PHILIPPINE AND OTHER ORIENTAL DROSOPHILIDÆ

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Through the kindness of Prof. M. Bezzi I have been able to study a series of Philippine Drosophilidæ, collected chiefly by Prof. C. F. Baker. I have included in the present paper the results of a study of two other Oriental series in my collection, taken in Formosa by Dr. R. Takahashi and in India by Miss Eleanor D. Mason. Dr. O. Duda has recently published two papers dealing with the Palæarctic and Oriental members of the family, based on a study of much of the material in European museums.[1] These papers are so nearly complete that they must serve as the basis for any study of the Old World species. All that I shall do here is to present a few notes on species that I have seen, correlate the new species here described with Duda's account, add a few observations based on examination of some of the type material at the British Museum (which I visited in 1922), and introduce some modifications in the system, based chiefly on Malloch's work.[2]

The types of the new species based on Philippine material have been returned to Professor Bezzi. The types of *Drosophila* (*Spinulophila*) *immigrans formosana* var. nov. and of *D. takahashii* sp. nov. have been deposited in the American Museum of Natural History. Paratypes are in these two collections and in my own collection.

Genus AMIOTA Loew

Malloch (February, 1924) shows that *Amiota* Loew has priority over *Phortica* Schiner. I formerly placed both names as synonyms of *Stegana* Meigen, but Malloch shows that the genera are easily separable by the thornlike bristles on the undersurface of the costal vein near the wing tip. These thorns are present in

[1] Ann. Hist. Nat. Mus. Hung. 20 (December 24, 1923) 24–59; Arch. Naturg. 90A (June, 1924) 172–259.

[2] Proc. Linn. Soc. N. S. Wales 48 (December 14, 1923) 601–622; 49 (October 24, 1924) 348; Proc. Biol. Soc. Wash. 37 (February 21, 1924) 35–42.

Stegana (and also in *Leucophenga*) but absent in *Amiota*. Duda separates the two forms on the basis of the plane of the long axis of the eye (horizontal in *Stegana*, vertical in *Amiota*). This division does not correspond to that of Malloch, and seems to me less satisfactory, as it places in *Amiota* a number of species that appear to be much more naturally grouped with *Stegana*. The three new forms described here have a bearing on the ultimate treatment of the group; all of them key to Duda's subgenus *Eostegana* (Hendel) of *Amiota*, but two have costal spines while one has not, and the appearance of the forms is so diverse that it seems certain they should be given at least subgeneric distinction. Owing to lack of material I have not attempted here to elaborate any further classification than that into *Stegana* (with costal spines) and *Amiota* (without costal spines).

AMIOTA ALBODORSATA sp. nov.

Female.—Arista broken, but long branches still present above and below. Second orbital minute, inserted at same level as third. Front three times the width of an eye (as viewed from above), narrowed below. Greatest diameter of eye inclined about 45° from the vertical, nearly twice the diameter at right angles to it. Carina large, flat. Antennæ yellowish white, second joint grayish above. Face, front, and occiput white. Cheeks dark brown.

Mesonotum and scutellum white. The mesonotum is badly rubbed in the type; the scutellum is large, being more than half as long as the mesonotum. Pleuræ blackish brown, with a few small grayish markings. Legs dark brown.

Wings blackish, bent down at base as in most species of *Stegana*. Costa to apex of fourth vein, no thorns on its third section. Discal and second basal cells separated by a cross vein. Third vein at tip of wing; third and fourth veins not convergent apically. Second vein bent outward at apex, nearly straight basal to this curve. Last section of fifth vein 1.5 times length of posterior cross vein.

Abdomen yellow, each segment with a posterior black band. Egg guides yellowish brown, long, with black teeth below and a black point posteriorly.

Length, 2.25 millimeters.

Los Baños, Laguna Province, Luzon, Philippine Islands (*C. F. Baker*), type and only specimen.

This species resembles *Stegana* superficially; it might perhaps best be made the type of a new genus intermediate between *Stegana* and *Amiota*.

AMIOTA LEUCOPHENGOIDES sp. nov.

Male.—Arista with about twelve long branches above and eleven short ones below. Antennæ yellowish brown, face and frons yellow with whitish reflections, ocellar dot dark brown. Frons half the width of an eye, its sides nearly parallel. Anterior orbital broken in the type; middle orbital half the size of upper, twice as far from upper as from lower. Only one large vibrissa. Carina distinct, long but low. Cheeks very narrow. Eyes bare, vertical diameter twice horizontal.

Mesonotum and scutellum dark brown, somewhat pollinose posteriorly. Prescutellars large. Pleuræ dark brown, somewhat pollinose. Legs yellowish brown. Mesonotum black.

