

from eye to end of maxillary $\frac{2}{3}$ diameter of eye. 17 gill-rakers on lower part of anterior arch. 90 scales in lateral line, 15 between anterior dorsal spines and lateral line. Dorsal XI 12; spines slender, fourth longest, a little more than $\frac{1}{2}$ length of head; soft rays gradually decreasing in length posteriorly, the first nearly $\frac{2}{5}$ length of head. Anal III 10; third spine longest, as long as soft rays, $\frac{1}{3}$ length of head. Pectoral as long as head, reaching anal. Caudal forked. Greyish silvery; dorsal, anal, and pelvic fins blackish; a black band across anterior part of interorbital region.

A single specimen, 195 mm. long, taken at a depth of 25 fathoms.

XLIX.—*Exotic Muscaridæ (Diptera)*.—II.*

By J. R. MALLOCH, Urbana, Ill., U.S.A.

ASIATIC SPECIES.

Family Tachinidæ.

Genus XENOTACHINA, nov.

Generic characters.—Fourth wing-vein continued to margin in an almost straight line, not curved forward; arista plumose; all wing-veins without setulæ; abdomen cylindrical, slightly tapered to apex, the tergites slightly overlapping sternites and with strong macrochætæ at apices; eyes of male widely separated, all frontal bristles except the upper supraorbital directed mesad; ocellar and post-ocellar bristles very small and weak; palpi normal; proboscis short and fleshy; sternopleural bristles 3, in an equilateral triangle; prosternum, pteropleura, and basal abdominal sternite bare; hypopleura with about four weak bristles in a vertical series in front of and slightly below the spiracle, the latter with some marginal hairs.

Genotype, the following species.

Xenotachina pallida, sp. n.

Male.—Pale yellowish testaceous. Ocellar triangle, a patch on each side of upper half of occiput, and a poorly

* For Part I., see Ann. & Mag. Nat. Hist. (9) vii., Feb. 1921, pp. 161-173.

defined central line on abdominal tergites 3 and 4 brownish. Wings clear. Calyptræ and halteres yellow.

Frons at vertex a little less than one-third of the head-width, widened anteriorly, each orbit with about seven bristles of unequal lengths; parafacial linear; cheek a little higher than width of third antennal segment, the latter narrow, about three times as long as second; longest hairs on arista longer than width of third antennal segment; aristal hairs continued to apex. Thorax without strong presutural acrostichals; postsutural dorso-centrals 3; scutellum carried well over apex of metanotum, with four strong marginal bristles. Hypopygium concealed. Fore tibia with a weak antero-dorsal and a strong posterior median bristle; mid-tibia with three posterior bristles; hind femur with some long, weak, widely spaced bristles on basal three-fourths and three short stout bristles on apical fourth of antero-ventral surface, the postero-ventral surface with some long, slender, widely spaced bristles; hind tibia with two antero-dorsal, two or three antero-ventral, and two postero-dorsal bristles; hind tarsus without a basal ventral bristle on basal segment.

Length 5 mm.

Type, North-west India (no other data).

This species presents some conflicting characters. The venation is typically Anthomyiid, but the shape of the abdomen and the strong apical bristles on all segments, as well as the presence of a vertical series of bristles on the hypopleura, are just as strong evidences of Tachinid relationships. The arrangement of the sternopleural bristles is different from that of most Tachinidæ and similar to that which is found in all Cœnosiinæ. I have had some hesitation in placing the genus in the Tachinidæ, but as at present limited it is impossible to include it in the Muscaridæ. The limits of most families in this suborder are very indefinite, and possibly with a fuller knowledge of the fauna of the world some of them will have to be united, as is the case with Muscaridæ and Anthomyiidæ.

Family Muscaridæ.

Subfamily PHAONINÆ.

Genus XENOSIA, nov.

Generic characters.—First and third wing-veins setulose above, the third setulose below at base; anterior intra-alar bristle absent; hypopleura with some hairs on upper margin

in front of spiracle; pteropleura, prosternum, and basal abdominal sternite bare; fourth wing-vein curved forward at apex; hind tibial calcar absent.

Genotype, *Mydæa ungulata*, Stein.

