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Philippine Nematoceros Diptera II.

By F. W. Edwards
(British Museum, Natural History).

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Culicidae.

The most important papers dealing with the mosquito fauna of the Philippines are following:

1906. Banks, C. S. A list of Philippine Culicidae with descriptions of some new species. Phil. J. Sci. i. pp. 977—1005.
1911. Ludlow, C. S. The Philippine Mosquitoes. Psyche XVIII, pp. 125—133. [Gives list of Philippine species known, including several previously described by the author].
1914. Ludlow, C. S. A new Anopheline. Psyche XXI, pp. 129—130.
1920. Dyar, H. G. A collection of mosquitoes from the Philippine Islands. Insecutor Inscit. VIII, pp. 175—186.
1925. Dyar, H. G. and Shannon, R. C. The types of Philippine mosquitoes described by Ludlow and other notes on the fauna. Insecutor Inscit. XIII, pp. 66—89.
1925. Dyar, H. G. Note on the male of *Aedes punctifemore* Ludlow. Insecutor Inscit. XIII, p. 217.

The nomenclature of the mosquitoes has been revolutionised since Dr. Ludlow published her list, and I therefore give below a revised list with synonyms of the Philippine species known up to the present.

- Anopheles (s. str.) gigas var. formosus Ludl.
" " barbirostris v. d. W.
" " bancrofti Skuse (*pseudobarbirostris* Ludl.).
" " hyrcanus Pall. (*sinensis* Wied.).
" " " var. *peditaeniatus* Leic.
" " aitkeni James (*pallidus* Ludl.).
" (Myzomyia) minimus Theo. (*mangyana* Banks; *febrifera* Banks; *funesta* Ludl.; *flavirostris* Ludl.).
" " subpictus Grassi (*rossi* Giles).
" " vagus Dön. (*indefinita* Ludl.).
" " ludlowi Theo.
" " parangensis Ludl.
" " fuliginosus Giles (*lineata* Ludl.; *mcgegori* Banks).
" " philippinensis Ludl.
" " maculatus Theo.
" " kochi Dön. (*flava* Ludl.).
" " tessellatus Theo. (*thorntoni* Ludl.).

- Megarhinus splendens Wied. (*grata* Banks; *argenteotarsis* Ludl.).
 " amboinensis Dol. (*lewaldi* Ludl.).
 * " nepenthis D. & S.
 * " gigantulus D. & S.
 Uranotaenia nivipes Theo. (*triangulata* Ludl.).
 " argyrotarsis Leic. (*parangensis* Ludl.).
 * " ludlowae D. & S.
 * " clara D. & S.
 " atra Theo. (*lateralis* Ludl.).
 " pygmaea Theo.
 " festacea Theo. (*falcipes* Banks).
 * " innotata D. & S.
 Harpagomyia genurostris Leic. (*coeruleovittata* Ludl.).
 Hodgesia quasisanguinae Leic. (*niveocaputis* Ludl.).
 " malayi Leic. (*ampyx* Dyar).
 Topomyia argyropalpis Leic. (*Kingia gregoryi* Ludl.).
 *Rachiotomyia powelli Ludl.
 * " nitidiventer Giles.
 * " monetifera Dyar.
 * " (Tricholeptomyia) nepenthicola Banks (*mus* Dyar).
 *Heizmannia scintillans Ludl.
 Mucidus laniger Wied.
 *Pardomyia quadripunctis Ludl.
 Armigeres (s. str.) obturbans Walk. (*joloensis* Ludl.).
 " " malayi Theo.
 " (Leicesteria) magna Theo.
 " digitata Edw.
 Aedes (Stegomyia) desmotes Giles (*albitarsis* Ludl.).
 " " variegatus Big.
 " " albopictus Skuse (*samarensis* Ludl.; *nigritia* Ludl.; *quasinigritia* Ludl.).
 " " albolineatus Theo.
 * " " meronephada D. & S.
 " " argenteus Poir. (*persistans* Banks; *alboannulis* Ludl.).
 * " " gardineri Ludl.
 * " " aurotaeniatus Edw. (*aurostriata* Banks).
 " (Finlaya) flavipennis Giles (*lutea* Ludl.; *aranetana* Banks).
 " " poecilia Theo.
 " " niveus Ludl.
 * " " melanopterus Giles (*palawanensis* Ludl.).
 * " " banksi Edw. (*pseudotaeniatus* Banks nec Giles).
 * " " rizali Banks.
 * " " leucomeres Giles.
 " (Ochlerotatus) vigilax Skuse (*annulipes* Ludl.).
 " (Banksinella) lineatopennis Ludl.
 " (Aedimorphus) niveoscutella Theo. (*pampangensis* Ludl.).
 " " alboscutellata Theo. (*argentinotus* Banks).
 " " caecus Theo.
 " " vexans Mg.

