., I, Dipt., p. 19 (♀; "North America" [Mexico according to Ricardo]); 1854, List Dipt. Brit. Mus., V, Suppl. I, p. 95. Ricardo, 1900, Ann. Mag. Nat. Hist., (7) V, pp. 169-170. Kertész, Cat. Taban., p. 19. Surcouf, 1921, Gen. Insect., Taban., p. 128.

Phyria fusciformis Enderlein, 1925, Mitt. Mus. Berlin, XI, 2, p. 304.

This species is probably not uncommon at suitable localities and at the right season, but I have happened to find the right combination only once, on Cerro Azul. It differs from its nearest congener, *E. diaphana* (Schiner) in having nearly wholly black legs. The rufus thorax will quickly distinguish it from *E. chagresensis*.

Distribution: Recorded in the literature from Mexico, Guatemala, Panama, Ecuador, Brasil and Peru. Dr. Bequaert has material from Colombia also. Specimens in the Hine coll. from Cabima, Panama and Cayuga, Guatemala are labelled *Buplex fusiformis* Wlk.

Panama records: 33 ♀ Canal Zone, Cabima, Boqueron River, and Alhajueta (A. Busck coll. in U. S. N. M.). 1 ♀ Summit, C. Z., June, 1930 (Dunn). 2 ♀; New San Juan, Chagres River region, June 26, 1939; 6 ♀, June 28, 1939. 1 ♀

El Valle, Coclé province, 2-2500 ft. July 9, 1939. 11 ♀ Cerro Azul, near Pacora, Panama province, 2000 ft., May 17, 1941. 2 ♀ Cano Saddle, Gatun, C. Z., June 13, 1923 (R. C. Shannon).

***Esenbeckia chagresensis* sp. nov.**

(Figs. 9, a, b)

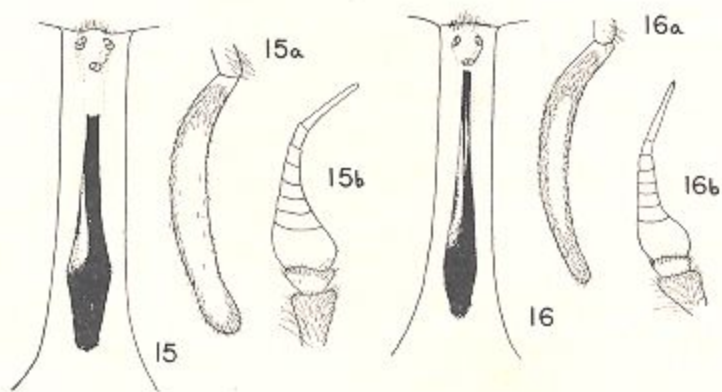
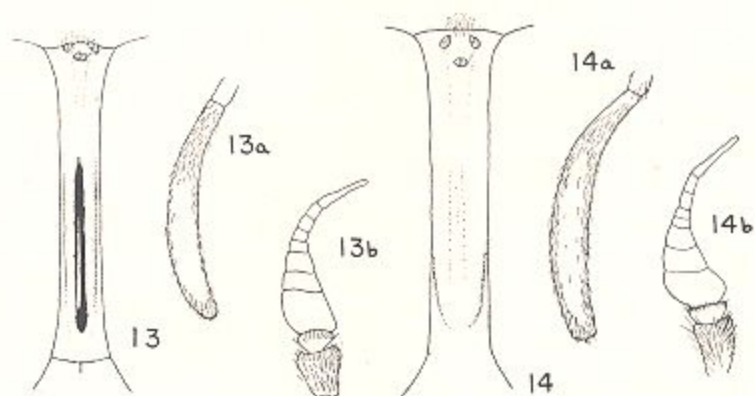
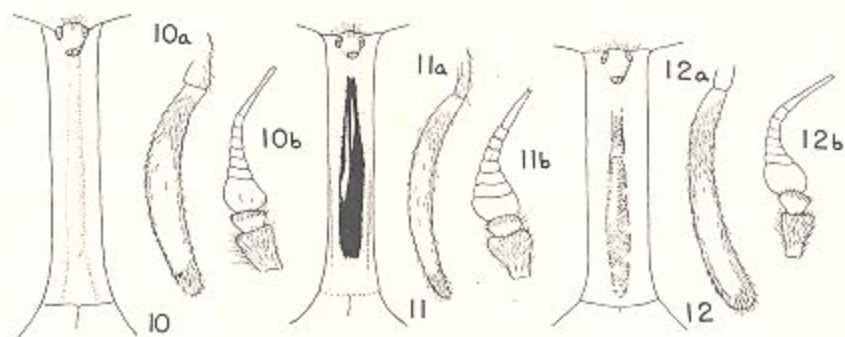
Female—Length 16-18 mm., of wing 16-18 mm. Eyes bare, dull greenish black in life.

