

NEW DIPTERA OR TWO-WINGED FLIES IN THE UNITED STATES NATIONAL MUSEUM

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The following descriptions of two new genera and 26 new species of Diptera, with notes on little-known species and several tables of species and genera, are the result of general work on the collection in this order.

Family MILICHIIDAE

Genus PHOLEOMYIA Hendel

Pholeomyia BILIMEK, Verh. Zool.-Bot. Ges. Wien, p. 903, 1867.—HENDEL, Wien. Ent. Zeit., vol. 30, p. 40, 1911.—MELANDER, Journ. N. Y., Ent. Soc., vol. 21, pp. 234-233, 1913.—MALLOCH, Proc. U. S. Nat. Mus., vol. 46, pp. 130-134, 1913.

Rhynchomilichia HENDEL, Wien. Ent. Zeit., vol. 22, p. 250, 1903.

PHOLEOMYIA EXPANSA, new species

Male.—Dull black in color, the abdomen expanded and circular in outline, silvery-white except on basal segment.

Front brownish black, slightly converging toward the antennae, where it is about one-fourth the width of the head. Besides the orbital row of bristles, which extends slightly below the attachment of the antennae, there are two variable rows of small bristles or hairs beginning just below the lowest ocellus and converging so as to unite at the lunule. Antennae black, the third joint round; arista short; vibrissae about the middle of the face, close to the eyes, separated by twice the greatest diameter of the third antennal joint; palpi black; proboscis not very long; the labella folding back, as long as the preceding segment. Thorax with well developed chaetotaxy: dorsocentrals 4; acrostichals 3 or 4 pairs behind the suture, the hindmost large; humeral 2; presutural 2; notopleural 2; supraalar 2; intraalar 2 or 3; scutellum with 2 pairs; mesopleura with a cluster of about 8; sternopleura with 3. Halteres black including stem. Calypters brown with blackish rim and brownish fringe. Abdomen

circular, very thin and flat, the dorsal surface entirely silvery, but under a high power showing a single row of delicate black hairs along the hind margin of each segment. First abdominal segment dull black, venter black, the sternites narrow, the membrane greatly developed between them and the tergites, so as to cover almost the whole. Wings sometimes milky, usually subhyaline, the veins black; the costa deeply and obliquely notched before the tip of the first vein. Legs black.

Length 4.5 mm.

Described from 9 males taken by the writer on Mount Lowe, California, near the upper end of the electric car line, on July 3, 1917.

Type.—Male, Cat. No. 27242, U.S.N.M.

Family CHLOROPIDAE

Genus CHLOROPS Meigen

Chlorops MEIGEN, Illiger's Magazine, vol. 2, p. 278, 1803.

CHLOROPS KUWANAE, new species

Male and female.—General color light yellow, thorax with three broad, opaque, black stripes, the inner much abbreviated behind, and a small black stripe above each wing. Front about half as wide as head, dull yellow with only small and scattered hairs; frontal triangle shining, the sides convex, apex drawn out in a long point which reaches the lunule; a roundish black spot covers all the triangle except the point and the basal angles, the latter yellow to the ocelli; antennae of ordinary size, first joint yellow, second brown, third black, with a very blunt upper angle, arista white with yellow basal joint. Face light yellow, white in male, bucca of same color, one-fifth the eye height; epistoma not much projecting. Palpi, proboscis and edge of mouth pale yellow. Occiput yellow, a large black spot extending downward from the vertex, widening below. Thorax shining except the dorsal stripes, with dark hairs and very minute bristles; pleurae light yellow, with a small black spot below the anterior spiracle, an interrupted oblique brown one on the mesopleura, the lower three-fifths of sternopleura light brown, sometimes with blackish upper edge. Scutellum convex, with two pairs of small bristles. Halteres pale yellow. Abdomen wholly pale yellow except four transverse black bands at the bases of the segments, which do not quite reach the lateral margin. Legs wholly yellow except the last tarsal joint of the middle and hind ones, and the last two joints of the front ones, which are brown. Wings hyaline; crossveins separated by a distance equal to two-thirds of the last segment of the fifth vein; third and fourth veins hardly divergent;

the costal segment before the second vein nearly one and one-half times the following one.

Length 2.6 mm.

One male, six females, Nishigahara, Tokyo, Japan, from larvae boring in rice stems; one vial of affected stems in alcohol, and two puparia dry in vial. Two females will be returned to Professor Kuwana from the type lot.

Type.—Male, Cat. No. 23927, U.S.N.M.

Family TRYPETIDAE

Genus ANASTREPHA Schiner

Anastrepha SCHINER, Novara Reise, 1868, p. 263.

ANASTREPHA SCHAUSI, new species

Male.—A reddish-yellow species with wing pattern of *parallela*, but the mouth strikingly ornamented.

Head yellow, third antennal joint blackened on apical third, palpi yellow; the whole edge of mouth swollen and expanded, with a narrow shining black line on the prominent part; above this line on the sides the color is contrasting white, but across the face the black line is less sharply defined and above it the color is yellow like the rest of the face.

Thorax yellow, a white pruinose stripe on middle of mesonotum, wider behind, and a narrow whitish stripe above root of wing. Pleura yellow, whitish along the suture above. Metanotum and halteres yellow.

Abdomen yellow, unmarked, the fifth segment darker and more shining, and almost equal in length to the third and fourth combined. Legs yellow, the larger bristles brown.

Wings with the clear area including the second basal cell continued distally and forward to the costa without interruption; the inverted V-shaped hyaline area beyond this is not interrupted, though somewhat narrowed, at the third vein. Thus there are three separated areas of brown and yellow coloration, almost exactly as in Loew's figure of *parallela*.¹

Length, 10.6 mm.

One male, Juan Vinas, Costa Rica, January 11, collected by William Schaus and J. T. Barnes, and named in honor of the former, the distinguished lepidopterist.

Type.—Male, Cat. No. 26837, U.S.N.M.

ANASTREPHA BARNESI, new species

Female.—A yellow species with wing pattern like *parallela*, fourth vein more strongly curved forward than usual, and exceptionally long ovipositor.

¹ Mon. N. Amer. Dipt., vol. 3, 1873, pl. 11, fig. 20.

Head yellow, including proboscis, palpi, and antennae. Thorax yellow, mesonotum without median stripe, but with one above root of wing ending at suture, and one on mesopleura just below notopleural suture; the double inflated sclerite between halter and root of wing is white on the mesial portion; otherwise the whole thorax is yellow. Halteres yellow in one specimen, the knob infuscated in the other. Abdomen short and wide, wholly yellow; ovipositor as long as all the rest of the insect, the parts measuring by micrometer as follows: Head, 18; thorax, 50; abdomen, 35 (total, 103); ovipositor, 103; the ovipositor is darker brown than the body, covered with dark hair, the basal third tapers gradually while the remainder is cylindrical. Legs yellow.

Wings with yellow and brown pattern as in *parallela*, but the fourth vein curves so far forward that the first posterior cell is more nearly closed than usual (by micrometer 7 units wide at tip and 12 units a little before).

Length with ovipositor, 19 mm.; without, 9.5 mm.

Two females, Cayuga, Guatemala (Schaus and Barnes).

Type.—Female, Cat. No. 26838, U.S.N.M.

Named in honor of J. T. Barnes, the companion of William Schaus, and discoverer of this species.

ANASTREPHA CORDATA, new species

Female.—A black-marked species with long ovipositor and striking heavy blackish spot covering hind cross vein.

Head yellow, the ocellar triangle, orbits at vertex and an indefinite occipital spot shining black: antennae yellow, palpi narrowly infuscated at tip. Thorax yellow, the dorsum with a pair of inner black stripes abbreviated behind, and an outer pair interrupted at the suture and abbreviated in front; a transverse black band just in front of scutellum; pleurae yellow, metanotum with a heart-shaped, shining black spot, notched with yellow in the middle above. Halteres yellow.

Abdomen yellow, the second to fifth segments with successively narrower basal black bands, that on the fifth interrupted. By micrometer the measurements are as follows: Head 16; thorax 34; abdomen 30 (total 80); ovipositor 49. Thus the ovipositor is about five-eighths as long as all the rest of the insect. It is yellow, more brown apically, tapering on the basal half, and densely hairy.

Wing with the pattern of uniform clear yellow color except the inverted V, of which one arm covers the posterior cross vein; this V is all blackish in color, and the part covering the cross vein is expanded and very striking. The hyaline stripe extending from the second basal cell to the costa is interrupted at the third vein

while the tip of the inverted V is also connected on its basal side along the third vein with the yellow of the middle band. The fourth vein curves forward at tip only a very little.

Length with ovipositor 11.5 mm.; without, 6.75 mm.

One female, Belize, British Honduras, collector unknown. From the writer's collection, now a part of the United States National Museum.

Type.—Female, Cat. No. 26839, U.S.N.M.

ANASTREPHA OBSCURA, new species

Male.—Head, thorax and abdomen yellow, a black spot in ocellar triangle and one just behind the root of the wing on the outer end of the postalar declivity. Mesonotum more reddish-yellow with pale yellow scutellum, and five more or less distinct pale longitudinal stripes, the outer including the humeri and notopleural suture. Upper edge of sternopleura and sides of mesonotum also pale.

Front with two orbitals turned back. Thoracic chaetotaxy as in *serpentina* Wiedemann. Abdomen unicolorous, the fifth segment not much longer than the fourth. Legs yellow, including the tarsi.

Wings of very characteristic color, the usual undulating bands obscured by a general brown infuscation, which leaves as subhyaline or distinctly lighter only a triangular spot on the costa beyond the first vein, the anal angle and two triangles on the hind margin, occupying a part of the second and third posterior cells. On examination with a lens there is a rather distinct division in color between the yellow-brown typical pattern and the plain brown obscuration: the outer border of the former crosses the discal cell diagonally beyond the anterior cross vein, continuing straight on to the third vein and thence along it to the costa, receiving on the way a narrow streak from behind which in its posterior part incloses the hind cross vein. The stigma and the base of the first basal cell and some indefinite expansions from the latter are deeper brown as well as the base of the third posterior cell. The fourth vein curves forward at tip as usual, and the first and third veins are setulose.

Female.—The ovipositor (sixth apparent segment) is about twice as long as the rest of the abdomen, cylindrical or slightly tapering, reddish in color.

Length of male, 8.5 to 10 mm.; of female, over all, 13.5 to 14.5 mm.; of ovipositor, 5 to 5.8 mm.

Described from four males and four females, from Trinidad, West Indies. Three were reared at Maraval, Trinidad, from larvae in *Lucuma multiflora*, the tropical fruit called jacana, by W. Büthn. One pair are deposited in the British Museum.