This species was originally described from Java. I have before me a female specimen from Kasauli, North-west India, taken by Lt.-Col. F. Wyville-Thomson.

The genus very closely resembles *Cyrtoneurina*, Giglio-Tos, but the latter has the pteropleura and basal abdominal sternite hairy.

Subfamily CÆNOSIINÆ.

Pygophora semilutea, sp. n.

Male.—Head yellow; upper half of front orbits, ocellar triangle, back of head, centre of face above, and proboscis blackened. Thorax black, grey pruinulent. Abdomen yellow, base of first tergite, a central spot on second, a large part of posterior half of third in centre, nearly all of fourth, and all of fifth tergites blackened; base of hypopygium black. Legs yellow. Wings clear. Calyptreæ white. Halteres yellow.

Third antennal segment about four times as long as second. Abdomen compressed at apex; fourth tergite almost prow-like in centre, with rather dense curved setulose hairs on each side of central elevated portion, and some bristles at apex, the lateral extremities with numerous long bristles; fifth tergite with long bristly hairs on sides. Bristling of legs normal; hind tibia with a short preapical ventral protuberance; basal segment of hind tarsus slightly arched at base. Wing-veins 3 and 4 slightly convergent apically.

Length 5.5 mm.

Type, Kandy, Ceylon, 21. v. 1892 (*Col. J. W. Yerbury*).

This species resembles in colour *immaculipennis*, Frey, but that species has the hind tibia without the small preapical ventral process—a fact which caused Stein to place the species in *Cænosia*.

AFRICAN SPECIES.

Subfamily ANTHOMYIINÆ.

Genus EMMESOMYIA, Malloch.

Emmesomyia tarda (Stein).

Pegomyia tarda, Stein, Ann. Mus. Nat. Hungar. xi. p. 559 (1913).

This species is a typical *Emmesomyia*. I have before

me one female from Dunkwa, Ashanti, West Africa, 2. vii. 1907 (*Dr. W. M. Graham*).

Emmesomyia africana, sp. n.

Female.—Yellow-testaceous, shining. Head black, anterior margin of frons and cheeks brownish, base of arista yellowish. Thorax with a broad fuscous dorso-central vitta. Abdomen slightly infuscated, but without black apical margins to tergites. Legs yellow. Wings clear. Halteres and calyptræ yellow.

Bristling of frons typical of the genus; arista with its longest hairs distinctly longer than its basal diameter. Thorax with three pairs of widely separated acrostichals, and between them three or four series of setulose hairs in front of suture; prealar short. Fore tibia with a short antero-dorsal and a longer posterior median bristle; mid-tibia with three posterior bristles; hind femur with three or four widely spaced bristles on basal three-fourths and two stronger near apex on antero-ventral surface, and some weaker bristles on basal two-thirds of postero-ventral; hind tibia with one antero-ventral, two antero-dorsal, and two postero-dorsal bristles. Costal thorn minute.

Length 5 mm.

Type, Zungeru, Northern Nigeria, xi. 1910 (*Dr. J. W. Scott-Macfie*).

Differs from *tarda* in having only two bristles on the antero-dorsal surface of the hind tibia.

Emmesomyia nigrolutea, sp. n.

Female.—Head black; frons and face with greyish pruinescence; antennæ and palpi black. Thorax, when seen from behind, densely grey pruinose, with a pair of widely separated black spots on anterior margin and three less widely separated spots behind suture; base of scutellum black. Abdomen yellow, with a moderately broad dorso-central vitta on segments 2 and 4, and a narrow fascia on apices of all segments black; anterior half of each segment from 2 to 4 infuscated, the infuscated parts when seen from behind covered with whitish pruinescence. Legs yellow, apices of all femora narrowly infuscated, tarsi brown. Wings clear. Calyptræ and halteres yellow.

Head and thorax as in preceding species. Fore tibia with a short preapical antero-dorsal bristle, the posterior bristle absent in the type; mid-tibia with an antero-dorsal and three posterior bristles; hind femur with a bristle near middle and

two near apex on antero-ventral surface, and one near middle on postero-ventral ; hind tibia with two postero-dorsal, one antero-ventral, and three antero-dorsal bristles. Costal thorn of moderate length.

Length 6.5 mm.

