FAUNA BURUANA.

DIPTERA, Fam. Muscidae.

By

J. R. MALLOCH.

In the collection before me I find 33 species. A few of these are quite generally distributed throughout the Orient and Australasia, but a number of others are new. The proponderant genus is *Dichaetomyia* MALLOCH, the habits of the larvae of which are unknown. It is impossible to arrive at any other conclusion, based upon the paucity of examples of the represented species, than that there must be many more species still undiscovered on the island. In two of the genera I have presented keys to the species, as in this manner comparative data are given which one would otherwise have to obtain from a careful perusal of the descriptions, a more tedious and less satisfactory course.

Subfamily **ANTHOMYIINAE.**

As is usual in tropical regions this subfamily is comparatively poorly represented, only two genera being amongst the material, and each with one species.

Anthomyia illocata WALKER.

One female of this species, Station 1, 11. XII. 1921.

This and several other of the widely distributed species occurring at Station I have apparently been introduced by trading vessels.

Genus **Taeniomyia** STEIN.

This genus occurs in Central America and Africa; the species known to me are very similar in appearance to those of *Emmesomyia* MALLOCH and the yellowish species of *Pegomyia* ROBINEAU-DESVOIDY.

Taeniomya nigrithorax sp. n.

Male. — Head black, white dusted; antennae, arista, and palpi, brownish black. Thorax shining black, with brownish dusting on dorsum, more greyish on sides and pleura, no vittae distinguishable on dorsum. Abdomen

shining, brownish testaceous, with slight white dusting on dorsum, the tergites with narrow dark apices. Legs dusky testaceous, the femora pitchy. Wings yellowish hyaline. Calyptrae and halteres yellow.

Narrowest part of frons a mere line; parafacial in profile eliminated below; cheek not as high as width of third antennal segment, the latter broad, and about five times as long as second; arista with hairs to apex, the longest fully twice as long as greatest diameter of arista; palpi normal. Thorax with two pairs of long presutural acrostichal bristles which are rather close to the dorsocentrals, and have about four series of hairs between them; prealar short but distinct; three or four setulae on pteropleura. Abdomen flattened, fifth sternite with the processes of moderate length and not abnormally bristled. Fore tibia with a median posterior bristle; mid femur with two or three fine posteroventral bristles on basal half; mid tibia with three posterior bristles; hind femur with a series of rather short widely spaced anteroventral bristles and some short setulae apically on posteroventral surface; hind tibia with one anterodorsal, one posterodorsal, and three anterodorsal bristles, all short. Inner cross vein at two-fifths from apex of discal cell; first posterior cell slightly narrowed at apex; third vein setulose at base above and below. Lower calypter much larger than upper.

Length, 5 mm.

Type, Station 9, 15. V. 1921.

Subfamily **LISPINAE.**

The members of this subfamily so far as known occur in the larval and pupal stages in aquatic surroundings, sometimes in the muddy bottoms of deep streams, and saline lakes, while the flies are found along the shores of rivers, lakes, and other bodies of water.

But two species are in this collection, both being already described.

Lispa bivittata STEIN.

A black species with much the appearance of a *Xenolispa*. Palpi and antennae black. Thorax black, with central part of dorsum grey dusted, a broad blackish vitta laterad of each series of dorsocentrals, and a faint brown vitta in centre. Abdomen with a conspicuous, large, white dusted, spot on each side of each tergite. Legs black, mid and hind tibiae yellowish at bases. Wings hyaline. Halteres yellow.

Arista plumose. Thorax with two pairs of strong prescutellar dorsocentrals, the others extremely inconspicuous; sternopleurals 3; centre of hypopleura bare. Fore tibia without, mid tibia with, a median posterior bristle; hind femur in male with, in female without, a median anteroventral bristle, both sexes with an apical posteroventral bristle; hind tibia with an anteroventral and an anterodorsal bristle at middle. First posterior cell

slightly narrowed at apex; inner cross vein at three-sevenths from apex of discal cell.

Length, 5 mm.

Locality, male and female, Station 9, 30—31. V. 1921.

Lispa cana WALKER.

This species occurs in Australia and a comparison of the female before me with those from that continent which I have shows no differences whatever.

A very striking character of the species apart from the densely pollinose frons, face, and cheeks in the female, is the presence of a group of black setulose hairs on the hypopleura below the spiracle similar to the one on the pteropleura. Usually the hypopleural hairs are on the lower posterior angle, but in *cana* there are no such hairs present there.

Locality, Station 2, 16. I. 1922.

Subfamily **PHAONIINAE.**

This is the most abundantly represented subfamily in the Orient, and contains some forms that are more or less intimately associated with human habitations, though not to the same extent as are those of the subfamily *Muscinae.*

Genus **Lispocephala** POKORNY.