Frons yellowish grey pollinose, about five times higher than wide, widened at base and vertex, the basal suture obsolete. The frontal callosity in well preserved examples is represented by a slightly raised stripe from base to vertex covered with darker and more yellowish pollinosity. This stripe is broader at base, where it flattens out and runs down over the subcallus to the base of the antennae, and in rubbed specimens the upper and middle portions may become denuded, showing a more or less uneven shiny strip. The ocelli are prominent and yellow. Antennae orange yellow. The first segment somewhat inflated, the second small and produced in a short blunt tooth dorsally, both with numerous black hairs, which form an even apical fringe on the second segment. Third segment of eight visible divisions, the first forming a broad basal piece with the following three, which are progressively smaller, while the last four form a sort of style. The fourth division is markedly the smallest, while the terminal piece is spike-like, as long or longer than the previous four divisions together. Clypeus and genae dark grey pollinose, with some dark hairs and light hairs forming tufts near the insertion of the palpi and along the genal margin of the eye. Genae with a deep groove running from the insertion of the palpi to a point even with the insertion of the antennae. Palpi black, curved, broad, blunt pointed, longer than antennae and clothed with black hairs on the inner surface, edges, and basal one-fifth of the outer surface. The inner surfaces of the palpi are round in cross section, the outer bare surfaces flat. Proboscis black, shiny, about equal to head height, the labella and theca of the labium both entirely sclerotized, the former a little less than one-half length of latter.

Mesonotum chocolate brown, covered with white pollen giving it a purplish cast, and with sparse black hairs. Pleura and sternum dark grey with white hairs. Scutellum concolorous with mesonotum. Prescutellar lobe prominent. Subepaulet subtriangular, thin, scale-like, without macrotrichia. Costa and first vein above and beyond arculus with macrotrichia, other veins bare. First posterior and anal cells closed and petiolate, a moderate appendix on the upper branch of the

EXPLANATION OF PLATE II

10, a, b. *Esenbeckia illota* Will. Honduras. 11, a, b. *Esenbeckia illota osornoi* subsp. nov. Paratype, Panama. 12, a, b. *Esenbeckia illota enderleini* Kröb. Goyaz, Brasil. 13, a, b. *Esenbeckia illota guianense* subsp. nov. Holotype, Bartica, British Guiana. 14, a, b. *Esenbeckia illota meridionale* subsp. nov. Holotype, Ilheus, Bahia, Brasil. 15, a, b. *Esenbeckia translucens* Macq. Panama. 16, a, b. *Esenbeckia prasiniventris* Macq. Panama.



third vein. Whole wing deeply fumose. All legs entirely black with black hairs. Coxae white haired.

Abdomen: First tergite straw yellow, translucent, with white hairs on the lateral and posterior margins, black hairs in a small patch on each side of the scutellum. Second tergite varying from clear yellow with a small brown spot on each lateral margin to entirely black. Succeeding segments black. All tergites with narrow light hind margins which bear white hairs, while the yellow or black anterior four-fifths of the segments bear black hairs. Venter: First two or three sternites largely yellow with lateral black patches, or entirely black with light hind margins. Fourth to terminal sternites black with light hind margins.