- *Aedes (Aedimorphus) punctifemore Ludl.
 * " (Skusea) amesi Ludl.
 * " " miachaetessa D. & S.
 " (Aedes) ostentatio Leic.
 * " " panaygensis Ludl.
 * " " macrodixoa D. & S.
 * " " nigrotarsis Ludl. (*mediolineata* Ludl.).
 * " " margarsen D. & S.
 * " " dux D. & S.
 Mimomyia minima Ludl.
 " chamberlaini Ludl.
 Ficalbia (Etorleptiomyia) luzonensis Ludl.
 Taeniorhynchus (Coquillettidia) giblini Taylor.
 " " ochraceus Theo. (*chrysogona* Knab).
 " " crassipes v. d. W. (*brevicellulus* Theo).
 * " " aureosquamatus Ludl. (*pagei* Ludl.).
 * " " diaeretus Dyar.
 " (Mansonioides) annuliferus Theo.
 " " annulipes Walk.
 " " annulatus Leich.
 " " uniformis Theo.
 Aedomyia venustipes Skuse (*catatista* Knab).
 Lutzia fuscana Wied.
 " halifaxi Theo. (*aureopunctis* Ludl.).
 Culex (s. str.) bitaeniorhynchus Giles.
 " " whitmorei Giles (*argenteus* Ludl.; *plegepennis* Theo.).
 " " gelidus Theo.
 " " sitiens Wied.
 " " vishnui Theo. (*summorosus* Dyar).
 " " tritaeniorhynchus Giles.
 " " fatigans Wied. (? *hensemaeon* Dyar).
 " " fuscocephalus Theo. (*taytayensis* Banks; *inelegans* Dyar).
 " " brevipalpis Giles (*fidelis* Dyar).
 * " " nematoides D. & S.
 " (Culicomyia) fragilis Ludl. (*inornatus* Theo.).
 " " ? pullus Theo. (*annulatus* Theo.).
 " (Lophoceratomyia) fraudatrix Theo.
 " " fulleri Ludl.
 " " ? hewitti Edw.

Of the 101 species mentioned in this list, the 29 marked * are endemic in the Philippines; the remainder are almost all widely distributed in the Oriental region, a very few (including *Anopheles bancrofti*, *Megarhinus amboinensis* and *Aedes vigilax*) are mainly Australasian.

About ten other names given in Dr. Ludlow's list were probably misidentifications, and are omitted here. A few notes on some types

and other specimens which I examined in Washington in August 1928 are appended.

Megarhinus splendens Wied. Dyar and Shannon had confused this species and *M. amboinensis*, although the two are quite distinct by the colour of the tufts on the eighth abdominal segment. As I have previously stated Ludlow's type ♂ of *M. argenteotarsis* is *M. splendens*; Banks' series (all labelled type) of *M. grata* included some specimens of *M. splendens* and some of *M. amboinensis*. Additional material of *M. splendens* is in the Washington Museum from Puerto Princessa, Palawan.

Megarhinus gigantulus D. & S. This is very similar to *M. minimus* Theo. of Ceylon, but the tufts of the seventh abdominal segment are entirely orange, instead of mainly black.

Megarhinus nepenthis D & S. This is very similar to *M. arcaudatus*, the common pitcher-plant species of Malaya and Borneo, but the difference in colour of the first abdominal segment is probably of specific value.

Uranotaenia clara D. & S. There seems to be a misprint in the description, the white wing-scales being as in *U. ludlowae*, not as in *U. parangensis*. Perhaps *U. clara* is not really distinct from *U. ludlowae*.

Heizmannia scintillans Ludl. The width of the front is not so great as has been stated, being only about equal to that of the first antennal segment. The species must therefore be extremely close to or perhaps identical with *H. communis* Leic.

Aedes (Stegomyia) variegatus Bigot. Several females of this species are in the Washington Museum from Camp Stotsenberg and Los Banos. They seem to belong to the typical New Guinea form, with the white abdominal bands complete or almost so.

Catantassomyia meronephada D. & S. This is an *Aedes* of the subgenus *Stegomyia*, evidently allied to *A. albolineatus* Theo. and *A. edwardsi* Barr., having the tarsal markings of the former and the thoracic ornamentation almost as in the latter.