Type, Higo Samula, Abyssinia, 30. x. 1911 (*R. J. Stordy*).

Most closely resembles *Tæniomyia maculithorax*, Stein, but the colour of the legs and bristling of hind tibia differ.

Genus TÆNIOMYIA, Stein.

I have in another magazine cited as the type of this genus *fascigera*, Stein. I have before me a female of this species from Oshogbo, S. Nigeria (*Dr. T. G. F. Mayer*), which enables me to designate as a character for distinguishing *Tæniomyia* from *Emmesomyia*, Malloch, and *Pegomyia*, R.-D., the presence of a number of setulose hairs on the upper part of the pteropleura. In *Emmesomyia* there is a fine bristle on the upper margin at the middle of the pteropleura, and in *Pegomyia* the pteropleura is bare. I have not seen any species of *Tæniomyia* from America, but several species of *Emmesomyia* are found there.

Genus RHODESINA, nov.

Generic characters.—Apical genital segment in female with a pair of stout claw-like thorns. Third wing-vein with a few setulose hairs at base above and below. Lower calyptra much larger than upper. Hind tibia with two postero-dorsal bristles.

Genotype, the following species.

Rhodesina ignobilis, sp. n.

Female.—Yellowish testaceous; third antennal segment, upper third of frons, and greater part of occiput, dorsum of thorax except laterally, the greater part of pleura, tergites of abdomen, and the tarsi infuscated. Wings clear. Calyptræ white. Halteres yellow.

Frons a little less than one-third of the head-width; orbits narrow, each with three supraorbital and two infraorbital bristles, the lower supraorbital directed forward; interfrontalia with a pair of strong cruciate bristles; third antennal segment over three times as long as second; arista with the longest hairs not as long as width of third antennal segment; parafacial in profile almost invisible; cheek not as high as width of third antennal segment. One strong

and two or three weak pairs of presutural acrostichals present; prealar minute; sternopleurals 1:2. Apical bristles on tergites 3 to 5 strong. Fore tibia with a median posterior bristle and one or two preapical antero-dorsal setulæ; mid-tibia with two or three posterior bristles; hind femur with five or six widely spaced bristles on antero-ventral surface, and two or three on basal half of postero-ventral; hind tibia with one antero-ventral, two antero-dorsal, and two postero-dorsal bristles.

Length 6.5 mm.

Type, Chirinda Forest, Melsetter District, Southern Rhodesia, 10. xii. 1910, 3800 feet, on cow-manure (*C. F. M. Swynnerton*).

This may be *Hydrophoria ignobilis*, Stein.

This genus is most closely allied to *Pegomyia*, but no species of that genus has the genitalia of the female armed as described above.

Subfamily *PHAONIINÆ*.

Phaonia magnifica, sp. n.

Male and female.—Black, densely whitish pruinose. Head black, with white pruinoscence, when viewed from the side with three black marks—at middle of frons, base of antennæ, and vibrissal angle; antennæ and palpi black. Thoracic dorsum with three widely separated black spots on anterior margin, three contiguous spots forming a fascia behind suture, and the larger basal part of scutellum deep black; pleura blackened above spiracles and behind fore and mid coxæ. Abdomen with a large central black spot on each tergite, those on second and third triangular, and each also with a large black lateral spot. Legs reddish, bases of fore and mid femora narrowly and apices of all rather broadly black; tarsi black. Wings clear. Calyptræ white. Halteres yellow.

Male.—Eyes densely hairy; narrowest part of frons about twice as wide as distance across posterior ocelli; interfrontalia uninterrupted; orbits moderately wide, bristled almost to anterior ocellus; parafacial at base of antennæ wider than third antennal segment, but little narrowed below; cheek twice as high as widest part of parafacial; arista with longest hairs as long as width of third antennal segment. Thorax with two or three pairs of strong presutural acrostichals; anterior intra-alar and prealar long; four postsutural dorso-centrals; hypopleura with a few hairs

on upper margin in front of spiracle. Abdomen ovate; basal sternite bare. Fore tibia without a median bristle; mid-tibia with three or four posterior bristles; hind femur with short fine bristles on antero-ventral and postero-ventral surfaces; hind tibia with two or three antero-dorsal and two antero-ventral bristles, the calcar short. Costal thorn short; fourth vein not curved forward at apex.