This genus in the Orient contains a number of segregates some of which may ultimately be recognized as subgenera, or even as distinct genera. In the material before me I find three species, only one of them represented by both sexes. All of them appear to be undescribed.

I present a key for the separation of the species.

Key to species.

1. Fore coxae and all femora black; outer cross vein at less than its own length from apex of fifth vein; anterior intra-alar bristle present ..... *proxima* sp. n.
— Fore coxae and all femora yellow; outer cross vein at much more than its own length from apex of fifth vein 2

2. Abdomen black, densely grey dusted, with three black spots on each tergite from second to fourth inclusive; anterior intra-alar present ..... *ciliata* sp. n.
— Abdomen testaceous yellow, grey dusted apically, and with a pair of black spots on fourth tergite; anterior intra-alar bristle absent ..... *bipuncta* sp. n.

Lispocephala proxima sp. n.

Female. — Head black, orbits, triangle, face, cheeks, and occiput, densely grey dusted; antennae black, second segment whitish dusted, third pale yellow; palpi yellow. Thorax black, slightly shining, densely grey dusted, with three rather broad, but inconspicuous, brown vittae, and a faintly indicated brown line along the series of dorsocentrals; sides of scutellum darkened. Abdomen fuscous, yellowish at base, densely grey dusted, with three black spots on second tergite, three on third, and two on fourth. Legs testaceous yellow, coxae and femora black. Wings hyaline. Calyptrae and halteres whitish.

Head from in front very distinctly wider than high; frons a little over one-fourth of the head width at vertex, over one-third at anterior margin; triangle continued to anterior margin, and, like the orbits, densely grey dusted, the interfrontalia black; ocellars much longer and stronger than postverticals; third antennal segment slender, about five times as long as second; arista long plumose. Thorax with the anterior pair of presutural dorsocentrals very small; anterior intra-alar moderately long; some hairs between the sternopleurals. Mid tibia with one posterior median bristle; hind femur with sparse anteroventral and posteroventral bristles; hind tibia with only one posterodorsal bristle, the anterodorsal pair long, anteroventral bristle short. Inner cross vein at middle of discal cell.

Length, 4 mm.

Type, Station 1, 13. XII. 1921.

Lispocephala ciliata sp. n.

Male and female. — Head colored as in *proxima*, but the third antennal segment is slightly darkened apically, and the palpi are black or fuscous. Thorax black, densely grey dusted, rather faintly vittate on dorsum. Abdomen colored as in *proxima*, but not yellow at base; fifth sternite of male yellow. Legs including coxae testaceous yellow. Wings hyaline. Calyptrae and halteres yellowish white.

Head about as high as wide; frons a little over one-fourth of head width, not much widened anteriorly; ocellar bristles short and fine, as long as postverticals; third antennal segment about twice as long as second; arista with its longest hairs fully as long as width of third antennal segment. Thorax with the anterior presutural dorsocentrals almost or quite indistinguishable, and the anterior intra-alars small but distinct. Fifth sternite in male with a dense fringe of short stiff black hairs along the inner sides of the processes; fifth tergite longer than base of hypopygium in same sex, forceps long, slender, tapered to a point. Mid tibia with a posterior median bristle; hind femur with sparse ventral bristles; hind tibia with anteroventral, the two posterodorsal, and the upper anterodorsal, short, the other anterodorsal bristle long. Inner cross vein a little before middle of discal cell

in male, a little beyond it in female; first posterior cell widened apically in male, not noticeably so in female. Lower calypter not projecting as far as upper.

Length, 3—3.5 mm.

Type, male, allotype, and two male paratypes, Station 9, 17-18. V. 1921, 4. VI. 1921.

This species is abnormal in having the lower calypter smaller than the upper, a character usually considered as of generic import in this subfamily, where it is usually the larger of the two.

Lispocephala bipuncta sp. n.

Female. — Similar to the preceding species, but the dorsum of thorax is brownish, the ocellar bristles are longer, the first posterior cell of wing is widened apically in female, and the lower calypter is distinctly protruded beyond the upper. For other characters see key to species.

Length, 3.5 mm.

Type, Station 9, 10. V. 1921.

Genus **Pygophora** SCHINER.

This genus was originally distinguished from its allies by the presence of a prominent blunt process at apex of hind tibia on its under side in the male. STEIN has cited this also as the salient character but there are some species in which there is no indication of this process in the male, and it is never present in the female of any species. I have cited in one or two of my recent papers on this family the characters which distinguish the genus from its closest relatives. These lie in the arrangement of the frontal and tibial bristles and are dependable for the separation of the genus in both sexes from *Lispocephala*, to which genus it is most nearly related.

There are at least two species in the material before me; the series of females which I deal with under *setiventris* may not belong to that species, but they possess no outstanding characters which permit of a dogmatic opinion, so I have included them tentatively under it.

Pygophora setiventris sp. n.