Culex fidelis Dyar. Of the four males in Dyar's type series three are *C. brevipalpis* and the fourth is a *Lophoceratomyia*, closely resembling and perhaps the same as *L. hewitti* Edw. Dyar based his description of the hypopygium on the former, of the palpi on the latter; the former may be selected as the type and the name *fidelis* placed in the synonymy of *C. brevipalpis*.

Culex fragilis Ludl. Dyar and Shannon question my determination of this as identical with *C. inornata* Theo. (Sarawak) and *C. ceylonica* Theo. (Ceylon), but I have carefully compared mounts of the hypopygia of all three (including a cotype of *C. fragilis*) and can find no difference. Possibly the male from Sarawak mentioned by Dyar and Shannon as differing from *C. fragilis* may have been a misidentified example of *C. pullus*.

The Böttcher collection includes the following material:

Anopheles Mg.

1. *A. hyrcanus* var. *peditaeniatus* Leic. Luzon: Manila, X. 1914, 3 ♂.

Megarhinus R-D.

2. **M. splendens** Wied. Momingan, II. VII. 1915, 7 ♂ 1 ♀. Sororro, 12. X. 16, 1 ♂. Aroroy, VIII. 1918, 1 ♀. Panaran, XII. 1915, 1 ♂. Mindanao: Surigao, 1 ♂ 3 ♀. Luzon: Lamao, II. VII. 1914, 1 ♂. Mindoro: Mangarin, XI. 1917, 1 ♀.

3. **M. amboinensis** Dol. Luzon: Lamao, VII. 1914, 1 ♀.

4. **M. towadensis** Mats. Mindanao: Surigao, VIII. 1916, 1 ♀. This is an interesting addition to the Philippine fauna, the species having previously been reported only from Japan.

Mucidus Theo.

5. **M. laniger** Wied. Mindoro: Calapan, 1. II. 1916, 1 ♂ 1 ♀.

Armigeres Theo.

6. **A. obturbans** Walk. S. Theodoro, I. 1916, 1 ♀.

7. **A. malayi** Theo. Theodoro, I. 1916, 1 ♂. Vivai, III. 1916, 1 ♂. Mindoro: Calapan, 1. II. 1916, 1 ♀.

Aedes Mg.

8. **A. (Stegomyia) albopictus** Skuse. S. Theodoro, I. 1916, 5 ♂ 3 ♀. Luzon: Banahao, VII. 1914, 1 ♂ 1 ♀.

9. **A. (Ochlerotatus) vigilax** Skuse. Luzon: Manila, I—VI. 1914, 4 ♂ 1 ♀.

10. **A. (Banksinella) lineatopennis** Ludl. Mindoro: Calapan, I—II. 1916, 1 ♀. Luzon: Manila, X. 1914, 1 ♂.

11. **A. (Aedimorphus) ? alboscuteclatus** Theo. Mindoro: Calapan, I—II. 1916, 1 ♀.

12. **A. (Aed.) lowisi** Theo. Mindoro: Calapan, I—II. 1916, 1 ♂ 24 ♀. Another addition to the Philippine fauna.

13. **A. (Aed.) vexans** Mg. Tungkulan, VI. 1915, 1 ♀. Luzon, Manila, I—VI. 1914, 3 ♀.

14. **A. (Aed.) imprimens** Walk. Mindanao: Port Banga, I. 1915, 1 ♀. Also new to the Philippine fauna.

Taeniorhynchus Arr.

15. **T. (Mansonioides) uniformis** Theo. Luzon: La Trinidad, V. 1914, 1 ♀.

Aëdomyia Theo.

16. **A. venustipes** Skuse. Luzon: Manila, X. 1914, 1 ♀.

Lutzia Theo.

17. **L. fuscana** Wied. Luzon: Limay, 21. X. 1916, 1 ♂. La Trinidad, V. 1914, 1 ♀.

Culex L.

18. **C. bitaeniorhynchus** Giles. Luzon: Manila, X. 1914, 3 ♀.

19. **C. tritaeniorhynchus** Giles. Luzon: Manila, X. 1914, 2 ♀.

Chironomidae.

One Philippine species of *Tanypus* was described by Schiner in 1868 and one of *Chironomus* by Thomson in 1869. After these no further records appear to have been published until 1921, when Kieffer described a number of species (Phil. Journ. Sci. XVIII, pp. 557—593). No additional information regarding Philippine Chironomidae has been published since, and the complete list of known species is as follows:

- Procladius* (?) *manilensis* Schin.
 " *philippinensis* Kieff.
Ablabesmyia *monilis* (L.) Kieff.
Chironomus *trochanteratus* Thoms.
 " (*Microtendipes*) *stictopterus* Kieff.
 " (*Limnochironomus*) *niveicauda* Kieff.
 " (*Phytochironomus*) *philippinarum* Kieff.
 " (*Kribiodoxa*) *pulchripennis* Kieff.