Type.—Female, Cat. No. 27246, U.S.N.M.

ANASTREPHA ORNATA, new species

Female. Head yellow, the third antennal joint twice the second, bordered with brown on front edge; palpi also tinged with brown at tip; upper two frontals turned backward; back of head with a blackish spot on each side of the occiput.

Thorax black with the following parts bright yellow: humeri: a narrow median stripe widening suddenly just before the prescutellars where it ends; a lateral stripe above the root of the wing, extending forward to the suture and inward a short distance on this; all the scutellum except a basal border above; a stripe on upper mesopleura and a space below the root of the wing including most of the hypopleura and the side of the metanotum; propleura and region about front coxae; and a stripe on the upper edge of the sternopleura once interrupted. There is also a reddish rather square spot on the middle of the dorsum, divided by the median stripe; and the sternopleurae are red along the median line.

Abdomen blackish with wide hind borders of the segments yellow; sixth segment (ovipositor) much longer than preceding part of abdomen, round, brown, hairy. Legs entirely yellow.

Wings hyaline with yellow and dark-brown pattern much like that of *serpentina*, but very distinct. The base of the costa has a blackish stripe ending at the tip of the first vein. A second blackish stripe begins at the base of the main stem-vein, fills the first basal to beyond the end of the second basal, then tapers off on the third vein and ends some distance before the anterior cross vein; the space between this and the costal stripe is largely filled with yellow. A third stripe begins narrowly at the outer hind corner of the second basal, follows the fifth vein (bulging behind it) more than halfway to hind cross vein, then becoming narrower runs straight in a diagonal direction to the costa, including the anterior cross vein (which is itself decidedly oblique to correspond); at the costa it widens again and runs to the apex of the wing, its widest part being where it includes the tip of the third vein. A fourth black stripe includes the anal cell, follows the anal vein to the margin, follows the margin to the posterior cross vein, then includes the latter and ends narrowly just in front of the fourth vein, without any trace of an arm turning back to the hind border. The basal half of the discal cell is faintly tinged with yellow; disregarding this we may consider that the hyaline portion is continuous from the second basal to the costa. The oblique position of the anterior cross vein is a striking character.

Male.—Only the first and second abdominal segments have black basal border, the others are wholly yellow.

Length of female, without ovipositor, 6 mm; with ovipositor 9 mm.

Length of male 6.5 mm.

Described from one female and two males, collected by F. X. Williams at Banos, Oriente, Ecuador, altitude 6,000 feet. One of each sex was captured on October 30, 1922; the other specimen was taken "On Luma Tree," January 19, 1923. Received from the Hawaiian Sugar Planters' Experiment Station.

Type.—Female, Cat. No. 27130, U.S.N.M.

PHOBEMA, new genus

Wing like *Anastrepha*; ovipositor like *Toxotrypana*; face with distinct antennal grooves, separated by a broad, rounded carina, which becomes more prominent upward, projecting in a rounded knob between the antennae at their base, widely separating them. The front is wide and flat and protuberant, making approximately a right angle with the face; there are two upper frontals turned back, the postverticals are present, the ocellars present but very small. Thoracic chaetotaxy: posterior dorcentral 1, far back; humeral 1; notopleural 2; presutural 1; supraalar 1; postalar 2; mesopleural 1 near upper hind edge; scutellar 2 pairs.

The relationship is with *Anastrepha*, from which the greatly elongated ovipositor would not separate it; but the facial structure is very different.

Type of the genus.—*Phobema atrox*, new species.

PHOBEMA ATROX, new species

Female.—General color brown tending toward yellow. Head dark yellow, the carina shining and translucent, the antennal grooves with whitish pollen; antennae dark yellow, reaching a little over halfway to the epistoma; third joint hardly twice the second, arista thin and bare. Palpi rather large and flat, yellow; probocis short, fleshy. Bucca (below eye) hardly one-third eye height. Back of head somewhat translucent.

Thorax dark yellow, scutellum triangular, short, halteres with brown knobs. Abdomen brown; first and second tergites united without suture, their sternites however distinct; sixth tergite very short, with a row of black hairs behind; seventh abdominal segment (ovipositor) longer than the whole of the rest of the fly, round in cross section, dark and curved upward at base, thence nearly straight and yellow, the extreme tip blackish.

Wing large and long, hyaline with yellow pattern as in *Anastrepha pseudoparallela* as figured by Loew.² Fourth vein distinctly curved forward just before reaching the margin as in the genus *Anastrepha*.

Male.—Front not quite so protuberant; abdomen clavate, lateral borders of tergites 3—5 with large hairs slanting backward.

² Mon. N. A. Diptera, vol. 3, pl. 11, fig. 24.

Length of female without ovipositor 12 mm; with ovipositor 28 mm. Length of male 12 mm.

Described from two females and one male, collected by F. X. Williams at Banos, Oriente, Ecuador, January 19, 1923, "On Luma Tree." Received from The Hawaiian Sugar Planters' Experiment Station.

Type.—Female, Cat. No. 27129, U.S.N.M.

Family SAPROMYZIDAE

Genus LONCHAEA Fallén

Lonchea FALLÉN, *Ortalides*, p. 25, 1820.—BECKER, *Berl. Ent. Zeitsch.*, vol. 40, p. 322, 1895.—MELANDER, *Psyche*, vol. 20, p. 61, 1913.—BEZZI, *Bull. Ent. Research*, vol. 9, p. 250, 1918; vol. 11, p. 199, 1920.

LONCHAEA HIRTITHORAX, new species

Male.—Shining black. Wings and two basal joints of tarsi yellow.

Front velvet black, clothed with numerous long hairs, which are mostly in four rows; width of the front above the antennae about one-seventh of the headwidth; third antenal joint slightly elongated, about one-half longer than wide, hardly reaching epistoma. Parafacial with very slight gray pruinosity, hardly visible except in favorable light. Palpi black, rather broad; epistoma at the sides with numerous large hairs, many of which are upturned; lunule bare. Thorax shining, covered with long, erect hair, among which no distinct acrostichals or dorsocentrals are visible except close to the scutellum where there appear to be two pairs of each. Scutellum shining black with two pairs of longer bristles and a marginal row of hairs between them. Pleurae shining, the mesopleura with abundant long hairs largely curved forward and upward, those along the hind margin bristlelike. Upper edge of sternopleura with a cluster of upturned large hairs. Halteres entirely black. Calypters black with fringe of same color. Abdomen wholly shining with rather abundant long hairs especially along the sides. Wings yellow, more infuscated apically and at the extreme base; the small cross-vein is opposite the tip of the first vein. Legs shining black except the tarsi, of which the first joints are yellow, the remainder brownish or black.

Female.—Front somewhat wider than in the male, with shorter hairs; the hairs of the epistoma, mesonotum and abdomen also noticeably shorter than in the male. Two distinct pairs of dorsocentrals with some hairlike ones anterior to them.

Length. Male, 4 mm., female, 3.6 mm.

Described from 14 specimens reared at Forest Grove, Oregon, by L. P. Rockwood, from *Lupinus polyphyllus*.

Type.—Male, Cat. No. 27243, U.S.N.M.

The nearest related form is *Lonchaea aberrans* Malloch, which is much less hairy, has a narrower front and the third antennal joint almost circular.

Mr. Rockwood writes that the larvae of this species are found in the stems of the plant just above the ground, often in such numbers that the plants are weakened and fall over by their own weight.

Family MUSCIDAE

Genus MESEMBRINA Meigen

Mesembrina MEIGEN, Syst. Besch., vol. 5, p. 10, 1826.

MESEMBRINA MAGNIFICA, new species

Female.—Black, the parafacials golden pollinose to the edge of the mouth, sharply dividing behind from the shining black bucca; width of front 0.30 of the headwidth, much less than in *meridiana*, *mystacea*, etc. Antennae slender, the arista yellow nearly to tip, plumose; palpi black. Thorax entirely black, the humeri and a median dorsal stripe reaching the transverse suture are pale yellow, pollinose. The dorsum has only small black hair and a few bristles which are very delicate except those at the margins and behind. Posterior dorsocentrals 2; anterior 1, hairlike, just before the suture. Posterior acrostichals 1; anterior none; humeral 3; posthumeral 1, very slender; prescutellar 1; notopleural 3 (the usual hind one doubled on both sides); supraalar 4 or 5 (only one large); postalar 2 (postalar declivity bare); sternopleural 2. Calypters deep orange. Abdomen black, first and second segments with black hair, except some reddish at base of first. Third segment covered with golden pile, its ground color tending toward reddish. Fourth segment with longer and more erect golden pile, its ground color distinctly red. Legs black. Wings deep yellow at base, infuscated toward the tip and anal angle. Venation as in *mystacea*, except that the opening of the first posterior cell is before the extreme apex of the wing.

Length 18 mm.

Described from one female specimen in excellent condition, collected at Suifu, Szechuen, China, by D. C. Graham.

Type.—Female, Cat. No. 27244, U.S.N.M.

BALIOGLUTUM, new genus

Hypopleural bristles wanting; fourth vein curved forward, the apical cell at tip slightly more than half as wide as at its widest part; third vein with a few distinct hairs below, none above; stem of venation not (as in *Chrysomyia*, etc.) ciliated behind; facial

plate with a low but very sharp keel, beginning at the top, lower part of the plate strongly narrowed by the ridges, the vibrissae twice the length of the second antennal joint above the mouth; facial ridges swollen below and convergent, covered with several rows of short, spiny hairs, which extend upward in one or two rows almost to the level of the arista; palpi rather short, flat; proboscis very short, with fleshy labella, front of male above about one-seventh the head-width, ocellar bristles, verticals, and upper frontals reduced to hairs, the lower frontals gradually larger, ending at insertion of antennae; parafrontals hairy down to same point. Lower part of head without bristles except about three pairs below vibrissae. Third antennal joint three to four times as long as second; arista with a few rays of moderate length above near base, and one or two below. Eyes bare.

Thorax nearly bare of bristles above, of the dorsocentrals only the hindmost are distinct; scutellum without discal bristles; post-scutellum not developed; prosternum, pteropleura, and hypopleura bare; sternopleura with a single bristle in the anterior upper corner and a considerable row of mixed bristles and long hairs along the upper edge posteriorly. Abdomen entirely destitute of bristles; first sternite hairy, 2 to 5 broad and hairy; genitalia small. Calypters large, bare, the hind ones much larger and longer than the others. Hind tibia without calcar.