Male. — Frontal orbits, face, antennae, and upper part of cheeks, golden yellow dusted, interfrontalia dull brownish yellow; palpi whitish yellow; occiput densely grey dusted; arista yellow, darker apically. Thorax black, densely and uniformly grey dusted. Abdomen semipellucid yellow, a dark mark in centre of second tergite, three blackish spots on third, and nearly all of fourth and fifth tergites black, the two last grey dusted and fourth with three dark spots; processes of fifth sternite yellow. Legs entirely yellow, the fore coxae very slightly greyish at extreme base on outer side. Wings hyaline. Calyptrae white. Halteres yellow.

Ocellars small; head normal. Anterior pair of presutural dorsocentrals minute; both pairs of intra-alars small. Abdomen compressed from fourth segment apicad, the fourth tergite with a quite pronounced central apical elevation which has rather long slender bristles at apex that are directed backward and slightly downward giving it a tufted appearance, the sides of this tergite with many outstanding bristly hairs which are curved upward at apices, and its extreme lateral margins with many long curled bristles which curve downward and inward; fifth tergite with finer and shorter bristly hairs on sides, and some longer hairs at apex which project backward; fifth sternite with very broad chitinous processes. Mid femur with a few fine but not very long posteroventral and anteroventral bristles basally; hind femur with three bristles forming a rather noticeable group basad of middle, and some bristles on apical half, the posteroventral surface similarly armed but the median bristles only two in number and longer; hind tibia without an apical ventral process, the bristles as usual, but rather short. Inner cross vein beyond middle of discal cell; outer cross vein at a little less than its own length from apex of fifth vein.

Length, 6 mm.

Type, Station 21, 10. I. 1922.

This species runs down to *immaculipennis* FREY in my key to the species of this genus published in the Annals and Magazine of Natural History, volume 10, 1922, page 380. The three species from the Orient known to me that run to this point may be separated in the male sex as indicated below.

1. Mid femur with short comb-like bristles on ventral surface of apical half; mid tibia with a submedian anterodorsal bristle ..... *immaculipennis* FREY
— Mid femur without comb-like ventral bristles apically..... 2

2. Fourth and fifth abdominal tergites with only sparse straight bristles or setulae on sides, the apex of fourth in centre with the usual number of strong bristles, not appearing tufted; mid tibia with a submedian anterodorsal bristle .... *macularis* WIEDEMANN
— Fourth and fifth abdominal tergites with quite closely placed fine erect setulose hairs which are curved upward at apices, the apex of fourth in centre with numerous long black bristles giving it a tufted appearance; mid tibia without a submedian anterodorsal bristle ..... *setiventris* sp. n.

There are two species in which the males have the fourth and fifth, and in one case the third, tergites furnished with rather conspicuously closely set black bristles, but in these the bristles are scale-like or lanceolate,

and the species are exceptionally small for this genus, averaging about 3.5 mm. in length. One of these, *minuta* MALLOCH, is Australian, the other, *lepidofera* STEIN, occurs in Formosa.

Four female specimens before me may belong to *setiventris*. They differ in having the orbits etc. more greyish yellow, the fore coxae a little more noticeably greyish at base, the wings slightly yellowish, especially along the veins, the anterodorsal surface of fore tibia with the two setulae stronger, and the posterior bristle on same tibia extending to apex, the bristles on all tibiae and femora stronger, and the fourth vein with a very slight indication of a forward curvature at apex.

Locality, Station 9, 15—31. V. 1921.

Pygophora nitidiventris sp. n.

Female. — Differs from the females above mentioned in having the abdomen testaceous yellow, with a shining fuscous mark on each tergite covering the entire surface except a narrow apical margin, the mark on fourth tergite much smaller than on the other tergites, and on all tergites tapered at lateral extremities. Wings greyish hyaline.

Structurally similar to *setiventris*, but there are no setulae on the anterodorsal surface of fore tibia, the posterior bristle on same tibia does not extend to apex; the mid tibia, as in that species, has no median anterodorsal bristle; the hind femur has a very long bristle near base on posteroventral surface, and one near apex on anteroventral, the other bristles on latter surface much shorter than usual; inner cross vein not beyond middle of discal cell; outer cross vein at its own length from apex of fifth vein.

Length, 3.75 mm.

Type, Station 9, 19. V. 1921.

A rather small species which is distinguished from its congeners by the shining fuscous markings of the abdomen, all others known to me having the abdomen with distinct dorsal spots, usually in threes, on at least the apical two or three tergites.

Genus **Atherigona** RONDANI.

There are three species of this genus in the collection, each represented by one specimen. One of these, *excisa* THOMSON, is the most widely distributed in the genus, and occurs in the larval and pupal stages in decaying fruits and vegetables; another is a species which I recently described from India, the immature stages of which occur in the stems of rice; while the third; one is undescribed, and is a very striking large form wich has its nearest relatives in the Orient.

Atherigona excisa THOMSON.