Of these species only one, *Ch. trochanteratus* Thoms. is represented in the present collection, but examples of ten others are included; most of them however are too much damaged for determination.

Clinotanypus Kieff.

It is possible that Schiner's *Tanypus manilensis* belongs to this genus, the wing-markings as described resembling several other known species. The mention of hairy wings however would preclude this reference, if the observation was correct.

1. **C. atromarginatus** sp. n.

♂. *Head* yellow. Antennae with scape blackish, base of flagellum yellowish, rest dark brown. Palpi yellow. *Thorax* shining dark brown above, with slight bluish-metallic reflections; mesonotum broadly bordered with dull black except towards the front; scutellum and postnotum blackish. Pronotum whitish, rather small, lobes rather widely separated in middle line. *Abdomen* ochreous; a narrow dark band on segment 3 and a broader one on segment 4; segment 7 and hypopygium blackish. *Legs* yellow; tips of all femora blackened, but most distinctly so on mid legs; tips of front and hind tibiae and bases of middle tibiae blackened. First segment of front tarsi whitish, rest dark brown; first two segments of mid and hind tarsi pale yellowish, rest darkened. Fourth tarsal segment on front legs almost cylindrical and not much shorter than fifth, on mid and hind legs shorter and cordiforms as usual. Wings almost hyaline, with a small dark brown spot on *r-m* and a larger brown cloud extending from costa across *R2* to *M*. Halteres yellow.

Length of body, 3 mm; wing, 2—3 mm.

Luzon: Manila, X. 1914, 1 ♂ (type). Los Banos, II—III. 1914, 3 ♀.

2. **C. variegatus** Kieff. Luzon: Banahao, 5. IV. 1914, 2 ♀.

The type was from Matale, Ceylon. The British Museum possesses specimens from Peradeniya and Galle, Ceylon, which are evidently conspecific, and agree rather closely with the Philippine examples. In all all these the wing-markings are more extensive than stated by

Kieffer, the two brown spots being connected by lighter brown clouds both in the costal cell and also along the hind margin of the wing.

3. *C. paivai* Kieff., var. ? Luzon: Los Banos, II-III. 1914, 1 ♀. Differs from the type (from Orissa) in having the femora entirely black.

4. *C.* sp. inc. Luzon: Banahao, VII. 1914, 1 ♀. Near *C. ceylanicus* Kieff.

5. *C.* sp. inc. Mamte, VII. 1914, 1 ♂ (damaged). A very distinct species with spotted mesonotum and maculate wings.

Ablabesmyia Joh.

6. *A. nigrocinctus* Dol. (?). Luzon: Los Banos, VI. 1914, 1 ♀.

The identity of Doleschall's species is uncertain, but he seems to have described an *Ablabesmyia*. As indicated in his figure, segments 1, 2 and 5 of the abdomen are pale, 3 and 4 each with a dark band, 6-8 dark; the specimen before me is similarly coloured, but has a faint median dark band across the wing which is not indicated by Doleschall.

Camptocladus v. d. W.

7. *C. dichromus*, sp. n.

♀. *Head* black. Eyes bare. Antennae blackish, 6-segmented; 3-5 with very long verticils and bristle like sense hairs; 3 and 4 each with a long neck, 5 without neck; 6 slender, longer than 4 and 5 together. Palpi yellow. *Thorax* entirely dull black. *Abdomen* with segments 1-3 bright yellow, sternite 4 also yellowish; rest black, except the cerci, which are white. *Legs* yellowish, only the coxae darkened. Fourth tarsal segment on all legs cylindrical, but less than twice as long as broad and shorter than fifth. *Wings* glassy, uncoloured, anterior veins darkened. Costa extending far beyond tip of R4-5 and reaching to near wing-tip beyond level of tip of *Cul.* *Cu2* strongly bent in middle, base of fork well beyond *r-m.* *An* straight, almost reaching base of cubital fork. Anal angle only slightly indicated. Halteres yellow.

Length of body, 0.8 mm; wing, 0.8 mm.

Balbalasang, III. 1913, 1 ♀.

Chironomus Mg.

8. *Chironomus trochanteratus* Thoms. Luzon: Los Banos, IV. 1914, 1 ♂ (hypopygium missing).

I examined the type of this species in 1923, and according to my notes it would seem to belong to the subgenus *Xenochironomus* Kieff.

