

THE NEOTROPICAL MUSCOID GENUS MESEMBRINELLA
GIGLIO-TOS AND OTHER TESTACEOUS
MUSCOID FLIES.

By J. M. ALDRICH,

Associate Curator, Division of Insects, United States National Museum.

The appearance of Dr. J. M. R. Surcouf's large Revision des Muscidae Testaceae (1919) suggested a study of the American forms included therein, in the course of which additional information came to light regarding the Australian genus *Palpostoma*, included but not seen by Surcouf. Following a brief sketch of the Muscidae Testaceae as a taxonomic concept, and a synopsis of the genus *Palpostoma*, with three species, the present paper confines itself to a consideration of the American representatives, in the genera *Ormia*, *Chloroprocta*, *Hemilucilia*, and *Mesembrinella*; these are all exclusively neotropical.

The material herein described is all in the United States National Museum except as noted. Through the kindness of Maj. E. E. Austen some important specimens, including two new species, were borrowed from the British Museum. Professor Bezzi, of Turin, Italy, also sent for study several species from his collection, which had been determined by Doctor Surcouf. The important tropical collection of the American Museum of Natural History contained several species, which were placed at my disposal; Prof. O. A. Johannsen furnished representatives of eight species; Prof. James S. Hine sent specimens of *Mesembrinella bicolor* that he had himself collected in British Guiana; two new species were received from the Bavarian State collection through Dr. E. O. Engel; and Dr. W. M. Mann brought several specimens which he collected in Bolivia while a member of the Mulford Biological Exploration. Prior to these acquisitions and loans, the National Museum had purchased a considerable series from Pablo Schild, in Higuito, Costa Rica. In the interesting and important Australian genus *Palpostoma* the material was furnished by Dr. J. F. Illingworth and Dr. Gerald F. Hill.

Robineau-Desvoidy proposed the term Muscidae Testaceae (1830, p. 425) for four genera of muscoids which agreed in having non-

metallic testaceous or yellow color—*Bengalia*, *Phumosia*, *Ormia*, and *Palpostoma*. Macquart (1835, p. 248) lumped all these as subgenera under a new genus *Ochromyia*; later (1843, p. 276) he recognized *Bengalia* as a distinct genus. Brauer and Bergenstamm, in their final synopsis of the muscoid flies (1893, p. 178) tabulate *Ochromyia* and *Bengalia* together, omit *Ormia* and *Palpostoma* as unknown to them, and add two new genera, *Zonochroa* and *Auchmeromyia*. Brauer alone later (1895, p. 594) takes up the group again, adding the neotropical *Mesembrinella* Giglio-Tos and one new, *Hemilucilia*, from South America.

Including all the above genera and several more recent from the Old World, adding *Chloroprocta* Van der Wulp from tropical America and six new genera from the Eastern Hemisphere, Surcouf has constructed a modernized Muscidae Testaceae of 20 genera, 2 subgenera, and some 29 species. He includes without having seen them *Ormia* and *Palpostoma*, which, although included in 1830, are totally divergent forms, as shown by the material of both in the United States National Museum. Omitting these from the group, it still remains a question whether the remainder form a natural tribe. *Bengalia* would be the typical form around which the rest should be grouped if sufficiently related; and characters other than color would have to be found to unite them.

Villeneuve (1920, p. 225), criticizing Surcouf's grouping because the genera assembled are not sufficiently related to each other, tabulates the Calliphorinae *sens. lat.* and limits the Testaceae to Xanthocalliphorinae Villeneuve, new name—in which, however, he does not include either *Bengalia* or *Phumosia*, the foundation of Robineau's group. No American known genus would be included in Xanthocalliphorinae, even after adopting some changes suggested by Surcouf in an answer to the criticism.¹ Nor do I believe that any American genus can be associated with *Bengalia* or *Phumosia* in a natural group of smaller dimensions than Calliphorinae in the wide sense.

Without giving the other Old World genera further consideration here, I take up *Palpostoma* and pass to the neotropical forms.

Genus PALPOSTOMA Robineau-Desvoidy.

Palpostoma ROBINEAU-DESVOIDY, Myodaires, 1830, p. 429.

Opsophasiops TOWNSEND, Proc. Biol. Soc. Wash., vol. 28, 1915, p. 22; Insector Ins. Menst., vol. 3, 1915, p. 115, syn.

Palpostoma SURCOUF, Revision Musc. Test., 1919, p. 116, not seen.

The type and sole original species of *Palpostoma* is *testacea*, from Australia. The characters for both genus and species were given in a few words—arista barely pubescent; proboscis at tip with a pair

¹ Bull. Soc. Ent. France, 1920, p. 250.

of distinct, jointed palpi; apical cell petiolate; color wholly pale testaceous; transverse facial impression yellow; 3 lines long. The genus was not recognized from 1830 to 1915, as far as I know; in the latter year Townsend² identified it from Tasmania, a species which he regarded as *testacea* having been described by Coquillett (1900, p. 390) as *Myiophasia flava*. The 2 males described by Coquillett are in the United States National Museum, and 11 additional specimens of the genus have been received from Dr. J. F. Illingworth, all collected or reared at Cairns, North Queensland. The supposed labellar palpi are little soft posterior prolongations, which in drying assume various shapes, sometimes quite like palpi; they are not jointed, in spite of Robineau's assertion.

The generic characters are as follows:

Front very narrow in the male, in the female of *testacea* also very narrow, of *desvoidyi* 0.27 the head width. When the front is narrow there are no developed verticals, nor orbitals, but the female of *desvoidyi* has the usual two pairs of each, the latter small; ocellars very small, directed forward; frontals small, beginning well before ocellar triangle and reaching only to lunula; front not prominent; antennae ordinary, third joint about $2\frac{1}{2}$ times the second and reaching nearly to the vibrissae, which are somewhat above the mouth and a little approximated; facial ridges low and bare, a few short stubby hairs about the vibrissae; transverse impression large, extending below the eye to form most of the bucca, which is from one-fourth to one-third the eye height in profile; parafacial and parafacial narrow, with short but distinct hairs arranged somewhat in two or three rows, extending to the lower edge of the eye; back of head not bulging; proboscis small, palpi normal, labella as above noted. Thoracic chaetotaxy: acrostichal, anterior 1, posterior 1; dorsocentral, anterior 2-3, posterior 3; humeral 2; posthumeral 1; presutural 1; notopleural 2; supraalar 1; intraalar 1 (far back); postalar 2; scutellar, 1 apical, 1 lateral; prothoracic 1; mesopleural, 1 above, 1 anterior, 4 posterior; sternopleural, 1-2 anterior, 1 posterior; pteropleural, 1 small; hypopleural, row of 8 slender. All the specimens show a well-developed pair of prosternal bristles, a very unusual character.

Abdomen with dorsum curved downward apically on account of the shortness of the sternites; female without any apical piercing structures, showing seven sternites all of nearly equal length except the second which is longer; male with small genitalia; no discal bristles on intermediate segments.

Legs of ordinary structure, claws and pulvilli long in male, short in female; middle tibia with a small bristle on inner front side.

² Ins., Ins. Menst., vol. 3, 1915, p. 115

Wing with petiolate apical cell, the petiole only a little before the apex of the wing; third costal segment very short, much shorter than fifth; first vein bare, third with a few hairs.

In regard to the real relationships of this genus, it will be noted that Coquillett put his species in *Myiophasia*. Townsend in detecting the characters of *Palpostoma* in the specimens did not remove them from the drawer containing *Myiophasia* in the wide sense, and never published any comment on the proper position of the genus. It probably should stand in a tribe by itself.

TABLE OF SPECIES.

Hind and apical cross veins parallel, or almost so..... *flava* Coquillett.
Hind cross vein much less oblique than apical.