One female, Station 4, March 1921.

Atherigona oryzae MALLOCH.

One male, Station 9, 29. V. 1921.

This specimen has a very slight infuscation at apices of the fore femora that is not present in the type series of the species, but in other respects it is identical with the males before me from India.

Atherigona bivittata sp. n.

Male. — Head black, interfrontalia seen from the side dark brown, orbits, parafacials, cheeks, and postocular orbits, densely greyish white dusted, central part of occiput less densely dusted; antennae, arista, and palpi, black, apices of latter densely whitish haired. Thorax black, densely grey dusted, with two dark brown vittae on dorsum, and a similarly colored streak along notopleural suture from behind humerus to base of wing; scutellum with a brown mark at base. Abdomen fuscous on dorsum, yellowish on sides, densely pale grey dusted, and with two conspicuous black vittae from base to apex on dorsum, which are transversely connected in front, and taper a little at both extremities; hypopygium yellow. Legs black, apices of femora narrowly yellowish. Wings clear. Calyptrae and knobs of halteres white.

Fig. 1. Hypopygial prominence of *Atherigona bivittata* male, from above. Much enlarged.

Each orbit with about six bristles; arista slightly thickened on more than its basal third, second segment over twice as long as thick, pubescence on third segment very short; palpi of the short apically dilated type, the basal bristles strong. Anterior dorsocentrals very short and weak; a number of strong setulose hairs between the sternopleural bristles. Abdomen elongate ovate, the hypopygium quite prominent and slightly compressed; hypopygial prominence consisting of a thick stem with a short rounded process on each side at apex projecting at right angles (Fig. 1), the stem of the trifoliate process slender and very long. Fore femur normal, with a distinct preapical posteroventral bristle; fore tibia with setulose hairs on anterodorsal surface which become gradually longer apically, those at apex longer than the tibial diameter, the two dorsal apical bristles short, the posteroventral one minute; fore tarsus compressed, the posterior hairs distinctly longer than thickness of segments, those on posterior side very long and bristlelike, all distinctly longer than the segments upon which they are situated; mid and hind legs normal, the hind femur without anteroventral bristles. Inner cross vein a little before middle of discal cell; penultimate and ultimate sections of fourth vein subequal in length; first posterior cell a little narrowed at apex; outer cross vein curved but erect.

Length, 6.5 mm.

Type, Station 6, 11. III. 1922.

This is one of the largest species of the genus and may be readily distinguished from its congeners by the conspicuously bivittate abdomen, almost entirely black legs, and peculiarly haired fore tibiae and tarsi. It has the fore tarsi haired much as does *longiseta* MALLOCH, but that species has the basal segment of that tarsus dilated at base, tapered to apex, and the remainder of tarsi more slender than in *bivittata*, the abdomen is marked as usual in *longiseta*, with dorsal spots, and not conspicuously bivittate, the basal two antennal segments are pale, and the fore tibia has no outstanding setulose hairs. The hypopygial prominence is the same shape in both spcies.

Genus **Helina** ROBINEAU-DESVOIDY.

This genus is abundantly represented in the Palearctic and Nearctic regions, but is much scarcer in other regions. There is but one species from Buru before me.

Helina isolata sp. n.

Female. — Head fuscous, with pale grey dusting, the interfrontalia when seen from the side and above opaque blackish, the narrow triangle greyish; base of third antennal segment reddish. Thorax testaceous, dorsum broadly brownish, with two narrow submedian, and two broad sublateral, dark brown vittae, the intervening spaces whitish dusted; pleura largely blackened. Abdomen ochreous yellow, shining. Legs colored as abdomen, tarsi black. Wings yellowish hyaline, the cross veins very slightly clouded. Halteres yellow.

Frons less than one-third of the head width, widened anteriorly, each orbit with two strong backwardly curved upper bristles which are about as long as outer vertical and half as long as inner, anterior incurved orbital very long, and above it one or two short weak bristles; ocellar bristles as long as inner verticals; third antennal segment about four times as long as second; arista plumose; parafacial not evident from side on greater part of its length; cheek not as high as width of third antennal segment; palpi slender. Thorax with very strong dorsal bristles, the dorsocentrals 2 + 3, both pairs of intra-alars present, the anterior pair in transverse line with anterior postsutural dorsocentrals; prealar very short; prescutellar acrostichals not very long; stigmatal bristles three in number; sternopleurals 3. Abdomen without well developed apical or discal bristles medianly. Fore tibia with an anterodorsal and a posterior median bristle; fore tarsus about one-third longer than fore tibia; fore femur with the posteroventral bristles very weak basally, the apex on anterior side produced slightly as a scale on all femora; mid femur with four or five apical posterior bristles; mid tibia with three posterior bristles; hind femur with one or two preapical anteroventral bristles; hind tibia with two anterodorsal and four or five short anteroventral bristles. Veins 3 and 4 parallel at apices;

costal thorn well developed; inner cross vein close to middle of discal cell.