BALIOGLUTUM ILLINGWORTHII, new species

Male.—Front 0.14 of the head-width at vertex, very gradually widening below; parafrontals and parafacials golden pollinose, a changeable dark spot at the level of the antennal insertion; parafacials without hairs, shining; antennae reddish, the third joint infuscated at tip and on upper side; palpi reddish-yellow; bucca one-fourth the height of head. Mesonotum, scutellum, and abdomen dotted all over with minute darker spots on a dense gray pollinose ground, the mesonotum showing four rather distinct darker stripes in front, abdomen not at all tessellated, scutellum with shining black border. Pleurae subshining black. Chaetotaxy: Dorsocentrals 0,1 (and a few hairs in the row); acrostichals 0,1 (an indistinct smaller pair close to the prescutellars); humeral 3; posthumeral 1; presutural 1; supraalar 3; intraalar 1 (behind); postalar 2 or 3; scutellum with 4 marginal, 2 submarginal, no discal; prothoracic a strong tuft. Calypters white. Wings glassy hyaline, veins brown. Legs black, with few bristles except the front femora, which have the usual two rows above and one on lower hind side. Hind tibia with short cilia on outer hind side.

Female.—Front at vertex 0.24 of head-width; no orbital nor cruciate bristles.

Length 8.4 to 10.4 mm.

Three males, one female, Cairns, North Queensland, Australia, collected by A. P. Dodd and J. F. Illingworth. Two males are returned to Dr. Illingworth, after whom I name the species.

Type.—Male, Cat. No. 26840, U.S.N.M.

Family CALLIPHORIDAE

Genus MESEMBRINELLA

Mesembrinella GIGLIO-TOS, Bull. Mus. Zool. ed Anat. Comp. R. Univ., Torino, vol. 7, No. 132, 1892, p. 4; Mem. R. Acad. Sci., Torino, ser. 2, vol. 45, 1895, p. 11.—ALDRICH, Proc. U. S. Nat. Mus., vol. 62, art. 11, 1922, p. 8.

An interesting character of the genus not previously mentioned is the existence of a post-scutellum, the absence of which has been considered a family character in Calliphoridae and Sarcophagidae. As here developed, however, it is much less bulging than in Dexidae and Tachinidae.

The discovery of four new species in collections submitted for identification by Prof. A. L. Melander makes a new analytical table of the genus desirable. For convenience it is put in the same form as the one previously published by me.

ANALYTICAL TABLE OF THE GENUS MESEMBRINELLA

A¹. Stem-vein bare (subgenus *Mesembrinella*).

a¹. Two presutural bristles present.

b¹. Legs almost black, but middle and hind femora yellow on apical half.

c¹. Wing with heavy subcostal black stripe not reaching the third vein, the posterior portion paler; 3 posterior acrostichals (Bolivia Surinam)-----*brunnipes* Surcouf.

e². Wings deep brown, the second fourth except behind yellow (Bolivia).
pictipennis Aldrich.

b². Femora and tibiae yellow.

c¹. Apical cell very wide open, the included costal section more than half as long as the preceding one (Costa Rica, Ecuador).
umbrosa Aldrich.

e². Apical cell less widely open, the included costal section less than half the preceding one.

d¹. Wing with only diffuse and not very strong infuscation (wide-spread neotropical)-----*bicolor* Fabricius.

a². Wing with heavy blackish subcostal stripe, beyond middle, before third vein (Brazil)-----*batesi* Aldrich.

a². Only one presutural present.

b¹. Fourth abdominal segment with a discal row of bristles.

c¹. Femora, pleurae, and abdomen bluegreen or blackish; 2 pairs acrostichals before suture.

d¹. Discal scutellar bristles small, almost in line with the much larger basal lateral pair; female with but one pair of proclinate orbitals, which are almost in the frontal row (Costa Rica).

uniseta, new species.

- d*². Discal scutellar bristles but little smaller than the lateral basal pair, and forming with them a strong curve; female with two pairs of orbitals, just outside the frontal row, which is here very hairlike (Peru)-----*cruciata* Townsend.
- c*². Femora, pleurae, and base of abdomen yellow.
- d*¹. One pair anterior acrostichals.
- e*¹. Posthumeral 1 (Panama)-----*tibialis* Aldrich.
- e*². Posthumeral 2 (South America)-----*aeneiventris* Wiedmann.
- d*². No anterior acrostichals.
- e*¹. Mesonotum viewed from behind shows three dark stripes, separating four pollinose ones (Brazil)-----*purpurata* Aldrich.
- e*². Viewed from behind the pollen is not distinctly divided into 4 stripes (Costa Rica)-----*semiflava*, new species.
- b*². Fourth abdominal segment without discals.
- c*¹. Facial ridges high and sharp, hairy to middle; middle and hind tibiae not at all infuscated; sternopleurals 2, 1-----*facialis* Aldrich.
- c*². Facial ridges lower, not hairy except close to vibrissae.
- d*¹. With 1 or 2 pairs of anterior acrostichals.
- e*¹. Legs, pleurae, and base of abdomen largely yellow.
- f*¹. Second to fourth abdominal segments with a posterior sharply defined violet band; third segment without marginal bristles (Brazil)-----*cyaneicincta* Surcouf.
- f*². Second to fourth abdominal segments not banded with violet; third segment with row of marginals (Costa Rica).
flavicurura, new species.
- e*². Legs, thorax, and abdomen bluegreen or blackish; fifth sternite of male produced in two shining black styles (Costa Rica).
spicata, new species.
- d*². Without anterior acrostichals.
- e*¹. Only one intra-alar (the posterior); abdominal segments 2-4 with sharply defined posterior violet bands (Brazil).
pauciseta Aldrich.
- e*². With 2 intra-alars; abdomen not violet-banded.
- f*¹. Second abdominal segment with only weak hairs along hind margin (South America)-----*randa* Walker.
- f*². Second abdominal segment with a distinct row of marginal bristles.
- g*¹. Middle and hind tibiae black, in male the middle ones elongated and with only minute bristles (South America).
quadrilineata Fabricius.
- g*². Middle and hind tibiae not or hardly infuscated; male with the usual bristles on middle tibiae (Brazil).
dorsimacula Aldrich.
- A*³ Stem-vein ciliated behind (subgenus *Mesembolia* Aldrich).
- a*¹. Greatest width of apical cell exceeding the length of the hind crossvein.
- b*¹. Apical cell moderately wide open, the included costal segment not more than half the preceding one; no acrostichals immediately behind the suture (Mexico to Paraguay)-----*bellardiana* Aldrich.
- b*². Apical cell very wide open, the included costal segment more than half the preceding (Brazil)-----*fulvipes* Aldrich.
- a*². Greatest width of apical cell less than hind crossvein (Brazil).
peregina Aldrich.

MESEMBRINELLA SPICATA, new species

Male.—Purplish-black in color, only the palpi, face, antennae and lower part of front bright yellow. Front wide for a male, 0.115 of the head width by micrometer (one specimen), the frontal rows composed of delicate hairs to the middle, below about 7 larger, the lowest just below antennal insertion; ocellars large, proclinate, a pair almost as large behind the triangle; vertical only one pair. Third antennal joint more than three times the second: facial ridges rather high and sharp, hairy almost to the middle of the third antennal joint; bucca one-fifth the eye height.

Mesonotum not with distinct pollinose stripes. Chaetotaxy: dorsocentral 2, 3; acrostichal 2, 1; humeral 3; posthumeral 2; presutural 1; notopleural 2; supraalar 3; intraalar 2; postalar 3; scutellar 2 lateral, 1 large apical, 1 large discal; sternopleural 2. Pleurae concolorous with mesonotum. Calypters transparent with black rim and conspicuous black fringe. Both thoracic spiracles large, dark.

Abdomen purplish-black, with rather dense, erect, short hair, no bristles whatever. Genital segments large and conspicuous, shining black; inner forceps shining black, parallel and close together, not tapering, blunt at tip, the base behind united and swollen into a sudden hump which is paler in color, divided into two arms backward toward the anus, and these arms bear a pair of black, converging processes ending in tufts of black hair which touch each other on the middle line. Outer forceps shining black, twisted, blunt. Fifth sternite narrow, shining black including its sides, with two erect, blunt, shining black processes in the place of the usual lobes.

Legs blackish; middle tibia with flexor bristle; hind tibia with long calcar just below middle.

Wings subhyaline, small cross vein infuscated; the opening of the apical cell at costa is about one-fifth the preceding costal segment.

Length 8.3 mm.

Described from one male, La Suiza de Turrialba, Costa Rica, February 22, 1923 (Pablo Schild). Through the kindness of Prof. A. L. Melander we retain this striking unique for the United State National Collection.

Type.—Male, Cat. No. 26796, U.S.N.M.

MESEMBRINELLA UNISETA, new species

A blue-black species with face, antennae, palpi, and thoracic spiracles yellow.

Male.—Front rather wide, 0.13 the head width (the same in three specimens measured by micrometer), black to antennae; no frontals of any size above the middle; ocellars long, proclinate, a post-ocellar pair also long; only one moderate pair of verticals. Third antennal

joint two and one-half times the second; arista with long but sparse plumosity; facial ridges flat, only a few hairs above vibrissae; bucca yellow, about one-ninth the eye height.

Mesonotum blue-black, with white pollen visible more from behind, not distinctly striped. Chaetotaxy: dorsocentral 2, 3; acrostichal 2, 1; humeral 3; posthumeral 2; presutural 1; notopleural 2; supraalar 3; intraalar 2; postalar 3; scutellum with 1 lateral; 1 apical, 1 rather small discal: sternopleural 2, 1. Calypters rather dark, the anterior with black rim. Spiracles large, yellow.

Abdomen blue-black, with a little white pollen visible in certain directions, not tessellated; first segment with one large lateral marginal; second with two laterals and sometimes a median marginal pair ($2\frac{1}{2}$ times in five males); third segment with strong marginal row of 10; fourth segment with distinct discal row of 4 to 6 (usually not continuing down the sides), and an apical row of 6 to 8. Genital segments rather large, shining black, with hair but no bristles. Inner forceps black, flat and broad at base, but tapering to a slender, sharp tip; outer forceps black, narrowed at base, broader in middle, with sharp tip. Fifth sternite with ordinary deep incision in middle and two large, black, subshining, flat lobes.

Legs black, middle tibia with flexor bristle, hind tibia with large calcar below middle.

Wings lightly infuscated, hind crossvein deeply so; fourth vein beyond hind crossvein bowed a little backward so as to widen the apical cell, which includes at its tip a costal segment about one-seventh of the preceding.

Female.—Front of equal width almost to antennae, 0.25 the head width (average of three, 0.24, 0.25, 0.27), the middle stripe red over halfway up.