Sternopleura in front of middle coxae with a double row of bristles and some smaller hairs, male with three sternopleurals at upper margin.

testacea Robineau-Desvoidy.

Sternopleura in front of middle coxae bearing a single transverse row of bristles, male with only two sternopleurals at the upper margin... *desvoidyi*, new species

PALPOSTOMA TESTACEA Robineau-Desvoidy.

Palpostoma testacea ROBINEAU-DESVOIDY, *Myiodaires*, 1830. p. 429.

A wholly yellow species with a trace of median brown pollinose stripe on the abdomen, which is also sprinkled with brown dots from which the hairs and bristles arise. The second abdominal segment has a weak row of marginals, the third a stronger row, the fourth a few weaker. Hind cross vein a little oblique and at its anterior end incurved, especially in the male. The front of the female is at the narrowest only two-thirds as wide as in the male.

Length, 6 mm.

Five males, one female, Cairns, North Queensland, Australia, J. F. Illingworth, collector; four reared from adults of the Scarabeid beetle *Lepidoderma albohirtum* Waterhouse. Three males are returned to Doctor Illingworth.

I decide on this as *testacea*, since it is exactly the size mentioned by Robineau, and comes from Australia—excluding *flava* from consideration as not from the continent of Australia.

PALPOSTOMA FLAVA Coquillett.

Myiophasia flava COQUILLET, Proc. Linn. Soc. New South Wales, 1900, p. 390.

Opsophasiops flava TOWNSEND, Proc. Biol. Soc. Wash., vol. 28, 1915, p. 22.

Palpostoma testacea ROBINEAU-DESVOIDY, Townsend, *Insector Ins. Menst.*, 1915, p. 111.

The two males described by Coquillett have the front at narrowest only as wide as the anterior ocellus; the abdomen is spotted with

brown as in the preceding, and has a median brown line. Length, 4.7 mm. "West Australia; bred from adults of the Scarabeid *Anoplostethus opalinus* Burm." Coquillett suggests that *Neophasia picta* Brauer and Bergenstamm may be congeneric, founded on a female without antennae from West Australia.³ Their description, however, seems to show but little relationship.

Type and paratype.—Male, Cat. No. 10431. Both bear distinct printed labels, "Tasmania, Austr. Arthur M. Lee, collector." This disagrees with Coquillett's indicated locality.

PALPOSTOMA DESVOIDYI, new species.

Male.—Very similar to the two preceding, but differing by the characters given in the table; also by smaller size from *testacea*. Second abdominal segment with a pair of median marginals, a space between them and the other marginals.

Female.—Front 0.27 of head width above, slightly broader at antennae.

Length of male, 4.4 mm. to 5 mm.; of female, 6 mm.

Three males, two females, Cairns, North Queensland, Australia, J. F. Illingworth, collector. Two are reared from *Lepidiota frenchii* Blackburn, a scarabeid beetle injurious to sugar cane.

Type and allotype.—Male and female, Cat. No. 25242, U.S.N.M. One paratype of each sex is returned to Doctor Illingworth.

Genus ORMIA Robineau-Desvoidy.

Ormia ROBINEAU-DESVOIDY, Myodaires, 1830, p. 428.

Phasiopteryx BRAUER and BERGENSTAMM, Zweifl. Kais. Mus., pt. 4, 1889, p. 146.

Neoptera VAN DER WULF, Biologia, Dipt., vol. 2, 1890, p. 165.

Euphasiopteryx TOWNSEND, Proc. Biol. Soc. Wash., vol. 28, 1915, p. 23.

Ormiophasis TOWNSEND, Insecutor Ins. Menst., vol. 6, 1918, p. 164.

ORMIA PUNCTATA Robineau-Desvoidy.

Ormia punctata ROBINEAU-DESVOIDY, Myodaires, 1830, p. 428.—TOWNSEND, Ent. News, vol. 26, 1915, p. 366.

Phasiopteryx bilimeki BRAUER and BERGENSTAMM, Zweifl. Kais. Mus., pt. 4, 1889 p. 147; pt. 6, 1893, p. 159.

Neoptera rufa VAN DER WULF, Biologia, Dipt., vol. 2, 1890, p. 165.

Clytiomyia punctata, new species, COQUILLET, Journ. N. Y. Ent. Soc., vol. 3. 1895, p. 52.

Oestrophasia punctata COQUILLET, Coquillett, Revision N. Amer. Tachin., 1897, p. 71.

This species, type of *Ormia*, was not seen by Surcouf. It is well represented in the United States National Museum collection from

³ Denkschr. Kais. Mus., 1893, p. 210.

Florida and Mexico. It is wholly unlike *Bengalia*, being a small Tachinid with bare arista; it is honey yellow in color, the epaulet at base of costa strikingly black and the small cross vein clouded; the prosternum is greatly swollen in both sexes, as in the Indian *Therobia abdominalis*, which is related. The male has an enormous thickening of the costa beyond the middle, and another in the second vein just behind it. There are probably two or three other species of *Ormia* in America, not at present well known.

Genus HEMILUCILIA Brauer.

Hemilucilia BRAUER, Sitzungsber. Kais. Akad. Wien, vol. 104, 1895, p. 104.—SURCOUF, Revis. Musc. Test., 1919, p. 54.

The type is *Musca segmentaria* Fabricius, the sole species included. It is much more closely related to *Chrysomyia* than to *Bengalia*, and is out of place in Surcouf's group. The face is vertical and the lower part of head strongly developed as in *Chrysomyia*, from which it differs chiefly in having the facial ridges very high and sharp, inclosing the antennae in a deep groove; the third antennal joint is very long, and the vibrissae are at the oral margin, only a little approximated to each other. The stem vein of the wing is ciliated behind, as in *Chrysomyia*, a character of decided generic value except apparently in *Mesembrinella*.⁴ Both species have the wings infuscated except a paler area in the middle third which does not reach the hind margin. Both *Hemilucilia* and *Cochliomyia* Townsend (type *maccellaria* Fabricius) differ from *Chrysomyia* in having the lower calypter bare above except at base, it being hairy to the edge in *marginalis* Wiedemann, the type of *Chrysomyia*.

TABLE OF SPECIES.

Humeri, postalar callosities and anterior part of mesopleura yellow; legs yellow; both thoracic spiracles pale yellow *segmentaria* Fabricius.
Humeri, etc., green or blue; legs mostly black; in female the front narrowing near the antennae; the metathoracic spiracle blackish. *fuscanipennis* Macquart.

HEMILUCILIA SEGMENTARIA Fabricius.

Musca segmentaria FABRICIUS, Syst. Antl., 1805, p. 292.—WIEDEMANN, Auss. Zweifl. Ins., vol. 2, 1830, p. 401.

Chrysomyia hyacinthia ROBINEAU-DESVOIDY, Myiodaires, 1830, p. 450.

⁴ This character, first mentioned by Pandellè (Revue Ent., 1896, p. 213), afterwards by Villeneuve (Bull. Soc. Ent. France, 1913, p. 163, etc.), and later on by Rodhain and Bequaert (Bull. Sci. France et Belg., ser. 7, vol. 49, 1916, p. 244) is a very important one. The cilia are found on the large vein at the base of the wing behind the costa and basad of the humeral cross vein. I have found them in the following out of many genera examined: *Phormia* in the wide sense; *Chrysomyia* in the wide sense; all *Rhiniinae* of Townsend's 1917 Revision except *Pollenia*, which probably does not belong to the tribe; *Nitellia vespillo* Fabricius; *Sarconesia chloropyga* Wiedemann; *Phrissopodia splendens* Macquart; *Sarconesiopsis caerulea* Townsend; *Chlorobrachycoma splendida* Townsend; *Hemilucilia* and *Chloroprocta*. They never occur in *Lucilia* and *Calliphora*.