Length, 7 mm.

Type, Station 12, 4. II. 1922.

Genus **Ophyra** ROBINEAU-DESVOIDY.

The only species of this genus in the collection is one met with rather generally in the Orient and Australasia. The larvae of the genus so far as I know are scavengers, feeding in manure and decaying matter of different kinds.

Ophyra nigra WIEDEMANN.

Three males and one female, Station 1, 15. XII. 1921; 18. I. 1922.

Genus **Heliographa** MALLOCH.

This genus contains species which were originally placed in *Limnophora* ROBINEAU-DESVOIDY. Like that genus it has the prosternum and base of third vein setulose, but the apical portion of first vein is furnished with short setulae which are not present in *Limnophora* in the restricted sence.

There are two species in the collection.

Heliographa tonsa (STEIN).

Two males which agree with the description of the genotype except in having the arista short haired, the longest hairs being nearly twice as long as basal diameter of arista.

Station 9, 18. V. 1921.

Heliographa aurantiaca (STEIN).

One male agrees well with the description of this species except that the abdominal markings are more distinct than would appear to have been the case in the type series.

Station 7, 21-30. IX. 1921.

Genus **Xenosina** MALLOCH.

This genus is exclusively Oriental so far as I know at this time. There is but one species in the collection, and though it is represented by females only it appears to be sufficiently well distinguished from its congeners to justify me in describing it.

Xenosina toxopei sp. n.

Female. — Head black, grey dusted, interfrontalia less noticeably dusted than other parts; antennae black, second segment yellowish above; arista brownish; palpi black. Thorax tawny yellow, dorsum mostly fuscous,

grey dusted, and with four narrow black vittae; most of sternopleura, hypopleura, and postnotum, a mark near centre of mesopleura, and another below base of wing, fuscous; scutellum entirely pale. Abdomen brownish black, basal three segments more distinctly shining and less noticeably dusted than fourth, the latter quite densely white dusted. Legs, including all coxae, tawny yellow. Wings yellowish hyaline, more noticeably along the veins. Calyptrae and halteres yellow.

Frons at vertex barely over one-fifth of the head width, slightly widened to anterior margin; postvertical bristles short and stout; ocellars long; orbits setulose on their entire length; arista plumose; third antennal segment about three times as long as second; palpi normal. Thorax with 2 + 4 dorsocentrals; prealar very short; scutellum elongate, the hairs descending a little below bristles on sides, one series quite noticeable; stigmatal bristle duplicated; sternopleura haired to upper margin; hypopleura haired on upper margin in front of spiracle. Abdomen ovate; basal sternite haired; bristles on apex of third and disc of fourth tergites longer than those on apex of fourth. Fore tibia without a median posterior bristle; mid tibia with three posterior bristles; hind femur with a series of anteroventral and no posteroventral bristles; hind tibia with two anterodorsal and one or two anteroventral bristles. First vein setulose at middle above and below; setulae on third vein extending well beyond inner cross vein on under side, falling short of that vein on upper side; fourth vein distinctly, but not conspicuously, bent forward at apex.

Length, 8 mm.

Type, Station 12, 4. II. 1922, 1200 m. Paratypes, Station 9, 9. VI. 1921; and Station 13, 29. VIII. 1921.

This species will run down to *morosa* (STEIN) in my key to the species of this genus published in the Philippine Journal of Science, volume 26, page 509, 1925, but is readily distinguished from that species by the yellow scutellum and partly yellow pleura as well as by other characters.

Named in honor of the collector.

Genus **Dichaetomya** MALLOCH.

This genus is a very large one, and is found in Africa, southern Asia, the entire Orient, including the numerous islands in the Indian and South Pacific, and in northern Australia. Of the species before me two have the wings very conspicuously blackened on the apical halves or more, and in this respect are similar to a species known to me from Fiji, the only region I have previously seen this type of wing coloration from. The other species in the collection have no very characteristic features and resemble the general run of species of the genus throughout most of its range. I have drawn up a key for the separation of the species from Buru, and though it is based largely upon color characters I believe that these are sufficiently

constant in this genus to be reliable guides to specific identities. There are no doubt more species yet to be taken on the island, and it remains for some naturalist to discover what the larval habits of the genus are.

Key to species.

1. Wings very conspicuously bicolored, yellow at bases, blackish on more than the apical halves; thorax with three pairs of postsutural dorsocentrals; no hairs on metathorax below lower calypter, nor on first wing vein below at base; femora largely black 2

— Wings not conspicuously bicolored, if faintly so the femora are yellow 3

2. Fore tibia with a posterior bristle near middle; tarsi yellow, fore pair slender ..... *buruensis* sp. n.

— Fore tibia without a posterior bristle near middle; tarsi fuscous, fore pair slightly thickened ..... *semifumosa* sp. n.