Length 8 to 8.5 mm. in both sexes.

Described from 6 males and 4 females, La Suiza de Turrialba, Costa Rica, February 22 to March 29, 1923, and September 5 and October 1, 1921. In Prof. L. Melander's collection.

Paratypes.—Male and female, Cat. No. 26797, U.S.N.M.

MESEMBRINELLA SEMIFLAVA, new species

Male.—Front almost as wide as the narrow ocellar triangle, the narrow parafrontals touching for some distance; frontal bristles beginning about the middle; ocellars long, proclinate, the post-ocellar pair about half as long; one pair of smallish verticals. The head is yellow except upper two-thirds of back and upper third of front; antennae and palpi yellow; third antennal joint not much more than twice the second which is a little longer than in some species; arista long, with long but sparse plumosity; facial ridges

rather flat, only a few hairs above vibrissae; bucca very narrow, hardly one-eighth the eye height.

Mesonotum, except humeri, metallic blue-green, overlaid with some white pollen, especially anteriorly; the two outer of the usual dark stripes are rather distinct, the inner not so. Chaetotaxy: dorsocentrals 2, 3; acrostichals 0, 1; humeral 2; posthumeral 1; presutural 1; notopleural 2; supraalar 2 and a small behind; intralar 2; postalar 2 (the front one small); scutellum with one lateral, 1 apical, 1 discal; sternopleural 2, and a small hairlike one below the posterior. Pleurae and humeri yellow. Calypters lightly infuscated, the front one with black rim. Thoracic spiracles large, yellow.

Abdomen pale yellow at base, blue and violet at tip. The first segment is yellow with a blackish narrow line at hind edge, extending below; the second segment is yellow with a purplish hind border, wider at middle, where it is nearly half the segment and very narrow below; third segment yellow anteriorly at side and more below, the rest blue, but the hind border purple; fourth segment blue above and below with a distinct white pollinose spot each side of the genitalia and hardly a trace of purple apically. The first segment has several lateral bristles, the second one, the third a strong marginal row, the fourth a discal row of 8 and a smaller marginal row. Genital segments of moderate size, brownish or piceous, shining, with hairs but no bristles. Inner forceps yellow, slender, nearly straight, with sharp black tips; outer forceps yellow, slender, strongly bowed in at tip. Fifth sternite small yellowish, cleft in middle.

Legs yellow, middle and hind tibiae and tips of their femora black; hind tarsi lighter than their tibiae; middle tibia without flexor bristle, hind tibia with long calcar a little below middle.

Wings long and narrow, infuscated, more distinctly beyond tip of auxiliary vein, but with no definite pattern; apical cell opening on costa just before apex for a distance equal to one-seventh the preceding costal segment.

Female.—The front is narrowest at vertex, where it is 0.18 of the head-width in both specimens; cruciate bristles distinct, only 3 to 4 lower frontals of any size; orbitals represented only feebly by hairs but the lower pair in one specimen a trifle stouter. Abdomen with much less yellow, none above on the third segment, and a wider dark margin on the second.

Length of male, 8.5 to 9 mm.; of female, the same.

Described from three males and two females, La Suiza de Turrialba, Costa Rica, February 23–28 and March 16, 1923 (Pablo Schild). In Prof. P. L. Melander's collection.

Paratypes.—Male and female, Cat. No. 26799, U.S.N.M.

MESEMBRINELLA FLAVICRURA, new species

Blue-black, the following parts yellow: Front except upper half or less, antennae, face, bucca, palpi, humeri and lower prothoracic region, thoracic spiracles, first abdominal segment in large part in the male (less in the female), coxae, all the femora except the tips.

Male.—Eyes almost contiguous, the front at narrowest only as wide as the anterior ocellus; the rows of frontal bristles begin below the narrow part; ocellars and post-ocellars of equal size, not large; verticals small. Facial ridges quite flat, only a few hairs above vibrissae; bucca one-fifth the eye height.

Thorax not with distinct pollinose stripes. Chetotaxy: dorso central 2, 3; acrostichal 2, 1; humeral 3; posthumeral 2; presutural 1; notopleural 2; supraalar 3; intraalar 2; postalar 3; scutellum with 2 lateral, 1 apical, 1 discal. Calypters infuscated, especially the posterior, with dark rims. Spiracles large, yellow.

Abdomen bluish-purple, the first segment yellow except a narrow black posterior border above and below which widens suddenly at the sides; second segment with trace of yellow above anteriorly. The first segment has one small lateral marginal, the second a large one, the third and fourth a marginal row, no discals. One male has a small but unmistakable pair of median marginals on the second segment.

Legs black except as indicated, middle tibia with flexor bristle, hind tibia with large calcar below middle.

Wings lightly infuscated, paler toward base; small cross vein decidedly infuscated; fourth vein and apical cell as in *uniseta*.

Female.—Front 0.23 of headwidth (average of three, 0.22, 0.24, 0.24); two pairs of orbitals; only one vertical. First abdominal segment varying in amount of yellow, sometimes with much less than indicated for male.

Length of males, 7 and 7.8 mm.; of females, 8 to 8.5 mm.

Described from two males and five females, La Suiza de Turrialba, Costa Rica, February 8 to July 26, 1923 (Pablo Schild). In Prof. A. L. Melander's collection.

Paratypes.—Male and female, Cat. No. 26800, U.S.N.M.

Tribe CHRYSOMYIINI

TABLE OF GENERA OF THE WORLD

- | | |
|--|--------------------------------------|
| 1. Hind calypters covered with hairs on upper side (Eastern Hemisphere except <i>Chrysomyia desvoidyi</i> Hough, noted below)----- | 2 |
| Hind calypters bare except in the basal depression (Western Hemisphere)----- | 3 |
| 2. Vibrissae at least the length of the second antennal joint above oral margin (type, <i>marginalis</i> Fabricius)----- | <i>Chrysomyia</i> Robineau Desvoidy. |
| Vibrissae at oral margin; male with broad front; small Australian species (type, <i>varipes</i> Macquart)----- | <i>Microcalliphora</i> Townsend. |

3. Palpi slender and very short; vibrissae at least the length of the second antennal joint above the oral margin and distinctly approximated; dorsocentrals only one or two pairs just before the scutellum (type, *macellaria* Fabricius) mesonotum striped..... *Cochliomyia* Townsend.
Palpi normal, clavate..... 4
4. Vibrissae at oral margin, hardly approximated; dorsocentrals 2, 4, small but distinct (type, *segmentaria* Fabricius) mesonotum not striped.

Hemilucilia Brauer.

Vibrissae at least the length of the second antennal joint above the oral margin..... 5

5. Without dorsocentrals except one or two pairs next to the scutellum; mesonotum striped (type, *fulvipes* Macquart; *Compsomyiops* Townsend, same type)..... *Paralucilia* Brauer and Bergenstamm.
Dorsocentrals 2, 4, small but distinct (type, *semiviridis* Van der Wulp) mesonotum not striped..... *Chloroprocta* Van der Wulp.

Neopollenia Brauer, *Neocalliphora* Brauer and Bergenstamm, and *Paracalliphora* Townsend, all from the oriental and Australian regions, which were placed in *Chrysomyiini* in the National Museum collection by Townsend, have bare stem vein and I would refer them to the tribe *Calliphorini*, with which head structure also agrees.

Malloch in a recent paper³ has gone still further in this direction, expressing the opinion that these three genera are at most only subgenera of *Calliphora*.

Genus COCHLIOMYIA Townsend

Cochliomyia TOWNSEND, Journ. Wash. Acad. Sci., vol. 5, 1915, p. 646.—

SHANNON, Insector Ins. Menst., vol. 11, 1923, p. 106.

?*Callitroga* "Schiner MS" BRAUER, Denkschriften Kais. Akad., vol. 47, 1883, p. 74.—JOHNSON, Bull. Amer. Mus. Nat. Hist., vol. 41, 1919, p. 439.

Townsend considered that Schiner's manuscript name, being "cited in synonymy," had no standing. Johnson asserted that "Brauer and Bergenstamm had a perfect right to adopt *Callitroga* Schiner MS." They did not adopt it, but they merely mentioned it in an ambiguous way as a collection name of Schiner's, apparently connecting it first and most clearly with *Lucilia hominivorax* Coquerel. This is supposed to be a synonym of *macellaria*, but may be different, and other related species are gradually coming to light. Even admitting the validity of the name for *hominivorax*, I doubt the advisability of using it as if *macellaria* were its type.

The species described below may be separated from the common and widespread North and South American *macellaria* by the following characters:

- a¹. Thorax evidently metallic blue or green, with four white pollinose stripes, the inner not continued on scutellum; abdomen almost wholly shining above, or with thin and uniform pruinosity, the fourth segment with a white pollinose spot on each side widely separated...*macellaria* Fabricius.

³ Trans. New Zealand Inst., vol. 55, p. 640, 1924.

α^2 . Thorax black with only slight traces of metallic color, the four white pollinose stripes very distinct and the inner pair continued on the scutellum; abdomen metallic green on the second and third segments with broad interrupted fascia of silvery pollen (on the third in some lights breaking up into four spots partly connected in pairs), fourth segment with a pair of silvery spots close together, elsewhere more coppery than preceding segments.....laniaria Wiedemann.

COCHLIOMYIA LANIARIA (Wiedemann)

Musca laniaria WIEDEMANN, AUSS. Zweifl., vol. 2, 1830, p. 406 *taniaria*, corrected, p. 683).

Campsomyia laniaria ENRIQUE LYNCH A., Anales Soc. Cient. Argentina, vol. 7, 1879, p. 256; vol. 10, 1880, p. 75 (*taniaria*, corrected, vol. 10, p. 249). Cited but not identified.

Male.—Front as wide as ocellar triangle, quite black near vertex, gradually covered with white pollen below, with numerous small white hairs which continue close to the eye as far down as the middle of the third antennal joint; bucca two-fifths the eye height, translucent yellow and shining except before and behind; back of head black to the proboscis; antennae, palpi, proboscis and facial structure as in *macellaria*, except that the vibrissae are a little nearer the epistoma. Pleurae black. Hind calypter brown on disk with white rim, a few pale hairs in the concavity close to base. Postalar declivity with tuft of long hairs on its center as in *macellaria* (above base of front calypter). Genitalia on same plan as in *macellaria* but the inner and outer forceps notably longer, and the former more slender; the penis at apex also more drawn out. Legs entirely black. Wings as in *macellaria*.