Holotype ♀ and many ♀ paratypes from New San Juan, in the Chagres River valley between Gamboa and Madden Dam, C. Z., June 26, 1939, on horse. 1 ♀ paratype from Rio Frio, Magdalena, Colombia, October 15, 1927. (Geo. Salt. coll. in Dr. J. Bequaert's collection). 1 ♀ Paratype, Utevey, near Pacora, Aug. 6, 1941. 25 ♀ Paratypes, Moja Polla, Chagres river region, June 12, 24, July 8, 1940; June 15, 1941. Holotype and 5 Paratypes to be deposited in the M. C. Z., Harvard Univ., Cambridge, Mass. Remaining Paratypes in the author's collection.

Esenbeckia illota (Williston)

(Figs. 10 to 14)

Pangonia illota Williston, 1901, Biol. Centr.-Amer., Dipt., I, p. 254 (♀; Ruatan Island, Rep. Honduras). Aldrich, 1905, Cat. North Amer. Diptera, p. 193. Kertész, 1908, Cat. Dipt., III, p. 155.

Pangonius illota Surcouf, 1921, Gen. Insect., Taban., p. 128. Hine, 1925, Occas. Papers Mus. Zool. Univ. Michigan, No. 162, p. 5.

Esenbeckia illota J. Bequaert, 1932, Jl. New York Ent. Soc., XXXIX, (1931), p. 536 (♀); 1933, Publ. No. 431, Carnegie Inst. Washington, p. 560 (♀). Kröber, 1934, Rev. de Entomologia, IV, pt. 2, p. 242.

Pangonia ferruginea Macquart, 1839, (Not of Meigen, 1804. See below). Mem. Soc. Sci. Agric. Lille (1838), Pt. 3, p. 295, (♀; northern part of the Capitainerie of Sao Paulo, Brasil); 1838, Dipt. Exot., I, pt. 2, p. 179. Walker, 1854, List Dipt. Brit. Mus., V, Suppl. 1, p. 129. Ricardo, 1900, Ann. Mag. Nat. Hist., (7) V, p. 171. Hunter, 1900, Trans. Amer. Ent. Soc., XXVII, p. 134. Kertész, 1900, Cat. Taban., p. 18; 1908, Cat. Dipt., III, p. 154.

Dyspangonia ferruginea Lutz, 1905, Rev. Soc. Sci. Sao Paulo, No. 1, p. 28 (Goyaz, August).

Esenbeckia ferruginea Ad. Lutz, 1909, Zool. Jahrb., Suppl. X, pt. 4, p. 667, Pl. III, fig. 45 (♀; Amaro Leite and Rio dos bois, Est. Goyaz; also Est. Minas Geraes). Ad. Lutz and Neiva, 1909, Mem. Inst. Osw. Cruz, I, pt. 1, p. 32 (Bicudos, Est. Minas Geraes). Neiva and Penna, 1916, Mem. Inst. Osw. Cruz., VIII, pp. 93 and 97 (Formosa, Est. Bahia; Parnagua, Est. Piahy). Surcouf, 1921, Gen. Insect., Tabanidae, p. 115 (Brasil). J. Bequaert, 1925, 13th Rept. United Fruit Co. Med. Dept. for 1924, p. 15. Kröber, 1934, Rev. de Entomologia, II, pt. 1, p. 65, fig. 11 (♀; Venezuela).

Esenbeckia enderleini Kröber, 1931, Zool. Anz., XCIV, p. 252, fig. 2 (♂; Tucuman, Argentina); 1932, Rev. Ent., II, 1, p. 64; 1934, Op. cit., IV, 2, p. 241 (♂, ♀; Argentina, Brasil).

NOT *Tanyglossa ferruginea* Meigen, 1804, Klass. Zweifl. Insekt., I, p. 175, Pl. 10, fig. 2 (Spain?).

Not *Pangonia ferruginea* Latreille, 1809, Gen. Crust. et Insect., IV, p. 282. Meigen, 1820, Syst. Beschreib. Europ. Zweifl. Insekt., II, p. 24. Walker, 1854, List. Dipt. Brit. Mus., V, p. 118. Loew, 1856, Neue Beitr., VI, p. 28. Schiner, 1868, Novara Reise, Zool., II, Abt. 1, Vol. B, Dipt., p. 99 (♂; Gibraltar). Ricardo, 1900, Ann. Mag. Nat. Hist., (7) V, p. 181 (♂; France). Kertész, 1900, Cat. Taban., p. 18. Villeneuve, 1905, Ann. Ent. Soc. France, LXXIV, p. 309. Arias, 1915, Dipt. Espana, No. 19, p. 60. Enderlein, 1925, Mitt. Mus. Berlin, XI, 2, p. 286, 287.