Lucilia segmentaria BRAUER and BERGENSTAMM, Zweifl. Kais. Mus., pt. 5, 1891, p. 420 (in list).

Hemilucilia segmentaria BRAUER, Sitzungsber. Kais. Akad. Wien, vol. 104, 1895, p. 598.—SURCOUF, Revis. Musc. Test., 1919, p. 55.

All the published references are to material from South America. The species is represented in the United States National Museum by a male and four females, from Costa Rica, Panama, Peru, and Paraguay. Surcouf quotes the previous descriptions and gives a new one in detail from the type. The species is easily recognized by the characters already mentioned. The front in the male is black only at the vortex and much narrower outside the frontal bristles than in *macellaria*.

HEMILUCILIA FUSCANIPENNIS Macquart.

Lucilia fuscipennis MACQUART, Dipt. Exotiques, Suppl., vol. 4, pt. 2, 1851, p. 223.

Described from Bahia, Brazil; the United States National Museum has a male and four females, from Panama and Costa Rica, identified as *Phormia fuscipennis* by Coquillett, and placed in *Hemilucilia* by Townsend. It is a smaller and darker species than the preceding, the front black nearly to the antennae, where there is a sharp change to yellow.

Genus CHLOROPROCTA Van der Wulp.

Chloroprocta VAN DER WULP, Biol. Cent. Amer. Dipt., vol. 2, 1896, p. 296.

Nearly allied to *Cochliomyia* Townsend, with which it has in common the ciliation of the stem vein of the wing; vibrissae a little above the edge of the mouth and somewhat approximated to each other; acrostichal and dorsocentral bristles except the hindmost very small and hardly discernable; lower part of head strongly developed; face straight and almost vertical; frontals extending slightly below insertion of antennae; hind calypter bare beyond the fold. It differs in having the head much flatter (shorter on the longitudinal axis of the insect), more concave behind, the upper edge thin, especially in the male; the female has the parafrontals outside the frontal bristles much narrower; the male has the eyes contiguous for some distance, the upper front portion with very large facets as in males of *Tabanus*, as large as the posterior ocelli but not quite equalling the front one. The genus would certainly have to be placed in the same tribe with *Chrysomyia* and *Cochliomyia*.

CHLOROPROCTA SEMIVIRDIS Van der Wulp.

Chloroprocta semiviridis VAN DER WULP, Biol. Cent. Amer. Dipt., vol. 2, 1896, p. 296.

Two males and a female in the United States National Museum collection, from Costa Rica, Brownsville, Texas, and Colima, Mexico, determined by Townsend, show but little trace of the testaceous

color of the thorax mentioned so prominently by Van der Wulp; the base of the abdomen is yellow, however, and there are indications of red in the pleurae in all the specimens, the mesonotum nevertheless would have to be called blue green. Legs brownish red. Wings wholly infuscated, but darker apically near the costa.

MESEMBRINELLA Giglio-Tos.

Mesembrinella GIGLIO-TOS, Boll. Mus. Zool. ed. Anat. Comp. R. Univ., Torino, vol. 7, No. 132, p. 4 (Oct. 1892); Mem. R. Acad. Sci., Torino, ser. 2, vol. 45, 1895 (Ditt. del Mess., pt. 4), p. 11. Type, *Musca quadrilineata* Fabricius, by designation, 1892.

Mesembrinella BRAUER, Sitzber. Kais. Akad. Wiss., vol. 104, 1895, p. 594.

Huascaromusca TOWNSEND, Insector Ins. Menst., vol. 6, 1918, p. 155 (type *cruciata*, new, from Peru).

Ochromyia and *Mesembrinella* SURCOUF, Revis. Musc. Testaceae, 1919, p. 63.

We still have to consider as American representatives of Surcouf's group his *Ochromyia* and *Mesembrinella*. His use of both names is open to question. The type of *Ochromyia* was distinctly designated at its first publication as *Musca jejuna* Fabricius. This species from Surcouf's examination of the type is a *Bengalia*, and in fact the only species known of this genus, of which all Desvoidy's names are probably synonymous (although Surcouf mentions only *testacea*, designating it as type of *Bengalia*,⁵ omitting the others from consideration). Obviously *Ochromyia*, 1835, is a synonym of *Bengalia*, 1830, having the same genotype. Now *Mesembrinella* also has a genotype, designated when it was first published, which is *Musca quadrilineata* Fabricius. This species from the type Surcouf places in *Ochromyia*. This situation would seem to require the transfer of the name *Mesembrinella* from Surcouf's group of that name to his *Ochromyias*, left without a name by making *Ochromyia* a synonym of *Bengalia*. There is, however, an alternative which largely does away with the confusion which a transfer would entail, namely, the union of both genera as taken by Surcouf under the name *Mesembrinella*. A consideration of the generic characters used by Surcouf shows that this is not only practicable but unavoidable. He separated the genera on the presence of one anterior sternopleural in *Ochromyia* and two in *Mesembrinella*, both groups having also one posterior. The commonest Central American species varies frequently between one and two anterior sternopleurals, the lower when present sometimes very small, hardly more than a hair. Other characters seem to be merely specific.

The combination gives a natural genus having several species in the neotropical region.

⁵ Townsend, Ins. Ins. Menst., vol. 4, 1916, p. 6, had already designated *Bengalia labiata* as type, but this is no doubt the same species.

Generic characters: hypopleural bristles present, arista plumose to tip, eyes bare, bend of fourth vein obtuse and broadly rounded, thence straight and ending only a little before the apex of wing (if there is any concavity at all it is just at the tip, not immediately after the bend); first posterior cell wide and broadly open, sometimes very broadly; frontal bristles not continuing below insertion of antennae; female with a pair of decussate bristles on the frontal stripe, below the ocelli; eyes bare; bucca narrow, about one-fifth to one-sixth eye height; first and second abdominal segments without median marginals; no discals except in two species on the fourth segment. They are easily separated from *Calliphora* by the course of the fourth vein, the much narrower bucca, the arista plumose to the tip, hind calypter bare above, and in the female decussate bristles on the front.

The two species herein identified as *Mesembrinella bicolor* Fabricius and *bellardiana*, new species, are fairly common in collections (I have examined approximately 50 of the former, 12 of the latter), but it is a very difficult matter to get enough of the others to determine the value of the characters. Both of the common species vary in the number of sternopleurals; posterior acrostichals may apparently vary from one to three pairs; a third humeral is usually present, but often small and sometimes merely hairlike; the foremost anterior dorso-central also may be small, so there is no real difference worth mentioning between two and three in this series; supraalars seem to vary from two to four in the same species; there may be two lateral scutellars or only one. On the other hand, there seems to be more constancy in the color of the wings than would be expected; the second presutural is regularly present in some species, absent in others; while one or two pairs of anterior acrostichals as compared with none seems to be a stable character. Color of the legs, as in *brunnipes*, I view with misgiving, but have too little material to prove anything.

The presence or absence of the second presutural bristle separates two very natural groups, the former including the type species; the absence of this bristle is generally accompanied by the absence of the second posthumeral, but the latter is well developed in *cruciata* and almost as well in *facialis*. The second presutural when present is mesad of the large outer presutural, which is always present, and a little behind the middle of a line drawn from the outer one to the dorsocentral, which is just before the suture. The posthumeral, which, as stated, usually varies with this, occurs halfway between the outer presutural and the humeral swelling.

TABLE OF SPECIES.