Female.—Front 0.31 of head width (average of three, 0.29, 0.30 and 0.33); parafrontals shining black above almost to middle; back of head yellow below changing abruptly to black just below neck. Fifth abdominal segment conical, polished, metallic. Otherwise as in male.

Length 5.5 to 7 mm., averaging distinctly smaller than *macellaria*.

Redescribed from one male and three females, Key West, Florida, January 31, February 1 and 6, 1869 (labels in handwriting; collector doubtful, perhaps Burgess); one female evidently collected many years ago with only the label "Fla." In addition to this old material, the United States National Museum has lately received 65 specimens of both sexes in alcohol (now pinned) from Dr. Paul Bartsch, curator of mollusks, United States National Museum, which he collected at one time on San Salvador Island, Bahamas, in the summer of 1923, on dead mollusks.

One Key West female bears the label "*Chrysomyia certima* Wlk.," in Coquillett's handwriting. This would appear from Walker's description to be a mistake, as *certima* is quite certainly a synonym

of *macellaria* (not of *Paralucilia cornicina* Fabricius, as suggested in my Catalogue, 1905, p. 516).

Wiedemann's allusion to this form by name occurs in a note following his description of *macellaria* Fabricius. Discussing the variations of the species, he says that those specimens having the white dorsal abdominal pollinose spots or interrupted cross-bands in the collection of Count Hoffmanssegg were labelled *Musca laniaria*, adding that they are not otherwise materially different from *macellaria*. Although in his description, based on the Fabrician type or types and additional material of his own, he had described these fasciae as if they were typical of *macellaria*, his note seems to make it clear that *laniaria* differs from *macellaria* in possessing them.

Genus CHRYSOMYIA Robineau-Desvoidy

Chrysomyia ROBINEAU-DESVOIDY, Myiodaries, 1830, p. 444.—TOWNSEND, Journ. Wash. Acad. Sci., vol. 5, 1915, p. 646.

CHRYSOMYIA DESVOIDYI Hough

Chrysomyia desvoidyi HOUGH, Kans. Univ. Quart., vol. 9, 1900, p. 203.

This was described from Brazilian specimens. As far as known it is the only American species with the hind calypter hairy, a character fortunately mentioned by Hough. It must be admitted however that the species is somewhat intermediate in this regard, since a considerable area of the lateral apical portion is bare.

Eyes of male almost contiguous for a considerable distance, separated only by the width of the front ocellars. The female has the front slightly narrowed just above the antennae, where it is about one-fourth as wide as the head (0.26 in each of two measured by micrometer). Halfway between the posterior ocelli and the eye, on the vertex of the female, there is one distinct bristle curved backward and laterally. The ocellar bristles in the female are close to the anterior ocellars and are directed straight to the side, opposite to each other. In the male, however, the ocellars are parallel and proclinate. Thorax in both sexes with much less distinct stripes than in the genera *Paralucilia* and *Cochliomyia*. In all the specimens seen the body color is deep blue-green. The hind calypter is dark brown, with white rim only in two females. The second and third abdominal segments have each a black band on the hind margin. Additional characters are given in the original description.

Six males and ten females; Quebrada Secca, Venezuela; Valera, Venezuela (Dr. C. Uribe); Cano Saddle, Canal Zone, Panama (Shannon); Erwin Island, Canal Zone, Panama (Shannon); Trinidad Rio, Panama (Busck); Las Cascadas, Canal Zone, Panama (A. H. Jennings); San Carlos, Costa Rica (Schild and Burgdorf); Cordoba, Mexico (Knab).

Genus *MICROCALLIPHORA* Townsend

Microcalliphora TOWNSEND, Proc. U. S. Nat. Mus., vol. 49, 1916, p. 618.

The type species designated by Townsend was described as *Lucilia varipes* by Macquart.⁴ It may be distinguished from the new species here described by the following characters. Both species are Australian.

- a*¹ All the femora mainly black, tibiae largely so; front in both sexes black almost to the lunule; male with dense erect white hairs on upper side of front femur, which are shorter toward apex; front femora yellow on anterior side.....*varipes* Macquart.
- a*² Male only; femora and tibiae entirely yellow; front black from vertex only as far as the upper third, then abruptly changing to pure yellow; front femur with only the usual black bristles.....*flavifrons*, new species.

MICROCALLIPHORA FLAVIFRONS, new species

Male.—Front broad, narrowest just at the level of the lunule, where it is by micrometer 0.33 in one, 0.32 in the other, of the headwidth (two males of *varipes* measure 0.33 and 0.35, and in them the front is not narrowed below). Parafrontals shining green at vertex and as far forward as the tip of the ocellar triangle, then changing suddenly to a pure light yellow, which color extends downward and covers the whole buccal region; frontal stripe a little darker yellow, wider than either parafrontal, blackish around the ocellar triangle; frontal bristles small, reaching as far as middle of second antennal joint; on the upper metallic part of the parafrontal each side are two distinct orbitals, which are reclinate and divaricate, the upper farther from the eye; two large verticals; the yellow part of the parafrontals bears small white hairs, which extend down on the parafacials as far as the middle of the third antennal joint but are almost imperceptible. Antennae yellow, the third joint broadly infuscated from the arista, five times as long as second joint. Arista rather short, the plumosity consisting of only a few long rays above and about three more appressed below; penultimate joint short. Vibrissae large and distinct, black, no black hairs above them, but the ridges rather thick and well covered with small pale hairs. Bucca one-third the eye height. Palpi yellow, clavate, of average size. Proboscis small. Mesonotum shining green, without stripes, with a very delicate pale pruinosity; dorsocentrals 3 anterior, 4 posterior; acrostichals, 1 just before suture and 1 prescutellar; sternopleurals 2; postalar declivity with several long bristly hairs in middle; lower lateral prong of scutellum (above base of calypters) bare; intraalar one large before the suture, two behind. Calypters yellowish. Abdomen bright green, first segment black and a black

⁴ *Dipteres Exetiques*, Suppl., vol. 4, 1851, p. 222.

posterior margin on second and third segments, that on former widened in middle. Genital segments rather small, shining green. Fifth sternite as usual with deep V-shaped cleft. Legs including coxae yellow, the tarsi only becoming brown near tip. Claws and pulvilli are small.

Wings with evident brown tinge, less so posteriorly; third vein hairy almost to the crossvein. Third and fifth costal segments equal; fourth vein with short, rectangular bend near margin of wing, the apical crossvein deeply concave, ending almost in the apex.

Length, 4 mm.

Described from two males collected by Dr. J. F. Illingworth at Gordonvale, North Queensland, Australia, in 1919. One is labeled "Ex carrion."

Type.—Male, Cat. No. 26841, U.S.N.M.

Family SARCOPHAGIDAE

Genus NOTOCHAETA Aldrich

Notochaeta ALDRICH, *Sarcophaga* and Allies, 1916, p. 52.

Front moderately narrow in male, not protruding at antennae; parafrontals and parafacials with only a few almost imperceptible minute hairs; vibrissae at edge of mouth, not approximated; facial ridges bare except close to the vibrissae; second antennal joint short, third three times as long, almost reaching vibrissae; arista with long plumosity to tip or nearly to it; epistoma not produced, face a little receding; palpi and proboscis normal; back of head flattened.

Thorax distinctly striped, with no acrostichals except a small pair before scutellum; dorsocentrals 2 anterior, 2 or 3 posterior; presutural 1, notopleural 2, postalar declivity bare. Postscutellum not developed; calypters bare. Abdomen without discals; no median marginals on first and second segments, third and fourth with strong erect rows.

Wings as in *Sarcophaga*; first vein bare, third bristly nearly to crossvein.

The foregoing characters are taken from the type species, *subpolita* Aldrich.

KEY TO SPECIES OF NOTOCHAETA

1. With two postsutural dorsocentrals..... 2
 With three postsutural dorsocentrals..... 4
2. Facial ridges somewhat prominent, with small hairs extending above the level of the middle of the third antennal joint----*plumigera* Van der Wulp
 Facial ridges more flattened, bare except close to vibrissae..... 3
3. With small but distinct prescutellars; scutellum with indistinctly defined continuation of median dark thoracic stripe; male with dense, suberect hairs on flexor surface of middle tibia-----*subpolita* Aldrich.

- With no prescutellars; scutellum with greenish-black disk, bordered uniformly with yellow pollen; male with only appressed hair on flexor surface of middle tibia.....townsendi, new species.
4. Abdomen shining blue in color.....comata, new species.
- Abdomen black with golden pollinose pattern.....angusta, new species.

NOTOCHAETA COMATA, new species

Male.—Front 0.12 and 0.14 of the headwidth in the two specimens. Parafrontals and parafacials golden pollinose; frontal bristles about 10, the uppermost 3 pairs reclinate, the lowest of all reaching to the first third of the second antennal joint, the rows diverging only gradually; antennae black, third joint three times the second, arista long plumose not quite to tip. Palpi black, of ordinary size; proboscis short. Back of head with black hairs, only a few pale around the neck and below. Buca one-fifth the eye height.

Thorax black with green reflections; mesonotum when viewed from behind with two white pollinose stripes just inside the dorso-central rows, and another pair from humeri to suture; behind the suture these begin again a little higher up and converge to follow the sides of the scutellum nearly to its apex. Presutural acrostichals small but distinct; sternopleurals 3, the intermediate smaller and almost in line with the others.

Abdomen subshining, blue-green, with very faint pollen except below; bristles as in generic characters; genital segments of moderate size, without bristles, but just below the anus on the inner forceps with a striking tuft of hairs. Fifth sternite with large, diverging, bare lobes, which turn up suddenly in a lobe directed forward and are truncate beyond this.

- Legs black, the femora slightly bluish; middle tibia on inner hind side with suberect hair, hind tibia on inner flexor side with 2 to 3 longer, fine hairs, on outer side with one bristle.

Wings slightly smoky; third vein curved so as to widen the apical cell beyond its middle; third vein hairy almost to small cross vein.

Length, 7.5 and 8 mm.

Described from two males collected at La Suiza, Costa Rica, April 20 and 24, 1923, by Pablo Schild; they were sent to the Museum for identification by Prof. A. L. Melander, and the type is returned to him.

Paratype.—Male, Cat. No. 26842, U.S.N.M.

NOTOCHAETA TOWNSENDI, new species

Male.—Front 0.18 of the head width in each of the two specimens; parafrontals and parafacials light golden pollinose, the latter with a few just distinguishable, minute black hairs in a single row; frontals about 14, the upper 3 reclinate, the remainder rather fine

and close together reaching down to middle of second antennal joint, and only moderately diverging. Back of head with all black hairs. Head otherwise as in *comata*.