Wings straight, not broken at base as in typical *Stegana*. Discal and second basal cells separated by a cross vein. Costa reaches only to apex of third vein. No costal thorns such as are present in *Stegana*. Second, third, and fourth veins nearly straight, not sinuate or converging. Wings slightly smoky.

First abdominal segment yellow, with a broad black fascia on each side, the fasciæ not quite meeting in the middorsal line. Remaining abdominal segments shining black, each with a narrow yellow posterior border.

Length, 3 millimeters.

Batbatan Island, Philippine Islands (*R. C. McGregor*), type and only specimen.

This species might be placed in *Leucophenga* if one were disposed to emphasize the short costa rather than the basal cross vein.

Genus STEGANA Meigen

STEGANA BAKERI sp. nov.

Arista with about seven branches above and four below. Carina absent. Antennæ brown, third joint blackish above. Face and mouth parts brown; frons brown, darker above. Frons parallel-sided, two-thirds the width of an eye. Lower and middle orbitals inserted at the same level, lower nearer midline of frons; upper orbital nearer to verticals than to two lower orbitals. Lower and middle orbitals nearly the same size. Postverticals minute. Cheeks very narrow. Vertical diameter of eye $1\frac{3}{4}$ horizontal diameter. Eyes bare.

Prescutellars well developed. Mesonotum reddish brown, subshining. Legs and pleuræ brownish yellow. A minute bristle near lower border of propleura.

Wings bent at base as in typical *Stegana*. Costa to apex of fourth vein; thorns on its underside just before apex of third

vein. Wings slightly smoky anteriorly. Second, third, and fourth veins not sinuate or convergent. Discal and second cells separate.

First abdominal segment yellow anteriorly, with a broad dull black band posterior to this, and a narrow whitish posterior margin. Second segment narrow, bright yellow, with no hairs or bristles. Third segment shining black with a narrow yellow anterior margin. Fourth segment shining black. Fifth segment yellow with black lateral margins.

Length, 3 millimeters.

Mount Maquiling, Luzon, Philippine Islands (*Baker*), type and only specimen.

The straight longitudinal veins of this species suggest *Amiota* or *Leucophenga;* but the characters given place it in *Stegana* as here defined.

LEUCOPHENGA HALTEROPUNCTATA Duda.

Mount Maquiling and Los Baños, Laguna Province, Philippine Islands (*Baker*).

LEUCOPHENGA ARGENTATA de Meijere.

Dapitan, Zamboanga Province, Mindanao, and Los Baños, Laguna Province, Philippine Islands (*Baker*).

LEUCOPHENGA BEZZII sp. nov.

Arista with about nine branches above and four below. Antennæ yellow, third joint brown. Face, mouth parts, and frons brownish yellow. Frons parallel-sided, nearly as wide as an eye. Lower orbital inserted scarcely below middle one, but nearer midline. Middle orbital slightly larger than lower one. Upper orbital slightly nearer to inner vertical than to middle orbital. Postverticals minute. Carina absent. Cheeks very narrow.

Prescutellars well developed. Mesonotum and scutellum reddish brown, lightly pollinose. Pleuræ and legs yellow. Halteres whitish.

Wings smoky. Costa to apex of third vein. Tubercles on underside of costa just before apex of third vein.

First abdominal segment yellow, with a broad black fascia on each side, the fasciæ almost meeting in the middle line in one specimen. Second and third segments black, with yellow anterior border that is narrower in the median dorsal region. Fourth segment black. Fifth segment yellow, with black lateral margins.

Length, 2.5 millimeters.

Mount Maquiling, Luzon, Philippine Islands (*Baker*), type and paratype.

Genus ZAPRIONUS Duda

Subgenus PHORTICELLA Duda

Phorticella Duda (type, *Drosophila bistriata* de Meijere) was based on the small second orbital, four acrostichal rows, and absence of femoral tubercles. The two new species here described have new combinations of these characters, so that it seems most convenient to reduce *Phorticella* to a subgenus of *Zaprionus*, basing it on the small second orbital alone. Duda's definition of the genus *Zaprionus* should also be modified slightly so as to include the neotropical *Z. orbitalis* (Sturtevant), which has grayish orbits and no thoracic stripes. This species and *Z. bilineata* (Williston) from the West Indies, as well as *Z. multistriata* sp. nov., belong to the typical subgenus; *Z. bakeri* sp. nov. belongs to *Phorticella; Z. albicornis* Enderlein[3] from Formosa and *Z. lineosa* (Walker) probably belong to the subgenus *Zaprionus*, but need to be checked.