- A*¹. Stem of venation bare (subgenus *Mesembrinella*).
- a*¹. Two presutural bristles present.
- b*¹. Legs almost black, but middle and hind femora yellow on apical half.
- c*¹. Wing with heavy subcostal black stripe, not reaching the third vein, the posterior portion paler; 3 posterior acrostichals (Bolivia, Surinam).
brunnipes Surcouf.
- c*². Wing deep brown, the second fourth, except behind, yellow (Bolivia).
pictipennis, new species.
- b*². Femora and tibiae yellow.
- c*¹. Apical cell very wide open, the costal section included more than half as long as the preceding one (Costa Rica, Ecuador) . . . *umbrosa*, new species.
- c*². Apical cell less widely open, the included costal section less than half the preceding.
- d*¹. Wing with only diffuse and not very strong infuscation (widespread neotropical) *bicolor* Fabricius.
- d*². Wing with heavy blackish subcostal stripe, beyond middle, before third vein (Brazil) *batesi*, new species.
- a*². Only one presutural present.
- b*¹. Fourth abdominal segment with a discal row of bristles.
- c*¹. Femora, pleurae, and whole abdomen black; second posthumeral large; 2 pairs anterior acrostichals (Peru) *cruciata* Townsend.
- c*². Femora, pleurae, and base of abdomen yellow.
- d*¹. One pair anterior acrostichals.
- e*¹. Posthumeral 1 (Panama) *tibialis*, new species.
- e*². Posthumeral 2 (South America) *aneiventris* Wiedemann.
- d*². No anterior acrostichals (Brazil) *purpurata*, new species.
- b*². Fourth abdominal segment without discals.
- c*¹. Facial ridges high and sharp, with bristles to middle; middle and hind tibiae not at all infuscated; sternopleurals 2, 1 (Costa Rica).
facialis, new species.
- c*². Facial ridges lower and not bristly except near vibrissae.
- d*¹. Segments 2-4 of abdomen with posterior third or fourth of purple color, sharply limited anteriorly.
- e*¹. No anterior acrostichals, only one intraalar (the posterior) (Brazil).
pauciseta, new species.
- e*². One or two anterior acrostichals; two intraalars (Brazil).
cyaneicincta Surcouf.
- d*². Abdomen without purple bands.
- e*¹. Third abdominal segment with only weak hairs along the hind margin above (South America) *randa* Walker.
- e*². Third abdominal segment with a marginal row of well-developed bristles.
- f*¹. Middle and hind tibiae black, in male the middle ones elongated and with all the bristles very minute (*flavipennis* Macquart).
quadrilineata Fabricius.
- f*². Middle and hind tibiae not or hardly infuscated, the male with the usual bristles on middle tibiae. *dorsimacula*, new species.
- A*². Stem of venation ciliated behind (subgenus *Mesembolia*, type *bellardiana*).
- a*¹. Greatest width of apical cell exceeding the length of the hind cross vein.
- b*¹. Apical cell moderately wide open in margin, the intercepted costal segment not more than half the preceding one; no acrostichals immediately behind the suture (Mexico to Paraguay) *bellardiana*, new species.
- b*². Apical cell very wide open, the intercepted costal segment more than half the preceding (Brazil) *fulvipes*, new species.
- a*². Greatest width of apical cell less than hind cross vein (Brazil).
peregrina, new species.

MESEMBRINELLA BRUNNIPES Surcouf.

Mesembrinella brunnipes SURCOUF, Revis. Musc. Test., 1919, p. 78, female.
Bolivia, Surinam.

One of the type specimens from Bolivia, sent me for study by Professor Bezzi, shows the following characters.

Female.—Head and thorax brownish, almost acorn colored, the scutellum the same. Cruciate bristles distinct. Antennae and palpi yellow, third antennal joint darkened from the arista on the outer side; facial ridges with numerous hairs above the vibrissae, but ascending only as far as the lowest third of the third antennal joint. Mesonotum with whitish pollinose stripes, which when viewed from behind extend to the scutellum. Thoracic chaetotaxy: dorsocentral 2, 3; acrostichal 2, 3; humeral 3; posthumeral 2; presutural 2; notopleural 2; supraalar 4 large and 1 or 2 small; intraalar 2; postalar 2; scutellum with 1 apical, 1 discal, laterals 1 large and 2 small; sternopleural 1, 1 on one side, 2, 1 on the other.

Abdomen yellow at extreme base; at the middle of the first segment it begins to be densely black haired, and at this point it becomes darker and takes on a purple reflection; this color and reflection increase apically, until the fourth segment is deep purple with no trace of yellow; tergites with no bristles except a few very weak on hind margin of second and third segments; sternites each with half a dozen of about the same size as those on the tergites. Legs dark brown, all the knees and apical half of middle and hind femora yellow; middle tibia with a stout flexor bristle beyond middle. Wings infuscated, most densely in a heavy subcostal stripe beginning just behind the tip of the first and not nearly reaching the third vein; anterior cross vein deeply infuscated and the same spot drawn out along the fourth vein, but not the third; fifth vein and hind cross vein also margined with brown. First posterior cell rather widely open before apex of wing.

Length, 11.5 mm.; of wing, 12.5 mm.

One female from Bolivia (Professor Johannsen) agrees with the type.

MESEMBRINELLA PICTIPENNIS, new species.

Male and female.—A brown species with deep blue or purplish abdomen greatly resembling *brunnipes* Surcouf, except in the following characters; there are three anterior dorsocentrals instead of two; one posterior acrostichal instead of three; three supraalar instead of four; the wing is much darker; apical cell broader and more widely open. The color of the wing, which is the same in both sexes, is considerably different from that of *brunnipes*.

In *pictipennis* the wing is wholly infuscated beyond the small cross vein, except a slight yellow mark beyond the tip of the first vein and another very small beyond the tip of the second vein. The broad apical cell is somewhat lighter in the middle, especially in the

female; the base of the wing as far as the tip of the second basal cell and the bifurcation of the second and third veins is brown. From the point mentioned to the small cross vein, and narrowly inclosing the latter, there is a bright yellow area, widest at the costa and extending a little into the discal cell, which is otherwise brown; there is thus in effect a yellow band extending halfway across the wing, which is elsewhere brown. The effect is different from anything in the genus so far as I have seen. The third costal segment (between the auxiliary and the first vein) is a little longer than the second and more than twice the fifth; the fourth vein is straight beyond the very broad bend and the apical cell is open at the costa for a distance longer than the anterior cross vein, or about half the posterior one.

The second abdominal segment has no marginal bristles, but the third has a few small ones; the fourth has erect hairs and at the apex a few small bristles. The eyes in the male are almost contiguous on the front, being separated by only about half the width of the anterior ocellus. The middle and hind femora are dark brown for more than half the length and the front ones entirely, except a narrow space underneath at tip.

Length of male, 13 mm.; of female, 13.5 mm.

Described from a male and female, collected at "Yungas de la Paz, Bolivia, 1000 M". Types in the British Museum. The species is nearest to *umbrosa*, but seems distinct in its vivid wing coloration, darker legs, etc.

MESEMBRINELLA UMBROSA, new species.

Mesembrinella bicolor GIGLIO-TOS, Van der Wulp, Biol. Centr. Amer. Dipt., vol. 2, 1896, p. 301, pl. 7, fig. 18.

Male.—Head, thorax, and legs rather uniformly brown in color, darker than in most of the species; abdomen except at base with some metallic blue reflections on brown ground. Front at narrowest only as wide as the anterior ocellus; third antennal joint brown; palpi and proboscis dark yellow. Thorax indistinctly darker along the middle on the mesonotum, hardly showing the usual stripes of pale pollen. Chaetotaxy: acrostichal 2 or 3, 1; dorsocentral 2, 3; humeral 3; posthumeral 3; presutural 2; notopleural 2; supraalar 3; intraalar 2; postalar 2, and a small; scutellum with 1 apical, 2 lateral both close to base, 1 discal close to edge; sternopleural 2, 1; a few pale hairs on hind calypter, on its attaching membrane above.

Abdomen brown, with blue reflections except at base; first and second segments without bristles even laterally, third and fourth with only a weak marginal row. Genital segments very small, brown; inner forceps parallel, slender, tapering, ending in a small up-curved hook; outer forceps slender and strongly bowed inward, their rounded tips approaching the tips of the inner pair. Fifth sternite with V-shaped incision, not with striking hairs or bristles. Legs uniform reddish yellow, the tarsi apically a little darker.