9. *C.* (s. str.) sp. inc. Luzon: Manila, X. 1914, 1 ♀.

Tanytarsus v. d. W.

10. *T.* sp. inc. Mindanao: Port Banga, I. 1915, 1 ♀.

11. *T.* sp. inc: Luzon: Manila, 14. III. 1914, 1 ♀.

Ceratopogonidae.

Only five species of this family have been recorded hitherto from the Philippines, four mentioned or described by Kieffer in 1921 (Phil. J. Sci. XVIII, pp. 557—593). These are

- Atrichopogon flavellus* Kieff.
 " *flavidus* Kieff.
Culicoides philippinensis Kieff.
 " *judicandus* Bezzi.
Probezzia bakeri Kieff.

The first of these is in my opinion identical with *Atrichopogon jacobsoni* de Meij., a species widely distributed in the Oriental and Australasian regions; the last belongs to the genus *Nilobezzia* Kieff., 1921. *C. judicandus* Bezzi is very inadequately described, but is probably the same as *C. philippinensis* Kieff.

The Böttcher collection contains representatives of 19 species, including two of the above four, but some of the material is not in a fit condition to describe, and in some cases the species represented belong to groups which are still not well understood. I describe below only the more distinctive forms which should easily be recognised again.

Atrichopogon Kieff.

1. **A. jacobsoni** de Meij. (*flavellus* Kieff.) Samar: Cathalogan, IV. 1915, 2 ♂ 17 ♀.

2. **A. sp. inc.** Luzon: La Trinidad, V. 1914, 7 ♂ 3 ♀. Much resembles the European *A. winnertzi* Goet. (*lucorum* Winn.), but scutellum brownish and tip of abdomen reddish. Except for the presence of macrotrichia in the apical third of the wing in the ♀, the specimens correspond fairly well with the description of *A. haemorrhoidalis* Kieff. (Formosa).

3. **A. (Kempia) longipalpis** Kieff. (?) Luzon Manila, X. 1914, 2 ♂ 1 ♀. Kieffer does not mention the yellowish scutellum, but his description applies well in the main to our material. The types were from Java.

Dolichohelea gen. n.

Eyes bare. Antennae of ♀ with segments 2—9 oval, 10—14 very long. Proboscis short. Thorax somewhat produced anteriorly; mesonotum with a small anterior tubercle, surface nearly bare, but strong bristles present above wingroots; scutellum somewhat trilobed, with strong marginal bristles. Pleural structure as in *Atrichopogon*. Abdomen narrow, tergites strongly chitinised, 2—4 much larger than 5—8. Legs unmodified, empodium large. Wings narrow, with microtrichia only. Second radial cell very long; intercalary fork inconspicuous; median fork shortly stalked; anal vein straight.

Although evidently allied to *Atrichopogon*, the species described below differs in so many details from all the species of the genus known to me that it seems desirable to separate it in a distinct genus or subgenus. The chief distinctions from *Atrichopogon* are to be found in the longer basal segments of the antennae; presence of mesonotal

tubercle; shape of scutellum; narrow abdomen, with rigid, strongly chitinised tergites; and narrower wings, with longer second radial cell. These features combined give the insect a superficial resemblance to *Palpomyia*.

4. **Dolichohelea polita** sp. n.

♀. *Head* yellow, including proboscis. Eyes touching. Antennae with scape and base of first flagellar segment yellow, rest black; segments 2–9 oval, about 1–5 times as long as broad, 10–14 each about 5–6 times as long as broad, 14 with terminal stylet. Palpi short, brownish. *Thorax* shining ochreous, with an ill-defined black area immediately in front of scutellum, and in some specimens a pair of blackish marks just behind middle of scutum, and a pair of dark stripes outside these; in the most strongly marked specimens the dark markings tend to combine, almost forming a circle. Scutellum yellow; postnotum blackish except at base. Mesonotum with very scanty short pale bristles; four long and strong black bristles above each wing-root, and another pair, widely separated, on prescutellar area. Scutellum with six strong black marginal bristles, the lateral pair widely separated from the other four; hind margin of scutellum slightly indented between the lateral and median bristles to give a weakly trilobed appearance. *Abdomen* somewhat constricted at the base, tip curved downwards. Tergites brightly shining; 1 rudimentary, yellowish; 2 longer than broad, basal half or more blackish, apex ochreous; 3 about as long as broad, black; 4 and 5 gradually shorter, blackish; 6–8 very short, brown. Sternites membranous, ochreous in colour. *Legs* ochreous; knees narrowly black; fifth tarsal segment black; empodium white. *Wings* hyaline, anterior veins darkened; second radial cell nearly six times as long as the first, and extending beyond four-fifths of the wing-length; cubital fork rather narrow. Halteres white.