ZAPRIONUS LINEOSA (Walker).[4]

From Macassar, Celebes. The type is a *Zaprionus*, with the usual brownish red color of the genus; four mesonotal white stripes (besides the notopleural stripes), that are barely united anteriorly into two; arista with three branches above and two below; face white.

ZAPRIONUS MULTISTRIATA sp. nov.

Female.—Arista with about four branches above and two below. Middle orbital very slightly smaller than upper, inserted halfway between upper and lower. Face prominent, carina large and flat. Frons yellowish red; orbits, median stripe, and lateral margins of ocellar triangle silvery white. Face, cheeks, and antennæ yellowish brown. Greatest width of cheeks (at lower posterior corner of head) about one-fourth height of eye. Eyes pilose. Only one prominent oral bristle.

Acrostichal hairs in six rows. Mesonotum reddish, with nine longitudinal white stripes, one between the two median acrostichal rows and four on each side as follows: One between the two outer acrostichal rows (that is, separated from the median stripe by two rows of acrostichal hairs); one outside the dorsocentral row and appearing continuous with the orbital

[3] Deutsch. Ent. Zeit. (1922) 295.

[4] Proc. Linn. Soc. London 4 (1860) 170 as *Notiphila*.

stripe and with the scutellar margin; an interrupted stripe appearing as a white margin to the humerus; and a stripe posterior to the suture. Scutellum reddish; with a median and two lateral white stripes that are continuous with the mesonotal stripes. Legs and pleuræ yellow. No femoral tubercles present.

Wings clear, veins brownish. Second, third, and fourth veins straight.

Abdomen dull yellowish brown.

Length, 2.5 millimeters.

Mount Maquiling, Luzon, Philippine Islands (*Baker 5260*), type and only specimen.

ZAPRIONUS (PHORTICELLA) BAKERI sp. nov.

Male.—Arista with about six branches above and four below. Middle orbital scarcely one-fourth the other two. Face prominent, carina large and flat. Face yellow. Frons yellowish red, orbits silvery white, forming white stripes which extend over the outer surfaces of second antennal joints. Only one prominent oral bristle. Greatest width of cheek about one-eighth greatest diameter of eye. Eyes pilose.

Acrostichal hairs in six rows. Mesonotum yellowish red, with four white longitudinal stripes, two on each side as follows: One just outside the dorsocentral row and appearing as a continuation of the orbital stripes, and a less distinct one just above the notopleural suture. On each side of the more-distinct white stripe is a darker brownish red stripe; the dorsocentral row of hairs is in the inner of these dark stripes. Scutellum yellowish red, bordered by white stripes that are continuations of the conspicuous mesonotal stripes and are also in turn margined by dark brownish red stripes. Pleuræ and legs yellow. No femoral tubercles.

Wings clear, veins brown. Last section of fifth vein $1\frac{2}{3}$ the length of posterior crossvein.

Abdomen yellowish brown, each hair and bristle arising from a dark brown spot.

Length, 2.5 millimeters.

Mount Maquiling, Luzon, Philippine Islands (*Baker 6230*), type and only specimen.

Genus DROSOPHILA Duda

Duda has separated *Drosophila* into a number of subgenera; and Malloch has suggested that some of his segregates from *Mycodrosophila* should also be placed under *Drosophila*. My opinion is that *Chaetodrosophilella* (see page 367) is also deserving of

only subgeneric rank. *Incisurifrons* Duda is a synonym of *Microdrosophila* Malloch. The three remaining subgenera present in the Oriental material before me were all first published in 1923 as genera, and genotypes have not been designated. We may select the following:

Hirtodrosophila, H. longecrinita Duda.
Paradrosophila, Drosophila pictipennis Kertesz.
Spinulophila, S. signata Duda.

In the case of *Spinulophila* only three forms were included, and two of these were described chiefly by stating their differences from *S. albomicans* Duda; but that species seems to have been undescribed at the time and therefore cannot become the genotype.

DROSOPHILA (CHAETODROSOPHILELLA) QUADRILINEATA de Meijere.

Mount Maquiling, Philippine Islands (*Baker*), one specimen. Recorded from Java and Annam. Duda gives the name as *Chaetodrosophila* in 1924; I have followed the original spelling.

DROSOPHILA (HIRTODROSOPHILA) LONGECRINITA Duda (typical form).

"Culasi, Panay. 5.18.18. Hillside forest at 800 meters. On fungus." (*McGregor*), seven specimens. Described from Formosa.

The six Oriental forms of the subgenus *Spinulophila* before me can be separated by the following key:

Key to six Oriental forms of Spinulophila Duda.