Wings strongly infuscated, first posterior cell a little paler in the middle and very widely open at margin, the intercepted costal segment two-thirds as long as the posterior cross vein; second costal segment longer than the following; third vein remarkably straight from cross vein to tip.

Length, 13 mm.

One male, Tucurrique, Costa Rica (Schild and Burgdorf); one male, one female, lent by Professor Bezzi, labeled "Archidona, Ecuador, R. Haensch S." This pair was placed by Mr. Surcouf along with two other females with the same label, under the name "*Mesembrinella quadrilineata* G. T. nec Fabricius." The pair, which I place provisionally under *umbrosa*, are larger than the others from the same place, and have the apical cell more widely open and the third vein bowed back toward the apex, besides having the stem of the venation bare. They differ from my Costa Rica type specimen, as far as I can make out in their poor condition, only in having a heavy subcostal infuscated stripe in the wing.

Two females from the British Museum; one of them from Cache, Costa Rica, was identified by Van der Wulp in *Biologia* as *bicolor* Giglio-Tos; the other is from Balzapamba, Ecuador, and is aberrant in having fulvous bristles and hairs, except the largest bristles, on the pleurae, coxae, femora, and tibiae. I can not decide whether this is a specific difference or not. One additional female, Bolivia (Johannsen).

Van der Wulp's figure of what he called *bicolor* Giglio-Tos shows a venation about as in *umbrosa* except that the first posterior cell is too much narrowed at the tip; Wulp also noted the long second segment of the costa in his text.

Type.—Male, Cat. No. 25246, U.S.N.M.

MESEMBRINELLA BICOLOR Fabricius.

Musca bicolor FABRICIUS, *Systema Antl.*, 1805, p. 291.—WIEDEMANN, *Auss. Zweifl. Ins.*, vol. 2, 1830, p. 392.

Calliphora socors WALKER, *Trans. Ent. Soc. Lond.*, n. ser., vol. 5, 1860, p. 311.

Mesembrinella bicolor, new species, GIGLIO-TOS, *Boll. R. Univ. Torino*, vol. 8, No. 147, 1893, p. 4; Ditteri del Messico, vol. 4, p. 11 (*Mem. R. Accad. Sci. Torino*, ser. 2, vol. 45, 1895).

Mesembrinella aeneiventris VAN DER WULP, *Biologia Cent. Amer. Dipt.*, vol. 2, 1896, p. 301, pl. 7, fig. 19.

Ochromyia bicolor FABRICIUS and *Mesembrinella bicolor* GIGLIO-TOS, Surcouf, *Revis. Musc. Test.*, pp. 70, 76, pl. 3, fig. 6.

The type locality was "South America." Giglio-Tos and Van der Wulp described it from Oaxaca, Playa Vicente, and northern Yucatan, considerably farther north than any other of the genus. The synonymy of *socors* I make out from specimens sent me by Major Austen, which he compared with Walker's types.

Male.—Head, thorax, abdomen, and legs brownish yellow, the abdomen except at base blue green, and a slight tinge of the same on the mesonotum in certain lights. Thorax with four whitish pollinose stripes, more conspicuous in front; the intervening nonpollinose portions are, first, a median one between the acrostichals, and, second, one on each side beginning on the inner side of the humerus and the adjacent mesonotum, continuing mesad of the inner presutural and halfway between the intraalar and dorsocentral rows; there is also a very narrow pollinose line along the anterior dorso-centrals. Front at narrowest three-fourths as wide as ocellar triangle; antennae, palpi, and proboscis yellow. Chaetotaxy: acrostichal 2, 3; dorsocentral 2, 3; humeral 3; posthumeral 3; presutural 2; notopleural 2; supraalar 3; intraalar 2; postalar 2; scutellar 1 apical, 2 marginal, and 1 discal; sternopleural usually 2, 1, sometimes 1,1. A few pale slender hairs on attaching margin of hind calypter above, and usually some dark hairs on the middle of the vertical surface above it (behind postalar callus). Wing tinged with brown throughout, costa hardly darker, anterior cross vein infuscated.

Female.—Front about one-fifth head width, the stripe above equal to four times one orbit; orbitals small and variable, the upper often minute or absent. The acrostichals just behind the suture sometimes absent, and when this is the case the next posterior pair are sometimes absent also, or only one present. The paler specimens show the stripes most distinctly, and in these the wings have little infuscation except along the veins.

Length, 7.6 to 10.5 mm.

Two males from Bartica, British Guiana, determined by Surcouf as *Ochromyia bicolor* Fabricius; two males, two females, northern Yucatan (Gaumer), from the British Museum, determined as *aeneiventris* Wiedemann by Van der Wulp in his Biologia paper; one male from Costa Rica, determined by Surcouf as *Mesembrinella bicolor* Giglio-Tos (all the preceding from Professor Bezzi, and mentioned by Surcouf in his paper).

Fourteen males and nineteen females, Higuito, Costa Rica (Pablo Schild); one female, Piedra Negra, Costa Rica (Schild); two males, Tehuantepec, Mexico (Sumichrast); two females, Porto Bello, Panama (August Busck); one male, two females, Huachi, Bolivia (Wm. M. Mann); one male, two females, Bernardinos, Paraguay (K. Fiebrig); two females, Surinam and Venezuela (Professor Johannsen); one male, one female, Bartica, British Guiana (J. S. Hine). The last pair in my own collection; all the rest in the United States National Museum.

Inasmuch as Mr. Surcouf divided his material generically on the number of sternopleurals, he naturally placed the material that he

saw in two genera, and hence failed to perceive the identity of the two species named *bicolor*. This is by far the commonest species of the genus, and has a wide range.

MESEMBRINELLA BATESI, new species.

Female.—A brown species with only slight metallic tinge on the abdomen, the pale abdominal pollen arranged in small, short, transverse "ripple marks."

Head light yellow, darker at vertex, the entire orbit with white pollen; front rather wide for the genus. Thorax acorn colored above, more yellow on sides. Chaetotaxy: acrostichal 2, 1; dorsocentral 2, 3; humeral 3; interhumeral 1; posthumeral 2; presutural 2; supraalar 4; intraalar 2; postalar 2; scutellar 1 apical, 1 and a small lateral, 1 discal; sternopleural 1, 1.

Abdomen with less metallic reflection than any other species except *facialis*, while the ripple marks above mentioned are not found in any other species that I have seen; they seem to originate from small pollinose dots at the base of the hairs, which coalesce in minute and short transverse rows; they occur even upon the small fifth segment. Third segment with very weak and depressed marginal bristles, those of fourth little stronger. Legs yellow, middle and hind tibiae with a trace of infuscation. Wings hardly infuscated except for the heavy subcostal dark stripe; apical cell not very wide for the genus, its costal opening less than half as long as the preceding costal segment.

Length, 12 mm.

One female, Amazon River, 65.53, collected by H. W. Bates.

Type in the British Museum.

MESEMBRINELLA CRUCIATA Townsend.

Huascaromusca cruciata TOWNSEND, *Insecutor* Ins. Menst., vol. 6, 1918, p. 155.

Female (type).—Black except antennae, palpi, and front of head, which are yellow. Front narrow for a female, about 0.22 of the head width, at vertex, not much wider at antennae, moderately wider below; head black above to about middle of front, thence yellow to lower curve of eye or more, gradually changing color in both regions; ocellars, orbitals, and frontals large; the next bristle above the usual two orbitals is in the frontal series, turned laterally, above this the strong, reclinate vertical (not as given by Townsend, with three orbitals); a pair of cruciate bristles in the frontal stripe below the ocelli; third antennal joint more than twice the second.