Length of body, about 2–5 mm.; wing, 2–5 mm.

Balbalasang, III. 1913, 5 ♀.

Culicoides Latr.

5. **C. oxystoma** Kieff. Balbalasang, III. 1913 and I. 1915, 1 ♂ 11 ♀.

A widely distributed species occurring from India to Queensland.

6. **C. philippinensis** Kieff. Luzon: La Trinidad, V. 1914, 2 ♂. Port Banga, I. 1915, 1 ♂.

7. **C. gymnopterus** Edw. Mindoro: Calapan, I–II. 1916, 1 ♂.

8. **C. pungens** de Meij. Balbalasang, III. 1913, 2 ♀. A widely spread Oriental species.

Stilobezzia Kieff.

Re-examination of a number of species of this genus, including the genotype, *S. notata* de Meij. (= *festiva* Kieff.) shows that Kieffer was in error in describing the female claws as „unequal“; I fell into the same error in defining the genus in my paper on the British Ceratopogonidae (*Trans. Ent. Soc. London*, 1926). Actually in all species examined, the *female tarsi bear each a single claw, which is toothed at the base*; this tooth was regarded by Kieffer and myself as a reduced second claw, but careful observation shows that it is not so.

9. *S.* sp. inc. Luzon: Manila, 14. III. 1914, 2 ♀ (both badly discoloured). A small species with unmarked wings devoid of macrotrichia.

Palpomyia Mg.

10. *P. calcarata* sp. n.

♀. *Head* reddish-ochreous. Eyes separated by the width of three facets. Antennae with scape and first two flagellar segments reddish-ochreous, rest black; segments 2—9 elongate-oval. Palpi with first two segments ochreous, last two blackish; segment 2 much longer than the others. *Thorax* blackish-brown, more reddish about shoulders, in front of scutellum, and on part of pleurae. Mesonotum shining; pleurae with some silvery-grey dusting, most conspicuous on lower part and when seen from above. Anterior spine of scutum very distinct, directed forwards. Scutellum with about six marginal bristles. *Abdomen* blackish-brown, shining; extreme base, incisures, and last two segments reddish. *Legs* reddish-ochreous; knees and tips of tibiae very narrowly black; last two or three tarsal segments blackened. Front femora very much swollen, less than four times as long as their breadth in the middle, with about 18 black spines beneath; spines more numerous near tip, but some extending in a row almost to base. Front tibiae curved, tip produced into a stout, blunt, black spine which is about twice as long as the tibial diameter. Middle and hind femora unarmed. Last tarsal segment without spines or bristles beneath; claws on all legs small, equal and simple. *Wings* hyaline; venation normal, as in *P. flavipes* Mg. Halteres yellow.

Length of body, 3 mm.; wing, 3 mm.

Luzon: La Trinidad, V. 1914, 1 ♀.

This species would probably have been referred by Kieffer to the genus *Heteromyia*, on account of the structure of the front femora and tibiae, but the genotype of *Heteromyia* (*H. fasciata* Say) differs from the present and allied species in the form of the hind tarsus of the female, which is greatly lengthened, with a single extremely long claw. If *Heteromyia* is to be maintained as a distinct genus it should be based upon the tarsal structure rather than upon that of the front femur and tibia, in regard to which a series of intergradient forms occur between such species as the present one and typical *Palpomyia* like *P. flavipes* Mg. The most striking feature of the new species is the spine-like process at the tip of the front tibia; this does not occur in the European *P. armipes* Mg. and *P. spinipes* Mg., which are otherwise very similar.

11. *P. manilensis* sp. n.

♂. *Head* black; face very strongly shining, with submetallic bronzy reflections. Antennae black, except for the first flagellar segment, which is mostly brownish. Segments 2—9 almost cylindrical, nearly three times as long as broad. Palpi black. *Thorax* black; dorsum moderately shining, with very fine and uniform dark pubescence; pleurae slightly grey-dusted. Anterior spine of scutum small. *Abdomen* black, shining. *Legs* with the coxae black; front

femora brownish at the base and beneath, black apically; middle and hind femora black at each end, brownish in the middle; tibiae and tarsi dark brownish. Front femora moderately swollen, with about 15 spines beneath; other femora unarmed. Front tibiae straight, tip not produced. Last segment of all tarsi unarmed; claws all small and equal, each with a small sub-basal tooth. *Wings* hyaline; anterior veins blackened; venation almost as in *P. flavipes* Mg. Halteres entirely black.