Female.—Differs from the male in having the frons over one-third of the head-width.

Length 9–10 mm.

Type, male, allotype, and five male paratypes, Estcourt, Natal, ix.–x. 1896 (*G. A. K. Marshall*).

Genus *ALLUAUDINELLA*, Giglio-Tos.

This genus was erected by Giglio-Tos for the reception of one species, *bivittata*, Macquart, described from Isle de France. In his recent paper on the genera of Anthomyiidae, Stein placed seven other species in the genus. I have not seen all of these species, but from an examination of the genotype and some of them I am convinced that there are at least two distinct, though closely allied, genera involved. Both genera may be distinguished from their allies by the broad thorax and abdomen, moderately widely separated eyes in both sexes, the frons of the female being but little wider than that of the male, the hairs on prosternum, pteropleura, and basal abdominal sternite, and the remarkably short stubby spines on the upper sides of the palpi. This last character readily separates the genera from their nearest allies.

The two genera which have been confused may be separated as follows:—

Alluaudinella, Giglio-Tos.

Propleura bare in centre; propisternum hairy; prosternum with a few setulose hairs; metanotum pilose on lateral elevation; third wing-vein bare at base above and below.

Genotype, *bivittata*, Macquart.

Æthiopomyia, gen. n.

Propleura hairy in centre; propisternum bare; prosternum hairy; metanotum with fine hairs on lateral elevation; third wing-vein setulose at base above and below.

Genotype, *Mydaea gigas*, Stein.

I have before me an African species of *Alluaudinella* which agrees in structure and chætotaxy with the genotype, but differs as stated below.

Alluaudinella fulvovittata, sp. n.

Male and female.—Yellowish testaceous. Thorax with two broad fulvous vittæ, which are not black in front of suture as in *bivittata*, Macq. Abdomen unmarked. Legs entirely pale.

Length 7–8 mm.

Type, male, allotype, and one female paratype, Yapi, Northern Territories, Gold Coast, xi. 1915 (Dr. J. J. Simpson).

Genus *NEAVEIA*, nov.

Generic characters.—Eyes of male separated by at least one-third of the head-width at vertex; each orbit with one strong, backwardly directed bristle a little in front of level of anterior ocellus and three infraorbitals; ocellar pair strong; head about twice as high as long in profile; arista plumose; palpi normal. Two strong pairs of postsutural dorso-centrals on thorax, the anterior pair of presutural dorso-centrals strong; prealar minute; præscutellar acrostichals not differentiated; margins of prosternum, centre of pteropleura, and margins of metathoracic spiracle with a few black setulose hairs. Abdomen narrowly ovate; basal sternite bare; fifth sternite deeply cleft. Hind tibia with two short postero-dorsal setulæ. Third wing-vein with a few hairs at base below, not curved forward at apex.

Genotype, the following species.

Neaveia flavida, sp. n.

Male.—Yellowish testaceous, slightly shining. Frons and upper two-thirds of occiput black. Dorsum of abdomen from a little before apex of basal tergite blackened in centre. Legs entirely pale. Wings clear. Calyptræ yellowish, margins brown. Halteres yellow.

Third antennal segment over three times as long as second; longest hairs on arista longer than width of third antennal segment; parafacial linear; cheek narrow. Thorax without differentiated presutural acrostichal bristles; sternopleurals 1:2, in a nearly equilateral triangle. Fore tibia with a median posterior bristle; mid-tibia with two posterior bristles and apicad of them several setulæ, hind femur with four or five widely spaced antero-ventral bristles and one bristle near middle on postero-ventral surface, hind tibia with one antero-dorsal and two antero-ventral bristles.

Length 5 mm.

Type, Mt. Mlanje, Nyasaland, 20. viii. 1913 (*S. A. Neave*).
Named in honour of the collector.

Eulimnophora marshalli, sp. n.

Male.—Black, slightly shining. Frontal orbits silvery, face and cheeks brownish-grey pruinulent; antennæ and palpi black. Thorax not distinctly vittate, the lateral margins brownish-grey pruinulent. Abdomen drab-grey pruinulent, base of first tergite, a pair of subtriangular spots on second and another on third tergite black, bases of most of the setulæ set in minute blackish dots. Legs black. Wings clear. Calyptræ brown. Halteres yellow.