Thorax dull black with slight cinereous pruinosity, more pollinose at extreme front edge; bristles long and erect. Chaetotaxy: dorsocentral 2, 3; acrostichal 2, 1; humeral 3; posthumeral 2; presutural 1; notopleural 2; supraalar 3; intraalar 2; postalar 3; scutellar

1 apical, 2 lateral (1 small), 1 discal (far apart); sternopleural 2, 1. Calypters brown, with blackish margin.

Abdomen wholly black, the second and third segments with violet reflections; second segment with only one or two appressed marginals at side; third with erect row of 12 slender marginals; fourth with row of 12 discals not so large, and as many marginals still smaller.

Legs black, still a little indication of yellow underneath on apical fourth of all the femora; tibiae with rather long bristles.

Wings with slight brown tinge, anterior cross vein infuscated; fourth vein curved backward before the bend, so the first posterior cell is very wide in this part; it ends a little before the apex, widely open.

Length, 8.8 mm.

Type.—Female, Cat. No. 22054, U.S.N.M.

See note on *Somomyia xanthorrhina* Bigot at end of paper.

MESEMBRINELLA TIBIALIS, new species.

Male.—Head and its members yellow, the back, however, black except below inside the metacephalic suture; eyes nearly contiguous, separated by only the width of the front ocellus; parafacial very narrow, half as wide as the third antennal joint when viewed from in front; bucca one-tenth of head height; third antennal joint slender, two and a half times as long as the second.

Thorax brownish yellow on pleurae, humeri, and edges of dorsum; all its bristles stout. Chaetotaxy: dorsocentral 2, 3 (in all cases I mention the anterior before the posterior of the bristles); acrostichal 1, 1; humeral 2; posthumeral 1; presutural 1; supraalar 3; intraalar 2; postalar 2; sternopleural 1, 1; scutellum with 1 apical, 2 lateral, 1 discal (each side). Calypters rather brownish.

Abdomen narrowly yellow at base above, below yellow nearly to apex; second and third tergites violet on apical third, but this is not sharply divided from the color preceding it as in some species; first and second with only a lateral bristle, third with a marginal row of eight stout and erect, fourth with a discal row of eight and a marginal of about the same, all strong; fifth tergite visible as a distinct crescent at the base of the genital segments, the latter not prominent.

Coxae and femora yellow, all tibiae blackish, the front ones less so, all femora infuscated at tip.

Wings uniformly brown in color, hind cross vein oblique; fourth vein with rounded curve, at the extreme tip slightly recurved.

Length, 8.7 mm.

One male, Porto Bello, Panama, March 18, 1911 (August Busck).

Type.—Male, Cat. No. 25247, U.S.N.M.

MESEMBRINELLA PURPURATA, new species.

Male.—Like *tibialis* in almost every respect but lacking the anterior acrostichals and having a heavy subcostal brown stripe in the wing,

beginning at the tip of the auxiliary and filling the space in front of the second vein. The antennae are a little longer than in *tibialis*, reaching almost to the vibrissae; the bristles on the upper edge of the hind femur are longer and in a single row; the hind tibia is a little flattened and has the calcar almost at two-thirds its length, while in *tibialis* it is nearer the middle.

Length, 10 mm.

One male, Espirito Santo, Brazil, collector unknown, from Prof. O. A. Johannsen.

Type.—Male, Cat. No. 25845, U.S.N.M.

MESEMBRINELLA AENEIVENTRIS Wiedemann.

Dezia aeneiventris WIEDEMANN, Auss. Zweifl. Ins., vol. 2, 1830, p. 376.

Ochromyia nigrifrons BIGOT, Annales Soc. Ent. France, 1878, p. 39.

Mesembrinella nigrifrons BRAUER, Sitzungsber. Kais. Akad. Wien, vol. 108, 1899, p. 518.

Mesembrinella aeneiventris SURCOUF, Revis. Musc. Test., 1919, p. 68, pl. 3, fig. 5.—VILLENEUVE, Bull. Soc. Ent. France, 1920, p. 224.

The type locality is "Brazil," and Bigot's material was also from there. Brauer merely refers Bigot's type to *Mesembrinella*.

A male specimen from Peru, identified by Surcouf and mentioned by him in his revision, has been kindly sent me for study by Professor Bezzi. It is so nearly like my *tibialis* that I at first thought them the same. Having only the two males, one of each, the question can not be settled positively; however, there are at least two pretty fair distinctive characters, as indicated in the table. *Aeneiventris* has a large posthumeral bristle halfway between the presutural and the hindmost humeral and in the same line with them, which is absent in *tibialis*. The other posthumeral, present in both, is equidistant from the presutural and the foremost of the anterior dorso-centrals, and considerably anterior to the line connecting them. The Peruvian specimen does not have the third posthumeral mentioned by Surcouf. There is a smallish but distinct flexor bristle beyond the middle of the middle tibia in *tibialis*, which is absent in *aeneiventris*. The genitals are on the same plan in the two specimens, but the inner forceps are larger in *aeneiventris* (in the proportion of 17 to 14), and the outer are slightly broader and more rounded apically. I can detect no other differences.

Surcouf did not see the type of *aeneiventris*, nor that of *nigrifrons*, which he places as a synonym.

MESEMBRINELLA FACIALIS, new species.

Female.—Brownish yellow all over except the fourth abdominal segment and indistinct hind border of the third, running forward to a point in the median line, where the color is almost black, with no

or almost no reflections. Front one-fifth head width, orbital bristles distinct; facial ridges distinctly high all the way up, with numerous short, black hairs up to the middle of the third antennal joint. Thorax with the usual pollinose stripes not very distinct. Chaetotaxy: acrostichal 2, 1 (the prescutellar as large as the adjacent dorsocentrals); dorsocentral 2, 3; humeral 2; posthumeral 2; presutural 1; notopleural 2; supraalar 3; intraalar 2; postalar 2; sternopleural 2, 1; scutellum with 1 apical, 2 lateral, 1 discal. The hind calypter along its attaching membrane bears black hairs, close to the thorax, none on its disk.

Abdomen short, globose, with almost no metallic reflections whatever; fourth segment covered with brown pollen; first segment without bristles, second with one lateral, third and fourth with a marginal row of a dozen, fifth also with a distinct row above. Sternites wide, each bearing a complete apical row of six and a broken subbasal of about four short, spiny bristles.

Wings rather uniformly infuscated, second costal segment two-thirds as long as the third.

Length, 9.2 mm.

One female, Higuito, Costa Rica (Pablo Schild).

Type.—Female, Cat. No. 25248, U.S.N.M.

MESEMBRINELLA PAUCISETA, new species.

Female.—Head and thorax, base of abdomen, coxae, femora, and front tibiae yellowish brown; dorsum of thorax rather dark brown; middle and hind tibiae infuscated, the former darkest, almost black. Antennae, palpi, and proboscis yellow. Abdomen with narrow violet posterior bands on segments 2 and 3, presumably also on 4, but it is soiled. Pollinose stripes distinct in front on thorax as in *bicolor*. Chaetotaxy: acrostichal 0, 1; dorsocentral 2, 3; humeral 2; posthumeral 1; presutural 1; notopleural 2; supraalar 3; intraalar 1; postalar 2; sternopleural 1, 1; scutellum with 1 apical, 1 lateral, 1 discal. Abdomen with a distinct median marginal pair and a lateral on the third segment, on the fourth a few smaller at tip.

Wings lightly infuscated, with a dark stripe between costa and third vein on apical half; first posterior cell intercepting a portion of the costa about equal to the anterior cross vein.

Length, 10 mm.

One female, near Para, Brazil (Miss H. B. Merrill).

Type.—Female, Cat. No. 25249, U.S.N.M.

MESEMBRINELLA CYANEICINCTA Surcouf.