The group to which this species belongs seems to be in a considerable nomenclatorial tangle, and the material available has not shed much light on the matter. *E. ferruginea* Macq., described from "au Nord du capitainerie de St. Paul," is represented by a considerable series of specimens from Anapolis, Goyaz and 2 ♀ from Abuna, Matto Grosso, Brasil, which I consider to be true *ferruginea*. *E. illota* Will., described from Ruatan Is., Rep. Honduras, I have from Prieta, Rep. Honduras. These two forms are quite distinct, though obviously related. Specimens from localities between these northern and southern limits appear to differ in slight details of color and structure from both *illota* and *ferruginea*, and to differ among themselves sufficiently for three types to be distinguishable, which I consider to be races or subspecies which serve to connect the two end forms. The accompanying figures will serve to show the main structural differences between the various forms, while the slight color differences are described below. As shown above, *ferruginea* Macq., 1838 is apparently a homonym of *ferruginea* (Meig.), which leaves *illota* Will. as the earliest available name for the group, and the others are all considered to be subspecies of it.

Esenbeckia illota illota Will.

Frons, antenna and palpus as figured. Whole insect pale brown. Mesonotum clothed with yellowish brown hairs and greyish pubescence. Pleura paler, the hairs more yellowish. Beard sparse, creamy. A tuft of brown hairs on the genae at the lower corner of the eye, and a row of brown hairs along the anterior eye margin bordering the face. Antennae and palpi pale yellowish orange, the hairs on the palpi black those on the basal antennal segments dark brown. Legs yellow, orange haired. Abdomen yellowish brown, horn colored, the first tergite markedly lighter. Hairs on first tergite pale yellowish, those on remaining tergites reddish brown. Each tergite with a small tuft of pale hairs at the extreme latero-posterior angle. First sternite pale haired, the rest dark haired with narrow posterior fringes of pale hairs. Knob of haltere pale yellow.

Described and figured from a female from Prieta, Rep. Honduras, May 5, 1924 (J. Bequaert coll.). Recorded in the literature from Yucatan, Honduras and British Honduras.

***Esenbeckia illota osornoi* subsp. nov.**

Frons, antenna and palpus as figured. Differs from the typical form in more orange antennae, sparser beard, thorax more yellowish, first tergite not paler than the others, all tergites orange haired, no pale lateral tufts, sternites all orange haired and knob of haltere orange brown. Specimens before me seem also to be smaller and more slender than the few *illota* I have seen.

Holotype ♀ and 45 ♀ Paratypes, Moja Pollo, Chagres River Valley, Jan., Feb., and March, 1940. 1 ♀ Paratype Canal Zone Forest Reserve, Feb. 22, 1942. Other Paratypes Boca de Cupa, Darien Province, Panama, March, 1939; Barro Colorado Is., C. Z., March, 1934; Puerto Armuelles, Chiriqui Province, January, 1940; Juan Mina Station, Chagres River valley, Feb. 17, 1939. 1 ♀, Restrepo, Colombia (P. C. A. Antunes coll.). There is also a considerable number of specimens from various localities in Colombia in Dr. Bequaert's collection, which are unfortunately not before me, although I have examined them.

There are also 2 ♀ in the Hine coll. from San Mateo, Costa Rica, and Crystalina, Colombia, labelled *Buplex tenuirostris* Walk., a name placed as a synonym of *Ricardoia flavohirta* (Bell.) by Kröber, but which appear to be the same as my Panama specimens.

***Esenbeckia illota guianense* subsp. nov.**

Frons, antenna and palpus as figured. Coloration practically as in *osornoi*, but rather darker and more reddish throughout. Hairs on palpi and basal antennal segments definitely rufous. Proboscis apparently thicker and heavier than in *osornoi*.