Eyes bare, separated by width of anterior ocellus; bristles on anterior half of frontal orbits very strong, but not very long; face concave in profile, parafacials invisible from side; cheek higher than width of third antennal segment, rather strongly setulose on lower half; arista finely pubescent. Thorax with two or three pairs of rather irregular presutural acrostichals and some weak setulæ, and four pairs of postsutural dorso-centrals; anterior and posterior lower sterno-pleural bristles weak. Abdomen ovate. Fore tibia unarmed at middle; mid-tibia with one posterior bristle; hind femur with two preapical antero-ventral bristles; hind tibia with one antero-dorsal and two or three antero-ventral bristles. Wing pointed at apex, third vein terminating in tip, fourth much behind it, slightly forwardly curved.

Length 5 mm.

Type and six paratypes, Ulundi, Natal, 5000–6500 feet, ix. 1896; one paratype, Estcourt, Natal, ix.–x. 1896 (*Dr. G. A. K. Marshall*).

Named in honour of the collector.

This may be the species recorded from Africa by Stein as *Limnophora arcuata*, Stein. This species, the genotype, is American, and I have seen no African examples of it. The head of *marshalli* is quite different from that of *arcuata*.

AUSTRALIAN SPECIES.

Subfamily ANTHOMYINÆ.

Hylemyia deceptiva, sp. n.

Male and female.—Similar to *Pegomyia pæcilopecta*, Malloch, in colour and wing-markings. Differs in having

the outer cross-vein of wing with its upper extremity conspicuously blackened and the lower but little infuscated, the black spot at apex of second vein absent or almost so, and the one at apex of first much smaller. The abdomen in male has a less clearly defined dorso-central vitta, and the larger bristles and also the setulæ are set in small blackish dots.

Male.—Differs from *Pegomyia pæcilopectera* in having the eyes closer together, arista more swollen at base, fore tibia with two posterior median bristles; hind tibia with three postero-dorsal, four or five antero-dorsal, and two antero-ventral bristles. Costal thorn of moderate length, wing less pointed than in *pæcilopectera*. Differs from *Hylemyia punctipennis*, Wiedemann, in having the arista much shorter-haired, the hind tibia with shorter posterior setulose hairs, and the fore tibia with two posterior bristles.

Female.—Similar to the male in colour.

Frons over one-third of the head-width; interfrontalia with a pair of cruciate bristles.

Length 4–4.5 mm.

Type, male, Mt. Albert, New Zealand, 26. vi. 1915 (*A. E. Brookes*). Allotype, same locality, 29. v. 1915 (*A. E. Brookes*). Paratype females, one, same locality as type, no date (*A. E. Brookes*); three, Neutral Bay, Sydney, New South Wales, 25. xi. 1909, 8. x. 1910, and 4. xii. 1910 (*Dr. J. B. Cleland*); one, Adelaide, South Australia, 29. v. 1910 (*Dr. J. B. Cleland*); and two, Sydney, N.S.W., 5. xii. 1906 (*W. Wesche*).

Closely allied to *punctipennis*, Wiedemann, a South-American species.

Subfamily PHAONINÆ.

Genus ANTIPODOMYIA, nov.

Generic characters.—Closely allied to *Limnophora*, the prealar bristle and hind tibial calcar absent, and the third wing-vein curved forward at its apex. Differs in having the prosternum bare, third vein bare at base, prescutellar acrostichals situated well in front of the posterior pair of dorso-centrals. Eyes of female separated by about one-third of the head-width, each orbit with only the upper bristle directed backward.

Genotype, the following species.

Antipodomyia bancrofti, sp. n.

Male.—Black, slightly shining. Antennæ and palpi black; face whitish pruinose. Thoracic dorsum with a

large subtriangular patch of bluish-grey pruinescence on each side at suture which connects with the pruinescence on pleura. Abdomen pale grey pruinose, basal tergite black, second and third each with a pair of very large black spots, which are narrowly separated in centre and cover disc except a triangular area on each side anteriorly, fourth tergite with two small black spots in centre anteriorly. Legs black. Wings clear. Calyptræ fuscous. Knobs of halteres pale yellow.