Length of body, 3 mm.; wing, 3 mm.

Luzon: Manila, XI. 1914, 1 ♀.

Much resembles the European *P. grossipes* Goet., differing in the black scape and bases of the posterior femora.

12. ***P. böttcheri*** sp. n.

♀. Body entirely shining black. Eyes separated by a narrow line scarcely equal to the width of one facet. Antennae and palpi dark brown, segments 2—9 of antennae rather over twice as long as broad. Mesonotal pubescence uniform but more scanty than in *P. manilensis*; anterior spine small but distinct. *Legs* with the coxae and trochanters black; front femora reddish with the tip narrowly black; middle femora reddish with the base rather broadly and the tip narrowly black; hind femora mainly black; front and middle tibiae reddish, blackened at the base, hind tibiae with about the basal half black; tarsi ochreous, terminal segments blackened. Front femora scarcely stouter than the others, with three small ventral spines on outer half; middle and hind femora each with three spines near the tip. Fourth tarsal segment on all legs about half as long again as broad, not distinctly bilobed beneath; fifth with six pairs of pointed spinules. Claws all equal, three-quarters as long as the last tarsal segment, bent sharply back from base, thickened on middle half, each with a blunt basal tooth on the outer side. *Wings* hyaline, anterior veins dark; venation as in *P. flavipes* Mg. Halteres black.

Length of body, 3 mm.; wing, 3 mm.

Luzon: Manila, XI. 1914, 1 ♀.

This species is evidently closely allied to the West African *P. grahami* J. and M.; its characters are intermediate between *Palpomyia* and *Sphaeromias* (*Xylocrypta*); I retain it in the former genus on account of the presence of the scutal spine.

Sphaeromias Curt. (*Xylocrypta* Kieff.)

13. ***S. discolor*** de Meij. (?). Luzon; Manila, X—XI. 1914. 4 ♀. Limay, IV. 1914, 2 ♀. I have no Javan material for comparison, but the determination is probably correct.

14. ***S.*** sp. inc. Luzon: Manila, X—XI. 1914, 2 - (both damaged.)

Homohelea Kieff.

15. ***H.*** sp. inc. (?). Samar: Catbalogan, IV. 1915, 1 ♀ (damaged).

Metahelea gen. n.

Head as in *Palpomyia*, but eyes touching and last palpal segment lengthened. Thorax as in *Palpomyia*, with well developed scutal spine. Front femora with small spines beneath. Fourth tarsal segment on all legs in ♂ four-lobed apically, the lower lobe on each side bearing a black spine, as in *Tetrabezzia* Kieff. Claws of ♂ very unequal (perhaps only one present on each foot). Wings with the venation of *Palpomyia*.

Evidently allied to *Tetrabezzia* on account of the peculiar form of the fourth tarsal segment, but differs in having two distinct radial cells, and the hind tarsi similar to the others.

16. **M. metallescens** sp. n.

♀. *Head* ochreous. Eyes touching for a long space. Antennae with the scape ochreous; segments 2-9 each ochreous at the base; dark at the tip, and about twice as long as broad; 10-14 elongate, dark. Palpi dark brown; segments 2 and 3 each about two and a half times as long as broad, 4 as long as 2 and 3 together. *Thorax* scarcely shining. Prothorax ochreous. Scutum dark bluish, sub-metallic, with strong vertically placed anterior spine, and with single rows of fine acrostichal and dorso-central bristles. Scutellum ochreous, with six black marginal bristles. Postnotum and pleurae dark brown. *Abdomen* with tergites dark brown, apex of 2 and most of the dorsal area of 3-5 ochreous; sternites and cerci ochreous. *Legs* dark brown; trochanters, most of front femora, and tips of middle and hind femora ochreous; first two tarsal segments ochreous. Front femora slender, with three very small and slender spines beneath near the tip; other femora unarmed. Front tarsi missing in type. Middle and hind tarsi alike; fourth segment deeply bilobed, each lobe again split into two lobes, one placed above the other, the upper lobe unarmed, the lower bearing a blunt black spine at its tip; fifth segment unarmed beneath, bearing apparently only a single curved claw which is about equal to the segment in length and is provided with a longish tooth close to the base (possibly this tooth is to be regarded as the rudimentary second claw). *Wings* with two large brown clouds, one filling the first radial cell and the base of cell *R5* and also extending over the cross-vein into the basal cell; the other in cell *R5* near its tip. Halteres yellow, base of knob darkened above.

Length of body, 3 mm.; wing, 2.5 mm.

Negros: Dumaguete, XI. 1914, 1 ♀.