Ochromyia cyaneicincta SURCOUF, Revis. Musc. Testaceae, 1919, p. 69, female.

This species, which I have not seen, is said by Surcouf to be almost like *aeneiventris* Wiedemann, differing, however, in having no abdom-

inal bristles except a weak row on the tip of the fourth segment, while *aeneiventris* has marginals of larger size on both the third and fourth segments and discals on the fourth. Surcouf had only a single female from Brazil.

Length, 12 mm.; above the average size.

The type was from Brazil.

MESEMBRINELLA QUADRILINEATA Fabricius.

Musca quadrilineata FABRICIUS, Systema Antl., 1805, p. 286.

Mesembrina quadrilineata WIEDEMANN, Auss. Zweifl., vol. 2, 1830, p. 347.

Ochromyia flavipennis MACQUART, Dipt. Exot., vol. 2, pt. 3, 1843, p. 291, pl. 17, fig. 3.—SURCOUF, Revis. Musc. Test., 1919, p. 65, pl. 3, fig. 4.—VILLENEUVE, Bull. Soc. Ent. France, 1920, p. 224.

I have seen no material identified by Doctor Surcouf as *flavipennis*, but specimens agreeing well with his description have been received. I follow suggestions received from Maj. E. E. Austen, of the British Museum, in selecting this as the true *quadrilineata*, in spite of the supposed type examined by Surcouf. It is apparent from the original description and that of Wiedemann that the type of *quadrilineata* had a dark subcostal stripe, while the specimen received by Surcouf had no such mark. This would seem to oblige us to choose for the true *quadrilineata* between *randa* and *flavipennis*; the additional character mentioned by Fabricius, "Abdomen violaceum, nitidum" applies much better to the latter than the former. Doctor Villeneuve states that the type of *flavipennis* has no calcar on the hind tibia, but if I interpret this correctly the bristle is merely smaller and higher up than usual, at or above the middle.

Male.—Front fully twice as wide as the ocellar triangle, the median stripe very narrow above, the parafrontals light golden yellow, nearly as wide as the parafacials. Chaetotaxy: humeral 2; post-humeral 1 (anterior); acrostichal 0, 1; dorsocentral 2, 3; presutural 1; notopleural 2; supraalar 3; intraalar 2; postalar 2; sternopleural 2; scutellar 1 lateral, 1 apical, and a small discal; first abdominal segment with several at the side; second with only one; third with a widely spaced row of stout marginals; fourth with small marginals. General color yellow, the mesonotum behind and the scutellum nearly black; abdomen with about the apical third bluish violet; mesonotum with four distinct pollinose stripes, reaching the scutellum. Legs yellow, the middle and hind tibiae brown, slightly flattened, with only small bristles; these and their femora elongated, the latter slender. Wings longer and narrower than usual, yellowish brown in color, with heavy black subcostal stripe beginning beyond the auxiliary.

Female.—Front two thirds as wide as one eye, blackish above; most of the abdomen bright purple, highly polished; femora less elongated, the middle ones stouter.

Length, 11 to 11.5 mm.

Redescribed from one male and one female, Cauri Valley, Venezuela (Boston Society of Natural History, correctly identified by C. W. Johnson); one female, Kiaeteur, British Guiana (American Museum); and a pair from British Guiana (British Museum).

MESEMBRINELLA RANDA Walker.

Dexia randa WALKER, List Dipt. Ins., vol 4, 1849, p. 852.

Ochromyia quadrilineata FABRICIUS of Surcouf, Revis. Musc. Test., p. 66, text fig. 5, and pl. 3, fig. 2.

Male and female.—Greatly resembling *quadrilineata*, but less brightly colored. The front of the male is the same, and also the pollinose thoracic stripes; the abdomen, however, is slightly pruinose and bluish, not polished purple, and the third segment lacks the stout marginal row. This last is the main structural difference, as the chaetotaxy is otherwise the same. The middle and hind tibiae are as in *quadrilineata*, their femora, however, hardly so slender and elongated.

Length, 10 to 11.5 mm.

One male and one female, Brazil (British Museum), compared with the type of *randa* by Major Austen.

Five additional females agree, but lack the subcostal blackish stripe in the wing, thus corresponding with the supposed type of *quadrilineata* which was redescribed by Surcouf. I can hardly make this out a distinct specific character here, though it seems usually constant. One of these females was from French Guiana, sent me by Professor Bezzi, identified as *quadrilineata* by Surcouf and mentioned in his Revision; two are from Kiaeteur and one from Tukeit, in British Guiana (American Museum); the other from Surinam (Johannsen).

MESEMBRINELLA DORSIMACULA, new species.

Male.—A rather slender yellow species, with the blue color on the abdomen very distinct but reduced to much smaller area than usual. Wholly yellow except the scutellum and a large spot immediately before it, which are deep brown and somewhat metallic; and a blue area including the fourth abdominal segment, most of the third above, and a small median posterior spot on the second; middle and hind tibiae brown. Front at narrowest at least twice the width of the ocellar triangle. Chaetotaxy: acrostichal 0, 1; dorsocentral 2, 3; humeral 2; posthumeral 1; presutural 1; notopleural 2; supraalar 3; intraalar 2; postalar 2; sternopleural 1, 1; scutellum with 1 apical, 1 lateral, 1 discal.

First abdominal segment with a well-developed vertical row of five bristles at the side (laterals); second with only one; third with scattered marginal row of six ending abruptly at the side; fourth with

only a few weak marginals. Genital segments small, brown, the fifth abdominal not visible at their base; fifth sternite small, yellow, with V-shaped incision, no apical bristles.

Femora rather slender; middle and hind tibiae brown, somewhat swollen, the latter especially are nearly as large as their femora.

Wings yellow, more brown apically, with a well-marked brown subcostal stripe beyond middle, which is as usual not sharply limited.

Length, 11 mm.

One male, Brazil, "Collection Coquillett," collector unknown.

Type.—Male, Cat. No. 25250, U.S.N.M.

MESEMBRINELLA (MESEMBOLIA) BELLARDIANA, new species.

Mesembrinella quadrilineata FABRICIUS, Giglio-Tos, Boll. R. Univ. Torino, vol. 8, No. 147, 1893, p. 4; Ditteri del Messico, pt. 4, 1895, p. 12.—SURCOUF, Revis. Musc. Test., 1919, p. 75.

Mesembrinella quadrilineata GIGLIO-TOS, not Fabricius, Surcouf, Revis. Musc. Test., 1919, p. 75.

Inasmuch as Surcouf placed the Fabrician species in *Ochromyia*, he recognized the name of Giglio-Tos as valid for the present one, crediting Giglio-Tos with the authorship. In combining his genera I am obliged to find a new name for the latter species. Since Bellardi was the one who first identified the specimens, I commemorate his work on the Mexican Diptera in the name I choose.

Female.—This species is of general brownish-yellow color, the abdomen except the base metallic blue green. Front about 0.23 of head width, with two orbitals and one pair of cruciate bristles; facial ridges depressed in the middle, hairy from vibrissae up to lower third of antennal joint; palpi large and broad; proboscis small; bucca one-sixth the eye height. Thorax dark brown dorsally. Chaetotaxy: acrostichal 2, 1; doroscentral 2, 3; humeral 2; posthumeral 2; presutural 2; notopleural 2; supraalar 3; intraalar 2; postalar 2; sternopleural 2, 1; scutellum with 1 apical, 2 lateral (both close to base), 1 discal.

Abdomen metallic blackish green above from beyond middle of second segment, below only from middle of third segment. Third and fourth abdominal segments with weak marginal row of bristles.

Legs yellow; hind femora with dense row of hairs above to beyond middle and one bristle beyond at second third of length. Wings brownish, with a heavy blackish subcostal stripe beginning at tip of auxiliary; beyond tip of second vein is a small paler spot, and a very narrow one lies beyond the tip of the first vein. First posterior very wide open, the intercepted costal segment being half as long as the hind cross vein.