Described and figured from the Holotype, a ♀ from Bartica, British Guiana, June 6, 1901. 1 ♀ Paratype, Caura Valley, Venezuela.

***Esenbeckia illota meridionae* subsp. nov.**

Frons, antenna and palpus as figured. Coloration much as in the preceding two forms, but differing as follows: Antennae pale yellow, hairs on basal segments and on palpi rufous. Beard rather heavy, creamy white. Tufts of paler hairs present on the latero-posterior margins of the tergites. Sternites with wholly pale straw colored hairs. Knobs of halteres dark brown, contrasting strongly with the pale pedicels.

Description and figures drawn from the Holotype, a female from Ilheus, Bahia, Brazil, August 30, 1934. I have seen other material from the same locality, but its distinctness was not then recognized.

Esenbeckia illota enderleini Kröb.

Frons, antenna and palpus as figured. Coloration in general rather paler than the preceding forms. Antennae ivory white, the hairs on the basal segments yellow. Hairs on palpi black. Beard sparse, nearly white. Hairs on thorax and abdomen, both above and below, pale straw colored, and rather denser and longer than on the other forms. In addition, many specimens bear faint median dark integumentary spots or streaks on the second to fifth tergites, and occasionally dorso-lateral spots of the same nature on the 3rd, 4th and 5th tergites can be made out.

Description drawn from a female from Pyrenopolis, Goyaz, Brazil, Aug. 10, 1936 (A. N. Allen coll.). I have seen material of this form from the States of Goyaz, Matto Grosso and Sao Paulo, Brasil. Kröber considered the form from Venezuela to be true *ferruginea*, while *enderleini*, described from the male from Tucuman, Argentina, he later records also from Brasil. The characters he uses to separate the two species (1932) are just those here used, while his figure of *ferruginea* agrees fairly well with my material from British Guiana and Venezuela. *Esenbeckia ferruginea* var. *nigrovillosa* Kröb., of which I have specimens from Goyaz, Brasil, determined by Dr. O. Castro, appears to be a distinct species, as the proboscis is quite different in structure, the theca of the labellum greatly inflated and heavily sclerotized, the labella large and also heavily sclerotized.

Esenbeckia prasiniventris (Macquart)

(Figs. 16, a, b)

Pangonia prasiniventris Macquart, 1845, Mem. Soc. Sci. Lille, (1884), p. 161, Pl. III, fig. 9; 1846, Dipt. Exot., Suppl. 1, p. 29, Pl. III, fig. 9 (♀; Colombia). Walker, 1854, List. Dipt. Brit. Mus., V, Suppl. 1, p. 130. Rondani, 1863, Arch. per la Zool., Modena III, 1, p. 85. Schiner, 1868, Novara Reise, Zool., II, Abt. 1, Vol. B, Dipt., p. 101 (♀, ♂). Osten Sacken, 1886, Biol. Centr.-Amer., Dipt., 1, p. 45 (♂; Panama). Ricardo, 1900, Ann. Mag. Nat. Hist., (7) V, p. 173. Hine, 1917, Trans. Amer. Ent. Soc., XLIII, p. 291 (Guatemala, Costa Rica, Ecuador, British Guiana). Dunn, 1934, Psyche, XLI, p. 171 (Panama).

Pangonia prasiniventris Hunter, 1900, Trans. Amer. Ent. Soc., XXVII, p. 134, (lapsus).

Pangonius prasiniventris Hine, 1925, Occ. Papers Mus. Zool. Univ. Michigan, No. 162, p. 5 (Honduras, Guatemala).

Esenbeckia prasiniventris Lutz, 1909, Zool. Jahrb., Suppl. X, 4, p. 670 (♂, ♀); 1911, Mem. Inst. Osw. Cruz., III, p. 84. Surcouf, 1921, Gen. Insect., Taban., p. 84. Kröber, 1931, Zool. Anz., XCIV, pp. 246-247; 1932, Rev. Ent., II, p. 55, figs. 3-4; 1934, Rev. Ent., IV, 2, p. 242. Bequaert, 1924, 13th Ann. Rep. Med. Dept. United Fruit Co., p. 205; 1940, Bull. Ent. Res., XXX, 4, p. 448. Lutz, 1928, Est. Zool. Parasit., Venezolanas, p. 56. Enderlein, 1925, Mitt. Mus. Berlin, XI, 2, p. 288. Curran, 1934, N. Amer. Dipt., p. 152, fig. 25 (head), p. 153, fig. 29 (wing).