3. Thorax with four pairs of postsutural dorsocentrals 7

— Thorax with three pairs of postsutural dorsocentrals 4

4. Femora entirely black 5

— Femora entirely or almost entirely yellow 6

5. Thorax and abdomen entirely honey yellow; mid and hind coxae and trochanters yellow, fore coxae fuscous; femora, tibiae, and tarsi, black, fore tibiae brownish yellow basally ..... *nigripes* sp. n.

— Thorax infuscated on disc; abdomen glossy black on dorsum, yellow on basal tergite, sides of second, and apex of fourth; legs entirely deep black ..... *lacustris* sp. n.

6. Fore tibia with a median posterior bristle; third wing vein usually setulose to or beyond inner cross vein on under side ..... *centralis* sp. n.

— Fore tibia without a median posterior bristle 8

7. Hairs descending over sides and slightly invading ventral surface of scutellum; fore tibia with an anterodorsal and a posterior median bristle ..... *armata* (STEIN).

— Hairs not descending below level of the strong bristles on sides of scutellum; fore tibia without median bristles....*rufa* (STEIN).

8. No fine black hairs on metathorax immediately below the lower calypter; wings slightly brownish, more evidently so on apical half, when seen against the light a pale line is evident along the hind side of apex of first vein and the costal vein to or beyond middle of marginal cell; palpi black at bases, yellow at apices 9

— Some fine black hairs on metathorax immediately below lower calypter..... 10

9. Tarsi yellow; hypopleura haired on lower posterior portion..... ..... *mellea* sp. n.

— Tarsi fuscous; hypopleura bare on lower posterior portion..... ..... *brunneipennis* sp. n.

10. All the wing veins with a broad yellowish cloud or suffusion, noticeable when seen against a light background; hypopleura with some microscopic black hairs below spiracle and on lower posterior portion; palpi and tarsi fuscous; abdomen blackened on apical half, hind margin of fourth tergite yellow..... ..... *suffusa* sp. n.

— Wings entirely clear or uniformly browned 11

11. Wings noticeably browned on apical half; apical half of abdomen, including entire dorsum of fourth tergite shining black; palpi fuscous ..... *uniformis* sp. n.

— Wings hyaline; abdomen entirely yellow; palpi dusky yellow.. ..... *claripennis* sp. n.

Dichaetomyia buruensis sp. n.

Male and female. — Head black, orbits, face, cheeks, and sides of occiput, whitish dusted; antennae entirely yellow; arista yellow at base, darker apically; palpi fuscous. Thorax black, shining, with four black dorsal vittae, the submedian pair linear; humeri yellow in both sexes, a

variable proportion of pleura, lateral margins of mesonotum, and most or all of scutellum, in female, yellowish; only the postalar declivity, sutures of pleura, and a small portion of scutellum, yellowish in male. Abdomen glossy black. Legs testaceous yellow, coxae and a large part or all of basal two-thirds of all femora black. Wings, including veins, yellow on a little less than basal half, both dark brown or fuscous on apical half. Calyptrae yellow. Knobs of halteres dark brown.

Frons in male linear in middle, with about three bristles on each orbit anteriorly, and a fine hair on each in front of anterior ocellus, frons in female about one-sixth of the head width at vertex, about one-fourth at antennae, each orbit with one long and one short backwardly curved bristle above middle, a long incurved one at anterior extremity, and some setulose hairs of variable lengths between these; ocellars short in male, long in female; third antennal segment about four times as long as second; arista plumose; palpi slender. Thorax with 2 + 3 dorsocentrals, the anterior presutural pair very short in both sexes; anterior intra-alar short, equal to prealar; hairs descending very little below level of the strong bristles on sides of scutellum; metanotum without hairs below level of lower calypter; hypopleura with some microscopic hairs on lower posterior angle. Abdomen elongata ovate, basal sternite haired; third and fourth tergites each with complete series of apical bristles, fourth with a median transverse series. Fore tibia with a median posterior bristle; fore femur without anteroventral bristles near apex; mid tibia with two posterior bristles; hind femur with an anteroventral series of fine short bristles, longer and stronger at apex; hind tibia with one anterodorsal and one or two short anteroventral bristles, the series of setulae on posterodorsal surface quite noticeable on apical third, especially one near base of series. Some soft inconspicuous hairs on under side of stem vein basad of humeral cross vein; first posterior cell slightly narrowed apically.

Length, 7 mm.

Type, male, and allotype, Station 9, 18. V. 1921; one male paratype, Station 9, 8. VI. 1921.

Dichaetomyia semifumosa sp. n.

Female. — A larger, more robust species than the foregoing, and more strongly bristled.

The thorax is honey yellow, with three fuscous vittae on dorsum, the abdomen is glossy black, with most of the basal segment yellow like thorax; the coxae, trochanters, and tibiae are yellow, the femora are yellow at apices, and the tarsi are black; knobs of halteres yellow.