Thorax black, striped as in *comata*, but the pollinose parts are more yellowish, the scutellum is wholly bordered (seen from behind) with this color, and it extends across the prescutellar region except a brown space at middle. No prescutellar or other acrostichals; the dorsocentral usually occurring behind the suture is missing, leaving only two posterior. Sternopleurals 3. Calypters white, bare.

Abdomen decidedly bluish in ground color, bases of the segments thinly white pollinose, the pollen denser at the sides and below and diminishes gradually behind, leaving only the apical third and a median stripe on segments 2 to 4 entirely shining. No median marginals on segments 1 and 2, a strong erect row on 3 and 4. Genital segments rather large, black, with erect hair, which becomes almost bristlelike on the apex of the first. The thick broad penis is the most characteristic part. Fifth sternite with simple diverging sides, inconspicuous. Wings as in *comata*. Legs as in *comata*, but no suberect or villous hairs on the middle tibiae.

Length, 7.5 and 8.5 mm.

Described from two males collected by C. H. T. Townsend on Huascaray Ridge, Jaen Province, Peru, on September 21.

Type.—Male, Cat. No. 26843, U.S.N.M.

NOTOCHAETA ANGUSTA, new species

Male.—Blackish, the pollinose markings distinctly golden in color except on the lower part of the pleurae and legs. Head somewhat narrower in general outline than in *comata*, but the front at narrowest slightly wider; parafacials a little wider than the narrow third joint. Thorax with four golden pollinose stripes, the inner ones nearly contiguous in front; the median brownish-black stripe reaches beyond the middle of the scutellum, the two pollinose stripes on each side coalesce just in front of the scutellum; one pair of small, but distinct prescutellars; sternopleurals 2. Abdomen with a median shining blackish stripe which expands on the hind margins of the second and third segments, extending around to the venter and more or less forward on the lateral dorsal portion. No median marginals on the second segment, the third with three pairs. Genital segments black, yellow pollinose, the genitalia small, blackish. Legs black, middle tibia with one bristle on outer front side. Wings subhyaline; third vein with about six hairs at base.

Length, 7.2 mm.

One male, Corazal, Canal Zone, Panama, June, 1911 (Busck).

Type.—Male, Cat. No. 26844, U.S.N.M.

Genus *SARCOPHAGA* Meigen

Sarcophaga MEIGEN, Syst. Besch., vol. 5, p. 14. 1826.

In the following three species the puparia will be described and figured in a forthcoming comprehensive work by Charles T. Greene.

SARCOPHAGA PLACIDA, new species

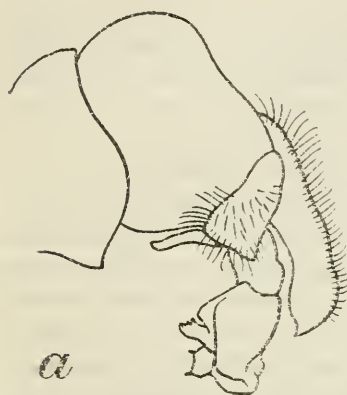
Fig. b.

Male.—Front 0.25 of head width (the same in both specimens); parafacials and parafrontals golden yellow pollinose, the former with only a few hairs near the eye; frontals eight, the upper one large and reclinate, the lowest at the level of the middle of the second antennal joint, hardly diverging toward the eye, about as in *communis*. Antennae black, third joint rather slender, fully twice the second, arista plumose for nearly three-fourths its length; facial ridges black below, the hairs ascending although sparsely to the middle; palpi black; bucca one-third the eye height, golden pollinose on anterior half. Beard pale except two orbital rows above, reduced to one at lower curve of eye.

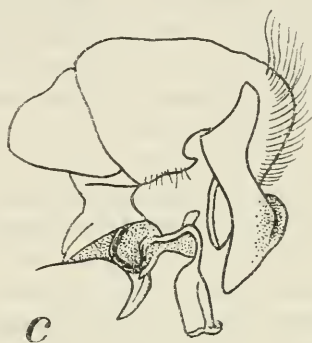
Thorax gray, with three strongly marked black stripes, the inner reaching the tip of the scutellum, and a narrow, short stripe each side along the supraalars; pleura with a shining black stripe along the suture above sternopleura. No anterior acrostichals; posterior dorsocentrals four, but only the posterior two of any size; sternopleurals three; scutellum with two lateral and a subdiscal pair of bristles, and in addition to these a tuft of dense white or yellow hair on the vertical border near the base.

Abdomen tessellated as usual, toward its tip becoming reddish in ground color; first and second segments without median marginals; third with a large pair, fourth with a row of about eight. Genital segments wholly yellow, narrow and elongate; the first with only a few small hairs, the second with moderate black hair and a few small bristles. Forceps black, long and narrow and closely touching each other throughout their length, beyond the middle strongly tapering and becoming larger again near the apices, which are rounded and clavate; on the anterior side the profile is nearly straight. Accessory plate small, yellow, its anterior end bearing a tuft of black short hair. Posterior clasper small, slender, yellow, bearing a long hair near its base; anterior clasper long and flat, yellow, fitting against the penis as if a part of it, the tip truncate. Penis short, mostly black, the terminal segment consisting mostly of three structures: (a) A flat transverse divided posterior plate; (b) two slender black filaments coming up in the middle and recurved; (c) two lateral black rods, tapering and curving forward, connected on the anterior side with a transparent membrane which forms a half-cylinder or trough, clos-

ing the anterior side of the organ. Fifth sternite delicate, yellow, retracted, in the form of a broad U, with rather dense hair on the inner side of the arms. The inflexed ends of the fourth tergite bear long hair.



Sarcophaga subaenescens Aldrich



Masicera arator Aldrich



Sarcophaga placida Aldrich



Sarcophaga morosa Aldrich

FIG. 1.—MALE GENITALIA. a, *SARCOPHAGA SUBAENESCENS*, NEW SPECIES; b, *SARCOPHAGA PLACIDA*, NEW SPECIES; c, *MASICERA ARATOR*, NEW SPECIES; d, *SARCOPHAGA MOROSA*, NEW SPECIES. DRAWN BY C. T. GREENE.

Legs black, femora stout, middle ones with comb on posterior apical edge below; middle tibia with a single bristle on outer front side; hind tibia without villosity; claws and pulvilli large, the latter infuscated.

Wings hyaline, with the usual venation; third vein with eight to ten hairs at base, reaching halfway to cross vein; third costal segment slightly longer than fifth; no costal spine. Epaulet black, subepaulet yellow.

Female.—Front 0.31 of head width (average of two, 0.30 and 0.32); the usual orbitals present, lower frontals as in male. Middle tibiae with two or three bristles on outer front side. Tufts of white or yellow hair on sides of scutellum as in male. Genital segments a little reddish, the organs much retracted.

Length of male, 10 to 11 mm.; of female, 8 to 10 mm.

Described from one male, Brownsville, Texas, collected by T. C. Barber in June, 1922; and from three lots, all from James Zetek: (a) One male and six females, reared at Ancon, Canal Zone, from dead *Murex*; (b) one male, one female, reared at Fort Amador, Canal Zone, from *Hylesia*, species, which we assume was dead to begin with; (c) four males and four females, reared at Ancon by one of Mr. Zetek's predecessors, but the data are now lost. This third lot are paler in color of pollen, and the lateral scutellar tufts are yellow instead instead of whitish, but the puparia show no differences. The type and allotype are from the lot a. Mr. Zetek's numbers for the three lots are Z-2305, Z-2303, and Z-1834, respectively.

Type.—Male, Cat. No. 27097, U.S.N.M.

SARCOPHAGA MOROSA, new species

Fig. d.

Male.—Front about 0.22 of head width, the head being damaged on the sides the measurement can not be taken exactly; parafrontals and parafacials pollinose with a distinct but not deep golden tinge, the former narrower than the middle stripe, the latter with a row of hairs next the eye becoming bristly below and a few additional hairs; two or three upper frontal pairs decreasingly reclinate, the uppermost not especially strong; lowest frontals strongly divergent; antennae black, third joint less than twice the second, moderately wide, arista plumose more than to middle. Palpi black; bucca about one-third eye height, with black hair except behind; back of head with mostly black hair.

Thorax with the usual three black stripes and an outer pair shorter and weaker. Acrostichals, 0, 1; dorsocentrals, 4, 3, all large; sternopleural, 3; scutellum with two lateral, one apical, and one discal near tip. Postalar declivity with hairs in the middle.

Abdomen tessellated as usual; first and second segments without median marginals, third with a pair, fourth with a marginal row. Genital segments rather large, wholly black, with erect, soft hair; forceps red on the attached basal part, the rest black, divergent, of

uniform breadth to the tip, where the hind edge curves forward to form a sharp tooth at the middle of the apex; accessory plate reddish, triangular, the apical side broad. Posterior clasper small and inconspicuous, anterior clasper long and low, rounded at tip. Penis thick and rather short, the distal segment globose, blackish; the apical posterior part is suddenly narrowed into a curved beak extending forward, underneath which two blunt filaments emerge; the side pieces of the distal segment are in the form of truncated plates, diverging apically from each other. Fifth sternite yellow, retracted, apparently a plain V.

Legs black; middle femora with combs before and behind at tip; middle tibiae with two bristles on outer front side; hind tibiae with long villosity on outer and inner flexor sides. Claws and pulvilli large, the latter infuscated.

Wings hyaline; third vein at base with four to six hairs; bend of fourth vein with stump or heavy fold; third costal segment considerably longer than fifth; no costal spine.

Length 11 mm.

Described from one male specimen, reared by F. Johansen from a larva taken near Ottawa, Canada; the fly emerged July 11, 1918.

Type.—Male, Cat. No. 27098, U.S.N.M.

The species is close to *pulla* Aldrich, but differs in the genitalia, especially the form of the accessory plate, which is entirely different, and in the forceps.

SARCOPHAGA SUBAENESCENS, new species

Fig. a.

Male.—Front 0.21 of head width (one specimen); parafrontals much narrower than median stripe, metallic above, thinly white pollinose below; frontal bristles ten, the uppermost reclinate and somewhat larger, the lowest diverging toward eye; a single vertical; ocellars normal; parafacials with thin white pollen, quite narrow below, the usual row of hairs bristly below; antennae black, third joint reddish basally, over twice the second, arista with somewhat short plumosity extending only to middle. Palpi black; bucca hardly one-third eye height, with black hair; back of head with only a little pale hair about foramen and below.

Thorax thinly glaucous pollinose, subshining, but when viewed from behind showing the usual three dark stripes well separated. Acrostichal 0, 1; dorsocentral 2, 3, sternopleural 3; scutellum with two lateral, one apical, and one discal; postalar declivity with a few hairs in middle.