Length, 12 mm.

One female, Brazil, collector unknown; three females from Bavarian State collection, from Espirito Santo, Brazil; four females in Professor Bezzi's collection, two being from Archidona, Ecuador; one from Puerto Bertoni, Alto Parana, Paraguay; one from Santo Catharina, Brazil. These four specimens were referred by Surcouf to *Mesembrinella quadrilineata* Giglio-Tos, on comparison with the Giglio-Tos type. One female, Huachi, Bolivia, collected by Dr. Wm. M. Mann. Two females, Espirito Santo, Brazil, from Professor Johannsen's collection.

Type.—Female, Cat. No. 25251, U.S.N.M., from Brazil.

MESEMBRINELLA (MESEMBOLIA) FULVIPES, new species.

Female.—Head yellow; thorax yellow, a little brownish dorsally; abdomen yellow, the second segment a little metallic above and the third and fourth wholly metallic blue green. All the hairs and smaller bristles are golden or fulvous yellow on the head, thorax except dorsum, base of abdomen on the sides and below, coxae, femora, and tibiae; even the hypopleural bristles have this color. Thoracic chaetotaxy: acrostichal, 3 anterior, 2 posterior; dorsocentral 3, 3; humeral 3; interhumeral 1; posthumeral 2; presutural 2; notopleural 2; supraalar 5 on left, 3 and a small on right; intraalar 2; postalar 2; scutellar 1 apical, 1 lateral, 1 discal (far apart); sternopleural 3, 1 on right, 2, 1 on left. Third and fourth abdominal segments with a few rather stout marginal bristles above.

Legs entirely fulvous, only the apical part of tarsi darkened by black hairs. Wings but little infuscated except the heavy subcostal stripe; apical cell very broad, its opening in costa more than half the preceding costal section.

Length, 13 mm.

One female, Espirito Santo, Brazil, from the Bavarian State collection; and one male not very well preserved, from the same locality, in Professor Johannsen's shipment.

Type.—Female, Cat. No. 25252, U.S.N.M.

MESEMBRINELLA (MESEMBOLIA) PEREGRINA, new species.

Male.—Eyes practically contiguous on the front, separated by less than the width of the anterior ocellus; head yellow except upper half behind, the antennae, palpi, and proboscis also yellow. Thorax brownish above with glaucous pruinosity, chaetotaxy as follows: acrostichal 2, 3; posthumeral 2; humeral 3; notopleural 2; intraalar 2; postalar 2; scutellum with 1 lateral near base, 1 discal, 1 apical; sternopleural 1, 1, and sometimes 1 lower very small. Abdomen mostly blue, shading gradually to yellow toward the base. Third segment with a row of 10 smallish marginals; fourth segment with erect hairs, among which are scattered a few more than twice as

long, also erect, the marginals not larger than the latter. Legs wholly yellow, the tarsi darker toward the tips. Wings rather uniformly infuscated, still a little deeper clouding follows the main veins and the cross veins, especially the anterior cross vein. Apical cell with a narrow opening, hardly as long as anterior cross vein.

Length, 9.2 and 9.5 mm.

Two males, Espirito Santo, Brazil, from the Bavarian State Museum.

Type.—Male, Cat. No. 25887, U.S.N.M.

Three females, Espirito Santo, Brazil (Professor Johannsen), agree with the males. The front is rather narrow, about half the width of one eye.

OTHER SPECIES NEAR MESEMBRINELLA.

Calliphora xanthorhina BIGOT, Bull. Soc. Ent. France, 1887, p. 180; Bull. Soc. Zool. France, vol. 12, p. 602. (*Somomyia*.)

The type, from Mexico, was referred to *Mesembrinella* by Brauer.⁶ The description gives legs black; wings pale grey with small cross-vein infuscated. These characters are different from anything included herein. The "*chrysorrhæa* Mcq." referred to by Brauer in this connection is a MS. name by Moritz, not Macquart, on a specimen in the Imperial Museum; see Brauer.⁷ The type of *xanthorhina* is in Mr. J. E. Collin's collection, but he writes me that it has been loaned for study; he thinks it the same as *M. cruciata* Townsend, but I do not venture to change the name until the type is examined.

Calliphora femorata WALKER, Trans. Ent. Soc., n. ser., vol. 5, 1858, p. 310.

From Mexico. Major Austen has examined the type, and writes me that it is a *Hemilucilia*; from this I should judge it a synonym of *segmentaria*.

Ochromyia fuscipennis MACQUART, Dipt. Exot., vol. 2, pt. 3, 1843, p. 292, female, pl. 17, fig. 2.

From Brazil. Only 8 mm. long, and the figure shows an appendage to the fourth vein at the bend. However, the description reads much like a *Mesembrinella*, and Macquart compares the specimen with *bicolor* Fabricius. Can not be identified from the description.

Ochromyia gigas MACQUART, Dipt. Exot., Suppl., vol. 1, 1846, p. 324, pl. 17, fig. 9.

From Brazil. Almost certainly not a *Mesembrinella*, as the colors are yellow and black, with no reference to blue or green; 16 mm. long; abdomen yellow, with black apex, segments 1-3 with small median dorsal spot at hind edge.

⁶ Sitzungsber. Kais. Akad., vol. 108, p. 526.

⁷ *Idem.*, vol. 104, 1895, p. 596.

LITERATURE.

- BRAUER, F., 1895. Bemerkungen zu einigen neuen Gattungen der Muscarien und Deutung einiger Original-Exemplare. Sitzungsberichte der kaiserlichen Akademie der Wissenschaften, Math.-Naturwiss. Classe, vol. 104, pp. 582-604.
- BRAUER, F., and BERGENSTAMM, J. E., 1893. Zweiflügler des Kaiserlichen Museums zu Wien, pt. 6. Denkschriften der Math.-Naturwiss. Classe der Kaiserlichen Akademie der Wissenschaften, vol. 60, pp. 89-240.
- COQUILLET, D. W., 1900. Descriptions of Two New Species of Diptera from Western Australia. Proc. Linn. Soc. New South Wales, 1900, pp. 389-390.
- GIGLIO-TOS, E., 1893. Diagnosi di nuovi generi e di nuovi specie di Ditteri. Boll. Mus. Zool. ed Anat. Comp. R. Univ. Torino, vol. 8, No. 147.
- 1895. Ditteri del Messico. Parte 4. Mem. R. Acc. Sci. Torino, ser. 2, vol. 45, sep. pp. 1-73, 1 pl.
- MACQUART, J., 1835. Histoire naturelle des Insectes. Diptères, vol. 2, 703 pp., with 24 plates. In the series called Suites à Buffon.
- 1843. Diptères exotiques nouveaux ou peu connus, vol. 2, pt. 3. Mémoires de la Société des Sciences et des Arts de Lille, pp. 161-460.
- ROBINEAU-DESVOIDY, J. B., 1830. Essai sur les Myodaires. Mémoires présentés par divers Savans à l'Académie Royale des Sciences de l'Institut de France, vol. 2, pp. 1-813.
- SURCOUF, J. M. R., 1919. Revision des Muscides Testaceae. Nouvelles Archives du Museum d'Histoire naturelle, ser. 5, vol. 6, pp. 27-124, 4 plates and text figures. Dated 1914, but the cover of the fascicle states that it was published in December, 1919. It was apparently not distributed before May, 1920.
- 1920. Sur une critique recent de J. Villeneuve. Bulletin de la Société entomologique de France, 1920, No. 15, pp. 249-251.
- VILLENEUVE, J., 1920. A propos de la Revision des *Muscidae testaceae* de J. Surcouf. Bulletin de la Société entomologique de France, 1920, No. 14, pp. 223-225.