Frons a little wider than in the preceding species, anterior presutural dorsocentrals half as long as second pair; anterior intra-alar and prealar bristles longer than in *buruensis*; a few black hairs placed low on sides of scutellum basally. Third and fourth abdominal tergites practically devoid

of median apical bristles, no discal bristles on fourth. Fore tibia without a median posterior bristle; hind femur with one or more posteroventral bristles. Otherwise as the preceding species.

Length, 8.5 mm.

Type, Station 11, 25. VI. 1921.

Dichaetomyia nigripes sp. n.

Male. — Head black, orbits, face, and cheeks, whitish dusted; antennae and base of arista honey yellow; palpi black. Thorax and abdomen honey yellow. Legs deep black, fore coxae fuscous, mid and hind coxae and trochanters honey yellow, bases of fore tibiae brownish yellow. Wings yellowish. Calyptrae and halteres yellow.

Head as in *buruensis*. Anterior presutural dorsocentrals and posterior intra-alar about half as long as second pair of dorsocentrals, prealar a little shorter; hairs descending a little below level of strong bristles on middle of sides of scutellum; a few microscopic black hairs below lower calypter; lower posterior angle of hypopleura with some fine hairs. Abdomen ovate; apical series of bristles on third and fourth tergites and median one on fourth complete. Fore tibia without a median posterior bristle; mid femur with four or five long posteroventral bristles on basal half; mid tibia with two posterior bristles; hind femur with a series of sparse long anteroventral bristles and about three long bristles on posteroventral surface; hind tibia with one anterodorsal and three or four short anteroventral bristles. I can detect no hairs on the under side of basal section of the stem vein of wing.

Length, 7 mm.

Type, Station 9, 6. VI. 1921.

Dichaetomyia lacustris sp. n.

Female. — A smaller and less robust species than the foregoing, and quite different in color. The head is the same as in *nigripes*, but the disc of thorax is largely blackened, has whitish dusting, and is distinctly quadrivittate with black; the pleurae are largely suffused with fuscous; the abdomen is colored as stated in the key, and the legs are entirely black.

The palpi are dilated; anterior pair of presutural dorsocentrals longer than in *nigripes*; apical and discal bristles on abdomen as in that species, but quite weak. In other respects as *nigripes*.

There may be really no hairs on the under side of stem vein at base in either of these species as I can not see any in the specimens before me.

Length, 6 mm.

Type, Station 9, 14. V. 1921.

Dichaetomyia centralis sp. n.

Male and female. — Head black, whitish dusted; antennae fulvous yellow, third segment fuscous except at base; palpi black. Thorax black,

humeri fulvous yellow; dorsum with a broad central grey-dusted stripe which extends over disc of scutellum laterad of which the dorsum is black and slightly shining, the usual submedian dark vittae brownish and not conspicuous. Abdomen glossy black. Legs, including coxae and tarsi, honey yellow. Wings greyish hyaline, more yellowish at bases. Calyptrae yellow. Knobs of halteres brownish.

Frons of male not as wide as third antennal segment. Thorax with 2 + 3' dorsocentrals, the anterior presutural pair about half as long as second pair; anterior intra-alar short; some hairs usually present on sides of scutellum basally; no hairs below lower calypter; hairs on lower posterior angle of hypopleura very inconspicuous. Abdomen ovate; bristles on apices of third and fourth tergites, on disc of fourth, and on sides of third distinct. Fore tibia with a median posterior bristle; mid tibia with two posterior bristles; hind tibia with one anterodorsal and two anteroventral bristles. Base of stem vein haired below; setulae on under surface of third vein continued to or beyond inner cross vein; fourth vein noticeably bent forward at apex.

Length, 7—8 mm.

Type, male, and allotype, Station 13, 27. VIII. 1921; two female paratypes, Station 11, 24. VI. 1921, 1200 m.; one male paratype, Station 17, 21-22. X. 1921.

The last mentioned specimen has no hairs on sides of scutellum basally.

This species is very similar to *fulvitarsis* var. *nitidiventris* MALLOCH from the Philippine Islands, but the latter has never any hairs on the sides of scutellum, the central part of disc of thorax is not densely grey dusted, and when seen from the side and in front has a pair of rather broad shining black submedian vittae just mesad of the dorsocentrals.

Dichaetomyia armata (STEIN).

This species has no hairs below the lower calypter, but has hairs on the under side of basal section of stem vein of wing, and on middle of upper part and on lower posterior angle of hypopleura.

One female, Station 5, April 1921.

This species occurs in the Philippine Islands and in Australia.

Dichaetomyia rufa (STEIN).

Two females may belong to this species, the exact identity of which has always been more or less in doubt with me. It was originally described from New Guinea by STEIN, and subsequently was recorded from other regions by him, though I suspect the records are not all based upon the same species. Exactly how many species there are in the group has yet to be decided. I have published a key to the related Australian species, but the females are not at present distinguishable. In the meantime, and

pending receipt of males, the species before me may be accepted as *rufa*.