Esenbeckia semiviridis Kröber, 1931, Zool. Anz., XCIV, p. 247; 1932, Rev. Ent., II, 1, p. 57, figs. 5-6; 1934, Rev. Ent., IV, 2, p. 242 (Venezuela).

Nor *Pangonia semiviridis* Ricardo, 1900, Ann. Mag. Nat. Hist., (7) VIII, p. 181, Pl. I, fig. 7 (♂; Barengo, Old Castile [Spain]).

There is considerable variation in this species, the ground color of the abdomen ranging from deep jade green to light yellowish green, while the vestiture of the thorax may be largely grey or quite rufous. The males are generally yellower and paler than the females.

Prasiniventris is the most abundant species of the genus in Panama, but like the other species its season of flight is rather short, from about the middle of December to the middle of February. During this period, however, it assumes almost epidemic proportions, and is a severe pest to stock, even attacking man. The flight is swift and noisy, and the flies are not easily discouraged, returning again and again to the attack.

Distribution: Recorded in the literature from Guatemala, Honduras, Costa Rica, Panama, Colombia, Ecuador, Venezuela, British Guiana, Trinidad and Brasil (Minas Geraes). I also have specimens from Stann Creek, Brit. Honduras, Feb. 19, 1940 (Komp coll.).

Panama records: Camp La Vaca, Chiriqui, Feb., 1930 (Dunn). David (Osten Sacken). Buena Vista, Chiriqui, 1000 ft., March, 1926 (J. D. Smith). El Valle, Coclé Prov., Dec. 8, 1938; Dec. 10, 17, 1939; Jan. 24, 1941. Taboga Is., Dec. 18, 1938. Ft. Clayton, C. Z., Jan. 23, 1939. Chepo, June 19, 1930 (Dunn). Summit, C. Z., Dec. 21, 1929 (Dunn). Utevey, near Pacora, Aug. 6, 1941. Also a long series from Moja Pollo, on the Chagres River and the C. Z. Forest Reserve along Madden Road, at various dates in Dec., Jan., and Feb. Ancon, C. Z. (Dunn). Paraiso, C. Z., Jan. 16, 1911 (Busck).

Esenbeckia mejiai sp. nov.

(Figs. 8, a, b)

Female—Length 15 mm., of wing, 16 mm.

Frons about seven times as high as wide, yellowish grey pollinose, the callus brown. Ocellar tubercle and subcallus dusky pollinose. Fronto-clypeus rather strongly inflated, shiny yellow. Genae shiny yellow, yellow pollinose towards the eye margins. Beard sparse and short, dusky brown. Antennae orange, the basal segments black haired, the terminal annulus unusually long and slender. Palpi orange, black haired, the apex drawn out in a slender point. Proboscis longer than head height, the labella less than one-fifth its length, and apparently well sclerotized.

Mesonotum greyish brown, clothed with yellowish brown and dark grey hairs. Scutellum concolorous. Pleura more yellowish. Wings greyish fumose, the costal and basal cells yellowish. First posterior cell closed and short petiolate, third vein with a long appendix. Legs orange brown, coxae and at least bases of femora black haired.

Abdomen dirty yellowish, horn colored. First tergite yellowish haired, second and succeeding tergites black haired anteriorly, but with long, pale straw colored hairs on the hind margins. These pale hairs become more abundant laterally, where they cover practically the width of the segment, and on the terminal segments they practically replace the dark hairs. Venter wholly yellowish and pale haired.

Holotype ♀ Tegucigalpa, Rep. of Honduras, November, 1941. (Dr. I. Mejia coll.). To be deposited in the Museum of Comparative Zoology, Cambridge, Mass. This species much resembles *illota* and its allies in coloration, but the structure of face, antennae and palpi is entirely distinct. It is the only shiny faced species of the genus I have seen.