Eyes bare, separated by less than width of anterior ocellus; ocellar bristles parallel; parafacials invisible from side; cheeks linear; vibrissæ short and stout, the adjoining setulæ very short and stubby; third antennal segment about twice as long as second; arista almost bare. Thorax with one pair of strong presutural acrostichals and a few weak hairs; three postsutural dorso-centrals; sternopleurals 1:2. Abdomen ovate; fifth sternite small, deeply incised in centre. Mid-tibia with one posterior bristle; hind femur with two preapical antero-ventral bristles; hind tibia with one antero-ventral and one antero-dorsal bristle.

Female.—Differs from the male in having the dorsum of thorax pruinose posteriorly, the abdominal spots larger, and the calyptræ white. Interfrontalia opaque black, orbits, face, and cheeks whitish pruinose. Thorax with one or two pairs of weak presutural acrostichals besides the one strong pair. In other respects as the male.

Length 2-3 mm.

Type, male, allotype, and three female paratypes, Stannary Hills, North Queensland, about 3000 feet, no date (*Dr. T. Bancroft*).

Named in honour of the collector.

SOUTH-AMERICAN SPECIES.

Subfamily ANTHOMYIINÆ.

Pegomyia pæcilopecta, sp. n.

Male.—Black, densely grey pruinose. Head black, orbits, face, and cheeks white pruinose, almost silvery; antennæ and palpi black. Thoracic dorsum with three broad, indefinitely margined brown vittæ. Abdomen with a moderately broad black dorso-central vitta; the larger bristles with a blackish dot at base of each. Legs yellowish brown, femora darker, tarsi black. Wings clear, with a black spot on each of the cross-veins, another over bases of second and third veins and of discal cell, one at apex of first

vein which extends from costa to second vein, a large one over apex of second vein, and a much less distinct one at apex of third vein. Calyptreæ white. Halteres yellow.

Eyes separated by a little over width across posterior ocelli; arista pubescent; parafacial at base of antennæ as wide as third antennal segment, narrowed below. Post-humeral bristle duplicated; three or four pairs of weak acrostichals in front of suture; prealar very long. Abdomen depressed; hypopygium small. Fore tibia with one antero-dorsal and one posterior median bristle, apical posterior bristle long, straight; mid-tibia with one antero-dorsal, two postero-dorsal, and two posterior bristles; hind femur with a complete series of irregular antero-ventral bristles and some widely spaced postero-ventral bristles; hind tibia with two postero-dorsal, one antero-ventral, and three antero-dorsal bristles, the posterior surface bare. Costal thorn minute; wing pointed, third vein ending almost in tip.

Length 4-5 mm.

Type and paratype, La Plata City, Argentina, 10. vi. 1896 (O. Thomas).

This species bears a striking resemblance to *Hylemyia punctipennis*, Wiedemann, but may be separated from it by the shorter-haired arista, larger single spot on outer cross-vein, presence of only two postero-dorsal hind tibial bristles, and absence of posterior setulæ on hind tibia.

L.—A Note on the Dipterous Subfamily Ditomyinæ, with Descriptions of new Recent and Fossil Forms. By F. W. EDWARDS.

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IN a recently published paper* Keilin has discussed in detail the larval morphology of three European genera formerly included in the Mycetophilidæ, subfamily Mycetobiinæ, and has given very strong reasons for considering that *Mycetobia* is closely related to *Anisopus* (*Rhyphus*), while *Ditomyia* and *Symmerus* are widely different and quite unrelated either to *Mycetobia* or any other Mycetophilidæ; he has even proposed the new family-name Ditomyiidæ for these two genera, considering them to be more closely related to Bibionidæ than to Mycetophilidæ.

In regard to *Mycetobia*, I have been able to confirm †

* Ann. & Mag. Nat. Hist. (9) iii. pp. 33-42, pls. ii.-v. (Jan. 1919).

† Ibid. (8) xvii. pp. 108-116 (Jan. 1916).



Malloch, John Russell. 1921. "Exotic Muscaridae (Diptera).--II." *The Annals and magazine of natural history; zoology, botany, and geology* 7, 420–431.

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