Station 1, 13. XII. 1921, and 8. I. 1922.

The species is probably an introduced one judging from the locality.

Dichaetomyia mellea sp. n.

Male and female. — Head black, orbits and parafacials yellowish dusted; antennae and palpi yellow, bases of latter more or less evidently blackened. Thorax, abdomen, and legs, honey yellow, fourth, most or all of third, and sometimes the apex of second tergite of abdomen glossy black; postnotum sometimes infuscated. Wings smoky, or brownish, hyaline, darkest on apical half in front, and with a pale line along apical part of first vein and costal vein beyond it. Calyptrae and halteres yellow. Hairs and bristles black.

Frons of male narrower than third antennal segment, that of female about one-fourth of head width at vertex, widened anteriorly; palpi a little dilated at apices. Thorax with 2 + 3 dorsocentrals, anterior presutural pair about half as long as second pair; prealar very short; sides of scutellum bare; no hairs below lower calypter; hypopleura with microscopic hairs on lower posterior angle. Abdomen ovate; fine bristles on apices of third and fourth, middle of fourth, and sides of third tergites in male, less evident in female. Fore tibia without a median posterior bristle; mid tibia with two posterior bristles; hind femur with a series of fine anteroventral bristles, and one or two similar bristles on basal part of posteroventral surface; hind tibia with one anterodorsal and two or three anteroventral bristles. Some fine hairs on under side of basal section of stem vein; the hairs on under side of third vein long at base, extending almost to inner cross vein; fourth vein very slightly bent forward at apex.

Length, 5-6.5 mm.

Type, male, allotype, one male and one female paratype, Station 9, 18-19. V. 1921.

Dichaetomyia brunneipennis sp. n.

Female. — Similar to the preceding species in color, differing in having the third antennal segment brownish except at base, the thorax with quite noticeable whitish dust on anterior portion of dorsum and with the usual four vittae showing when seen from behind, the tarsi fuscous, and hypopleura bare on lower posterior angle. This last character may not be constant.

Length, 6.5 mm.

Type, Station 13, 27. VIII. 1921.

Dichaetomyia suffusa sp. n.

Female. — Head black, orbits and parafacials white dusted; antennae yellow; palpi fuscous. Thorax and abdomen colored as in *mellea*, but the apex of fourth tergite is yellow. Legs yellow, tarsi black. Wings hyaline,

with a broad yellow suffusion along the veins leaving a narrow hyaline portion in centre of the principal cells. Calyptrae and halteres yellow.

Similar to *mellea* in structure, but there are some microscopic black hairs below lower calypter, and the abdominal bristles are not evident on apical tergites except on sides and on hind margins of fourth.

Length, 6.5 mm.

Type, Station 9, 26. V. 1921.

Dichaetomyia uniformis sp. n.

Female. — Similar to the preceding species, but the wings are quite evenly and slightly browned on apical half, there being no indication of pale central streaks in the cells. The third antennal segment is largely brown, and the tarsi are black.

Length, 7 mm.

Type, Station 13, 30. VIII. 1921.

Dichaetomyia claripennis sp. n.

Female. — Differs from preceding species in having the abdomen yellow, the wing entirely hyaline, antennae clear yellow, palpi dusky yellow, fore tarsi not black but yellowish brown, and the bristles on apices of third and fourth tergites, and on disc of fourth quite distinct. There is but one anterodorsal and one anteroventral bristle on hind tibia in type.

Length, 7 mm.

Type, Station 1, 8. I. 1922.

Dichaetomyia sp.

A female specimen from Station 9, 24. V. 1921, which is very much discolored does not belong to any of the previous species, but is too badly preserved for description.

Subfamily MUSCINAE.

This subfamily contains those species most intimately associated with man and domesticated animals, the best known being the species of the genus *Musca*.

There are in this collection but three [1]) genera of the group, each represented by a single species, and two of these by one specimen each.

Musca sp.

A poorly preserved female specimen of a species belonging to the group *Biomyia* is before me. It does not have any median bristle on the posterior side of fore tibia, nor any evident hairs on the hypopleura below

[1]) For other species of *Muscidae*, see PATTON's list in this Journal.

spiracle. It is not possible for me to determine its exact specific identity.
Station 5, 4—5. VI. 1921.

Orthellia diffidens (WALKER).

This widely distributed Oriental species was taken at Station 1, three males bearing the date 17. V. 1921, and two females bearing the numbers 18 and 27 respectively.

Morellia hortensia (WIEDEMANN).

A male before me agrees very well with those of this species which I have from Java and Sumatra, but is a little larger than is the rule. I can detect no differences that may be considered as of specific import.
Station 22, 22. I. 1922.