Abdomen black with very thin tessellation, subshining and with a slight aeneous reflection; first segment without median marginals;

second with a small, depressed pair rather far apart in the described specimen; third with a large pair, fourth with a marginal row. Genital segments small, wholly black, with small black hair, the second segment with two small bristles turned up behind. Forceps minute, black, diverging only at tip, in profile of rather even width, bearing a small tooth at the middle of the blunt tip. Accessory plate yellow, shining, rounded, not much produced apically. Posterior clasper not visible in the specimen, anterior minute, depressed forward. Penis small, blackish, distinctly jointed, the distal segment somewhat globose, its main sclerite forming the back and sides has a thick, rounded, transverse rim at apex, in front of which in the middle is a small protuberance. Fifth sternite wholly retracted in the specimen.

Legs black, middle femur without comb, middle tibia with one bristle on outer front side, hind tibia without villosity; claws and pulvillia large, the latter infuscated.

Wings hyaline; third vein with a row of six or eight hairs; fourth vein ending nearer apex than in most species (less than half the fifth costal segment); third costal segment slightly shorter than fifth.

Length 5 mm.

Described from a single male, reared by Ray T. Webber from a puparium which he took out of a spider's web at Somerville, New Jersey, on June 23, 1922.

Type.—Male, Cat. No. 27099, U.S.N.M.

The nearest relative is *dauidsoni*, Coquillett, which has been reared from spiders' eggs; *subaenescens* differs from this species in having no anterior acrostichals, thinner pollen, a slight aeneous cast to the color of the abdomen, etc. It is highly probable that *subaenescens* attacks spiders' eggs.

Family TACHINIDAE

Genus ATACTA Schiner

Atacta SCHINER, Novara Reise, 1868, p. 328. Type and sole species *brasilienensis*, new.

Atactomima TOWNSEND, Bulletin Amer. Mus. Nat. Hist., vol. 35, 1916, p. 15. Type and sole species *crescentis*, new, from Brazil.

The characters of *Atacta* are in brief as follows: Head wider than thorax, subhemispherical; front in male strikingly narrow above (about twice the ocellar triangle), the eyes diverging at a wide angle to the level of the antennae, parafrontals somewhat triangular in form, usually silvery, covered with dense hair, frontal stripe only about as wide as ocellar triangle; only one vertical on each side. Female with wide front, the parafrontals slightly inflated, very broad, with a long dark, translucent reflecting spot on each bearing

a row of five orbitals, the uppermost of which is reclinate. In both sexes the ocellars are present, the frontals diverge below in a broad curve almost to the eye margin at the level of the middle of the second antennal joint; the antennae are slender and small, the second joint equal to the third; the face is very flat, the parafacials bare and wide, the facial ridges bare, the vibrissae distinctly above the edge of the mouth. Bucca in profile about one-fourth the eye height. Palpi and proboscis ordinary. The thoracic chaetotaxy is the same as in *Belvosia unifasciata* Robineau-Desvoidy (*Triachora* of Townsend) and in thorax, abdomen, legs and wings there are no generic characters unlike the latter.

Brauer and Bergenstamm include *Brachycoma nigriceps* Van der Wulp in *Atacta* from a specimen⁴; but as the third antennal joint is twice the second I doubt if they understood the genus as herein restricted.

The species *crescentis* Townsend seems clearly congeneric from the male in the National Museum; the characters given by Townsend for the genus *Atactomima* are all specific in my opinion.

TABLE OF SPECIES

1. Fourth abdominal segment covered with dense golden pollen; hair of median portion of second and third abdominal segments recumbent; second abdominal segment almost always destitute of median marginals; male with silvery parafrontals.....**brasiliensis** Schiner.
Fourth abdominal segment with gray pollen; hairs of median region of second and third abdominal segments erect; second abdominal segment with a pair of median marginal bristles..... 2
2. Antennae and palpi black, tip of latter yellow.....**crassiceps**, new species.
Antennae with second joint yellow, palpi yellow..... 3
3. Male with bright silvery pollen on parafrontals, strongly contrasting with the white or yellowish parafacials.....**argentifrons**, new species.
Male with the strongly widened parafrontals more chalky white, almost concolorous with parafacials.....**crescentis** Townsend.

ATACTA BRASILIENSIS Schiner

Atacta brasiliensis SCHINER, Novara Reise, 1868, p. 328.—BRAUER and BERGENSTAMM, *Zweifl. Kais. Mus.*, pt. 4, 1889, p. 96, fig. 57; pt. 5, 1891, pp. 340, 365; pt. 6, 1893.—TOWNSEND, *Journ. N. Y. Ent. Soc.*, vol. 23, 1915, p. 64.—C. S. BRIMLEY, *Ent. News*, vol. 33, 1922, p. 21.

Brachycoma laticeps VAN DER WULP, *Biologia Cent.-Amer.*, Dipt., vol. 2, 1890, p. 92.

Atacta apicalis Coquillett, *Revis. Tachin.*, 1897, p. 83.

Originally described from a female taken in Brazil, and afterward collected by Townsend in Peru, the species ranges northward to the vicinity of Washington. Specimens from North America in the United States National Museum are as follows: One male, Chiriqui Province, Canal Zone, reared from *Remigia repanda* Fabricius by

⁴ *Zweifl. Kais. Mus.*, pt. 5, 1891, p. 365.

Zetek (No. 22304); one female, Higuito, Costa Rica (Pablo Schild); one female, Puerto Barrios, Guat., February 24, 1905 (C. C. Deam); one male, Tifton, Georgia, September 8, 1896 (G. R. Pilate, type of *apicalis*); one female, Raleigh, North Carolina, July, 1906 (Brimley); one female, Falls Church, Virginia, May 30 (Banks); and one female, Great Falls, Virginia, August 9, 1923 (Aldrich).

ATACTA CRASSICEPS, new species

Male.—front very narrow at the ocelli, only about twice the width of the ocellar triangle, widening very rapidly to the lower end of the frontal row. The parafrontals are covered with somewhat golden pollen which in most lights gives a brownish or almost black reflection; they are quite protuberant, a little inflated and rather densely covered with erect black hairs. The frontal bristles begin a little below the ocelli and the rows diverge rapidly below, ending close to the eye at the level of the middle of the second antennal joint; ocellar bristles distinct and a dense tuft of hair behind them to the vertex. Inner verticals are developed; face very flat with yellow pollen through which a darker ground color shows on each side; parafacials bare with yellow pollen; its least width nearly equal to the length of the third antennal joint. Antennae black, very slender, the arista short, gradually tapering; its penultimate joint twice as long as broad. Vibrissae considerably above the mouth (two-thirds the length of the second antennal joint) with a group of half a dozen small hairs and bristles above them, the highest a little above the tips of the antennae; palpi and proboscis of ordinary size; bucca one-third the eyeheight. Thorax black with conspicuous stripes of white pollen, which leave between them a pair of abbreviated black stripes in front between the acrostichal and dorsocentral; a pair of complete black stripes beginning just mesad of the humerus and extending to the scutellum; and a short median black stripe beginning at the scutellum and extending forward nearly to the suture. Chaetotaxy: acrostichals, anterior 3, posterior 3; dorsocentrals, anterior 2, posterior 4; intraalar, posterior 3, anterior 1; supraalar 3; postalar 2; humeral 3 and 4; sternopleural 4; scutellum with three equal pairs of the margin, the last of which might be called apical, and one pair discal. Abdomen black with gray reflecting pollen which on the fourth segment becomes more dense and yellowish-gray in color; the second segment with a single pair of marginals; third segment with about five pairs; fourth segment with five or six pairs in a single row considerably before the apex. Genitalia small and concealed, of a rather common type. Fifth sternite with a U-shaped incision, the lobes black and almost bare. Legs black, the middle tibia with three or four bristles on the outer front side, the hind tibia distinctly ciliated on the outer side with one longer bristle below the middle.

Wings hyaline, third vein with four or five bristles at base; fourth vein rather suddenly bent, almost at a right angle from which it curves a little outward reaching the costa considerably before the tip of the wing.

Length 9 mm.

Female.—The front has the two large dark, reflecting spots on the parafrontals as in *brasiliensis*, but the color of the remaining pollen is gray rather than golden. This with the characters given in the table will readily distinguish the two species.

Length 7.5 mm.

Described from three males and one female. The males are from Great Falls, Virginia, August 9, 1923 (Aldrich); Tupelo, Mississippi, September 30, 1921 (H. W. Allen); Hope, Arkansas, August 21, 1922 (received from C. W. Johnson and returned to him). The single female is from Opelousas, Louisiana, April, 1897 (Pilate).

Type.—Male, Cat. No. 26845, U.S.N.M., from Great Falls, Virginia.

ATACTA ARGENTIFRONS, new species

Male.—This species is most nearly related to *crassiceps*, the single male specimen has the front much the same as in *brasiliensis*, the parafrontals having very decided silvery color and being less inflated than in *crassiceps*. The thoracic stripes are the same in all the species which I have seen, but *brasiliensis* is the only one with deep golden pollen on the fourth abdominal segment and without median marginals on the second. The female of this species is unknown.

Length 9.5 mm.

Described from a single male collected in May by H. H. Smith at Corumba, Brazil.

Type in the collection of the American Museum of Natural History.

ATACTA CRESCENTIS (Townsend)

Atactomina crescentis TOWNSEND, Bull. Amer. Mus. Nat. Hist., vol. 35, 1916, p. 15.

Described from four males and a female in the American Museum. Locality, Chapada, Brazil. One paratype male is in the United States National Museum. The supposed generic characters are very slight except that the parafrontals are quite rapidly widened below, the eye being rather more crescent-shaped than in the other species.

ATACTA NIGRIPALPIS (Van der Wulp)

Brachycoma nigripalpis VAN DER WULP, Biologia Cent. Amer. Dipt., vol. 2, p. 98.

Atacta nigripalpis BRAUER and BERGENSTAMM, Zweifl. Kais. Mus., pt. 5, 1891, p. 365.

Not seen by the writer and placed here on account of the statement of Brauer and Bergenstamm, who saw a type specimen. I doubt the generic reference very much as none of the other species have such an elongated third antennal joint.

Genus *MASICERA* Macquart

Masicera MACQUART, Ins. Dipt. du Nord de la France, 1834, p. 285.—COQUILLET, Revision of the Tachinidae (Tech. Bull. No. 7, Division of Entomology), p. 113, 1897.

MASICERA ARATOR, new species

Fig. c.