Nilbezzia Kieff.17. **N. ochriventris** sp. n.

♀. *Head* dark brownish-grey. Eyes touching for a considerable distance. Antennae entirely dark brown; segments 2-9 together not much shorter than 10-14; 2 about twice as long as broad, narrowed at the base; 3 hardly longer than broad; 4-9 gradually longer. *Thorax* blackish, heavily dusted with grey; scutellum reddish. *Abdomen* much narrower than the thorax, light ochreous, somewhat grey-dusted; when viewed very obliquely from behind with traces of a median longitu-

dinal dark line. Cerci black. Last sternite with long curved bristly hairs. *Legs* dark brown, basal half of front and middle femora, most of front tibia, and apical half of middle tibia ochreous; first four tarsal segments ochreous with blackish tips. Front femora unarmed; middle and hind femora with a few spiny bristles beneath near the tips and a row of similar bristles anteriorly; similar rows of bristles anteriorly on front and hind tibiae and anteriorly and posteriorly on middle tibiae. Fourth tarsal segment on all legs about half as long again as broad, fifth with about six pairs of spiny bristles beneath. Claws all equal, each with a basal tooth about one-third as long as the claw. *Wings* whitish, veins all pale. Costa extending to fully four-fifths of the wing-length. Halteres whitish.

Length of body, 3,8 mm.; wing, 3,5 mm.

Luzon: Manila, 14. III. 1914, 1 ♂.

This must be very similar to *N. (Bezzia) acanthopus* de Meij. (Java), the claws of which are said to be unequal, the larger with a basal tooth; to *N. (Probezzia) bakeri* Kieff. (Luzon), which according to the description has unarmed femora and a black abdomen; also to *N. kerteszi* Kieff. (Formosa), which is said to have the femora unarmed and the abdomen as broad as the thorax. Neither de Meijere nor Kieffer indicate that the abdomen was pale in their specimens.

Bezzia Kieff.

18. **B. (Probezzia)** sp. inc. Luzon: Banahao, 5. IV. 1914, 2 ♀. A small species with brownish-grey, unmarked thorax, yellow legs, and black abdomen.

19. **B. (Probezzia)** sp. inc. Luzon: La Trinidad, V. 1914, 1 ♀. Much resembles the European *B. annulipes* Mg.

Simuliidae.

I am not aware that any species of this family have been recorded as occurring in the Philippines. Two are represented in the collection before me.

Simulium Latr.

1. *S. melanopus* sp. n.

♂. *Head* black, including mouth-parts and scape of antennae (flagellum missing). *Thorax* dull black above, with oval or slightly crescent-shaped areas on front of mesonotum, which appear shining and slightly iridescent when viewed from in front, but more silvery when viewed from behind; sides of mesonotum in some aspects broadly iridescent greenish; mesonotum also broadly silvery-iridescent posteriorly when viewed from behind. Scutellum with scanty black hair. Pleurae grey-dusted, membranous area bare. *Abdomen* with fringe of basal segment black, second segment silvered at base (other markings not clearly distinguishable). Hypopygium with claspers over

twice as long as broad, with one terminal spine facing inwards. *Legs* black; front coxae brownish; front tibiae somewhat silvery on outer side; hind tibiae with the extreme base scarcely perceptibly yellowish; first segment of middle and hind tarsi yellowish on the basal half. First segment of front tarsi flattened, rather over four times as long as deep; first segment of hind tarsi also much flattened, barely four times as long as deep. *Wings* hyaline, venation normal. Hair on stem vein black. Basal part of radius bare. Halteres blackish.

♀. *Head* black; frons shining, rather broad; face grey-dusted. Antennae entirely black. *Thorax* with the mesonotum considerably shining all over, with scanty dark fine pubescence; without distinct grey dusting even on shoulders, but with the sides broadly iridescent as in the ♂ (though less noticeably so). *Abdomen* black, last four tergites brightly shining. *Legs* as in the ♂, but hind tibiae with some grey dusting on basal third, and first hind tarsal segment slender. Claws simple. *Wings* as in the ♂. Halteres yellowish.

Length of body, about 2 mm.; wing, 2—2.2 mm.

Luzon: Banahao, VI. 1914, 2 ♂ 1 ♀ (incl. type ♂). Mt. Data, III. 1917, 1 ♀.

This is nearly allied to *S. iridescens* de Meij. (Java) and *S. fuscipilosum* Edw. (Malaya), differing in the almost completely black tibiae.

2. *S. (Eusimulium)* sp. Luzon: Banahao, 5. IV. 1914, 1 ♀. Perhaps a form of *S. aureum* Fries.