Male.—Front 0.28 of head width (average of four, 0.28, 0.28, 0.26, 0.29); parafrontals light golden pollinose; frontal bristles about eight, the two uppermost rather large, reclinate, the lowest reaching the level of the arista and strongly diverging toward the eyes; one pair of verticals; ocellars large; parafacials silvery from the lowest frontals, at narrowest less than half the width of third antennal joint; first two joints of antennae and usually the base of third red, the third broad and long, almost reaching the vibrissae, four or five times the second; arista of moderate length, hardly thickened basally; face concolorous with parafacials, its ridges rather sharp, bare except close to vibrissae; palpi yellow, ordinary, proboscis short, fleshy; bucca over one-fourth of eye height.

Thorax gray pollinose, with very indistinct darker stripes. Acrostichal 3, 3; dorsocentral 3, 4; humeral 3; posthumeral 2; presutural 2; notopleural 2; supraalar 3; intraalar 3; postalar 2; sternopleural 3; pteropleural 0; scutellum with 3 lateral, 1 apical, not upturned, 1 discal.

Abdomen black with subsilvery basal bands of pollen on segments two to four, which to the naked eye give the impression of being equal to the alternating black bands; under the lens in some angles however the pollen covers most of the segments. First segment with one median marginal pair; second segment with a discal and a marginal pair; third with a discal pair and a marginal row; fourth with two to eight discal and a marginal row. Genital segments rather large, wholly black, with black hair and the second with a pair of bristles directed backward. Inner forceps black, slender, long, deeply divided but not divergent, the tips blunt and slightly bent back. Outer forceps with very peculiar and characteristic shape, long and flat, shining black, beyond the middle suddenly widening backward in a thin, concave margin, the apex sharp and curved a little forward so that the whole apical part suggests a plough share. Fifth sternite large and prominent, black, without special bristles or hairs.

Legs black, claws and pulvilli long, especially the front ones; front tibia with two bristles on outer hind side; middle tibia with one bristle on outer front side near middle; hind tibia on outer hind side subciliate, with one long about middle.

Wings hyaline, fourth vein with oblique and rounded bend, the distance from its tip to extreme apex of wing barely equal to one-half the hind cross vein. Third vein with two to three hairs at base.

Female.—Front 0.30 of head width at vertex, wider anteriorly (one specimen); parafacials slightly wider and third antennal joint narrower (hardly three times the second); abdomen with narrower subsilvery bands, the shining black intervening portion wider; genital organs retracted, no indications of a piercing organ; middle tibia with two bristles on outer front side; hind tibia with irregular bristles on outer hind side, not subciliate.

Length of male, 8 to 8.5 mm; of female, 9 mm.

Described from four males and one female. The type male and allotype female were collected at Linglestown, Pennsylvania, June 15, 1913, and were received from the State Bureau of Plant Industry, Harrisburg, Pennsylvania, through the courtesy of A. B. Champlain. One male was bred "from a large *Tipula* larva" collected by James Fletcher at Chelsea, Quebec (near Ottawa), on May 27, 1906; the puparium was formed on June 3, and the fly emerged on June 27. The puparium will be figured by Charles T. Greene in a later paper. One male was collected by H. C. Fall at Tyngsboro, Massachusetts, on July 26, 1916, and is deposited in the Boston Society of Natural History. The remaining male was collected by R. C. Shannon at Dead Run, Virginia (close to Washington), on June 22, 1913.

Type, allotype, and one paratype.—Both sexes, Cat. No. 27100, U.S.N.M.

Family DEXIIDAE

Genus DEXIA Meigen

Dexia MEIGEN, Systemat. Beschreib., vol. 5, 1826, p. 33.—BAER, Die Tachininen, 1921, p. 160.

DEXIA VENTRALIS, new species

Male.—Front 0.18 of headwidth (average of three, 0.16, 0.18, and 0.19), the middle stripe reddish-brown, the parafrontals, parafacials, posterior orbits and all below the eye light golden pollinose except a broad brown stripe from the eye downward and forward. Parafacials bare. Head from in front obviously higher than wide. Verticals small (only one pair), frontals 7 or 8 irregular, beginning below the ocelli and ending at base of antennae; vibrissae above mouth, a

few small hairs above them. Antennae small, yellow, separated by a well-developed carina which extends between them at base, although low and narrow here; third joint slender, twice the second, not nearly reaching the vibrissae; arista short with dense erect plumosity. Palpi smallish, yellow; proboscis small, the labella yellow. Bucca one-half the eye height.

Thorax with dense yellow pollen becoming more gray on pleurae, with four narrow incomplete darker stripes. Chaetotaxy: acrostichal 1, 1 (sometimes a second small pair before the prescutellars); dorso-central 4, 3; humeral 2; posthumeral 1; presutural 1; notopleural 2; supraalar 2; intraalar 2; postalar 2; scutellum with 2 lateral, a large decussate apical pair and a small discal; sternopleural 2; pteropleural minute.

Abdomen mostly yellow in ground color, a variable interrupted median black stripe, and narrow variable black hind margins on last three segments; the inflexed ends of the second and third tergites come together below and are more or less tipped with black, thus forming a variable black median ventral stripe. First segment without median marginals; second with one pair discal and one marginal, other marginals toward the sides; third segment with one or two pairs of discals, and a stout marginal row of 8; fourth segment with irregular discal and apical rows. Genitalia small, yellow, the lobes of the fifth sternite black. The pollen of the abdomen is yellowish and confined to the bases of the last three segments, covering half of the fourth.

Legs yellow, tarsi however black; claws and pulvilli long. Middle tibia with only one small bristle on outer front side; hind tibia with two small on outer hind side.

Wings somewhat brownish; costal spine distinct; fourth vein sharply bent at a right angle, with a slight or distinct stump at the bend, ending not very far before the apex; third vein with only 2 to 5 small hairs at base.

Female.—Looks like a distinct species, but was reared with these males. The abdomen is but little or hardly at all yellow in ground color, the basal pollinose bands contrasting with the shining black apical half on segments 2 to 4. The wing is broader, and the fourth vein curves more distinctly backward beyond the crossvein. Width of front at narrowest (vertex) is 0.38 in one specimen and 0.45 in the other. There are only 5 to 6 frontals, the upper one turned back and outward; the usual two orbitals are large and proclinate. The usual two pairs of verticals are present.

Length of male, 8.6 to 10.3 mm.; of female, 7.5 and 8.4 mm.

Described from seven males and two females, reared from scarabaeid beetles at Suigen, Korea, by C. P. Clausen and J. L. King.

Type.—Male, Cat. No. 27245, U.S.N.M.

The species is strictly congeneric with *Dexia rustica* Fabricius of Europe, type of the genus. It agrees very well with the description of *Dexia divergens* Walker, described from Mount Ophir⁵; but one of our specimens was compared with Walker's type in the British Museum by Dr. J. D. Tothill and showed differences apparently specific.

Genus EUTRIXOPSIS Townsend

Eutrixopsis TOWNSEND, Insecutor Inscitiae Menst., vol. 6, p. 166, 1918.

This genus was based upon the single species *javana*, described by Townsend on the same page; only a single specimen was known, a male from Java. The species has recently been found by Clausen and King, of the United States Bureau of Entomology, to be an important parasite of the "Japanese Beetle," *Popillia japonica* Newm., in Japan. Their studies of its biology and economic relations will be published elsewhere.

The genus differs from *Eutrixa* (inclusive of *Eutrixoides* Walton) chiefly in having much narrower parafacials and broader and flatter facial ridges: in other words, the suture encloses a much broader portion of the head below. The parafacial also bears close to the eye a more or less double row of hairs. Both genera are parasitic on melolonthine beetles in the adult stage.

Since *javana* has been only briefly described hitherto, its economic importance requires that it be given a full description here.

EUTRIXOPSIS JAVANA Townsend

Eutrixopsis javana TOWNSEND, Insecutor Inscitiae Menst., vol. 6, p. 166, 1918.

Male.—A brown fly with mostly yellow abdomen and legs. Eyes almost contiguous on the front, separated by less than the width of the anterior ocellus, ocellar triangle small, elevated; ocellar and vertical bristles absent, no hairs on front above middle, a few small bristles below stopping short of the lunule; small hairs begin on lower parafrontals and continue down the narrow parafacials in a mostly double row to the lower end of the lunule. Antennae brown, very small, third joint twice the second, arista pale, about three times as long as the third joint, bare, its penultimate joint short. Facial ridges flat, converging below and at the closest point separated by hardly more than the width of the third antennal joint. No vibrissae, the ridges hairy in this region and bearing a few small but increasing bristles toward the mouth, which is some distance below. Palpi and proboscis ordinary, the former yellow. Back of head concave above, convex below. Bucca half the eye height, the

⁵ Proc. Linn. Soc., vol. 1, 1856, p. 21.

large transverse impression ending vertically below the eye. Thorax brown with smooth, silky gray pollen and two narrow brown stripes near middle. Chaetotaxy: Acrostichals, 1 next to scutellum; dorso-centrals, 3 anterior, 4 posterior; intraalar 1, supraalar 1; postalar 2; humeral 1 or 2; prescutellar 1; notopleural 2; scutellum with 2 lateral, 1 apical of same size, 1 discal; sternopleural 2. Calypters whitish.

Abdomen yellow in ground color, with thin gray pollen; segments 1-3 with narrow posterior dark band and a dark middle line of same width. First segment without marginal bristles; second with a small median pair; third with marginal row of about 12, not large. Genital segments yellow, small, hairy; inner forceps united into a small slender yellow process curving forward, blunt at tip; outer forceps yellow, slender, as large and long as the combined inner ones. Fifth sternite with broad yellow lobes, separated by a broad V-shaped incision.

Legs yellow; tips of hind femora infuscated and all the tibiae with faint dark reflections in certain lights. Claws long and pulvilli nearly equal to last tarsal joint. Wings subhyaline, third vein with two or three hairs at base.

Length, 6 to 7 mm.

Female.—Front considerably wider than front ocellus; as the only specimen is somewhat shriveled, the front may normally be almost as wide as the ocellar triangle. Claws long for a female, but not so long as in the male; pulvilli rounded, more than half as long as last tarsal joint. Whether any sort of piercing larvipositor is present is not clear; the organs have been unsuccessfully pulled apart. There may be a minute piercer, but in any event smaller than the very distinct one of *Eutrixa exilis* and not comparable with the large one of *jonesi*.

Length, 6 mm.

Five males and six females, reared at the Japanese beetle laboratory from adults of the so-called Japanese beetle, *Popillia japonica* Newman; the infested beetles were obtained in Japan.

Type.—Male, Cat. No. 26846, U.S.N.M.