1. Cheeks (at lower posterior corner of head) one-fourth height of eye.. 2.
   Cheeks one-sixth to one-tenth height of eye..... 3.
2. Males, basal tarsal joint of first leg with no strikingly long hairs.
   D. (S.) immigrans Sturtevant.
   Males, basal tarsal joint of first leg with strikingly long hairs.
   D. (S.) immigrans var. formosana var. nov.
3. Thorax metallic; abdomen shining metallic black.
   D. (S.) monochaeta sp. nov.
   Thorax reddish; abdomen without bands; 3 millimeters long.
   D. (S.) rubra sp. nov.
   Thorax yellow, not reddish; abdomen with black bands; or fly less than 2 millimeters long..... 4.
4. Males with conspicuous silvering on front; less than 2 millimeters long; abdominal bands narrow or absent..... D. (S.) nasuta Lamb.
   Faint silvering on front; more than 2 millimeters long; black abdominal bands distinct, broader in middorsal line....**D. (S.) balneorum sp. nov.**

DROSOPHILA (SPINULOPHILA) IMMIGRANS Sturtevant.

Drosophila tripunctata of authors, not of Loew.
Drosophila cilifemur VILLENEUVE.
Drosophila hypocausta OSTEN SACKEN?

I have the typical form of this species from Taihoku, Formosa (*R. Takahashi*), and females that are presumably typical (the variety *formosana* is not identifiable in females) from Kodaikanal, Madras, India (*E. D. Mason*). The species is recorded from Europe, the Canary Islands, the United States, Costa Rica, Hawaii, Australia, and Formosa. *Drosophila hypocausta* Osten Sacken, which is perhaps an earlier name for the species, was described from the Philippine Islands.

DROSOPHILA (SPINULOPHILA) IMMIGRANS FORMOSANA var. nov.

Male.—Differs from typical *immigrans* only in the front tarsi. The short dense hairs of the two basal joints are less conspicuous than in the typical form, but there is a series of much longer recurved black hairs on the outer and anterior surfaces of all the joints of the front tarsi.

I am unable to separate the female from the typical form.

Taihoku, Formosa, March, 1924 (*Takahashi*), type and seven paratype males.

Duda also recognized this form from Formosa, but he failed to give it a name.

DROSOPHILA (SPINULOPHILA) MONOCHAETA sp. nov.

Arista with about eight branches above and five below. Carina prominent, large, flat. Middle orbital minute, but larger than the hairs anterior to it. Only one prominent oral bristle. Greatest width of cheek about one-sixth height of eye. Front reddish yellow; face, cheeks, and mouth parts yellow.

Mesonotum dark reddish brown, shining, with metallic bluish reflections posteriorly. Scutellum, pleuræ, and coxæ shining dark reddish brown. Legs yellow. Front femora somewhat swollen, bearing the usual row of small spines and, on the undersurface, only one bristle, which is much longer and stronger than the bristles usually present here.

Wings clear, except extreme base which is darkened. Only one spine at apex of first costal section. Costal index about 5, fourth vein index about 1.1, 5x index about 1, 4c index about 0.4.

Abdomen shining metallic black; two basal segments bluish, third to fifth more coppery.

Length, 2.5 millimeters.

Mount Maquiling, Luzon, Philippine Islands (*Baker 6224*), type and only specimen.

The metallic thorax and abdomen and the single long bristle on the undersurface of the front femur will identify this species.

DROSOPHILA (SPINULOPHILA) RUBRA sp. nov.

Male.—Arista with about eight branches above and four below. Carina large and flat. Second oral bristle nearly as large as first. Middle orbital not larger than the minute reclinate hairs anterior to it. Front and antennæ yellowish red. Face, cheeks, and mouth parts yellow. Greatest width of cheek about one-eighth height of eye.

Acrostichal hairs in eight rows. Mesonotum and scutellum dull yellowish red, pleuræ paler. Legs yellow. The usual row of spines present on front femora. Front tarsi without special hairs or bristles.

Wings clear, veins brown. Only one large bristle at apex of first section of costa. Costal index about 4, fourth vein index about 1.1, 5x index about 0.9, 4c index about 0.6.

Abdomen dull yellowish red.

Length, 3 millimeters.

Mount Maquiling, Luzon, Philippine Islands (*Baker*), type and only specimen.

The large size and red color should serve to identify this species easily.

DROSOPHILA (SPINULOPHILA) NASUTA Lamb.

Drosophila albomicans DUDA.

Taihoku, Formosa (*Takahashi*).

Recorded from the Seychelles and from Formosa. Lamb does not mention the femoral spines characteristic of *Spinulophila* in the description of *nasuta;* but I have seen the type, and such spines are present. The synonymy given here needs no further explanation.

DROSOPHILA (SPINULOPHILA) BALNEORUM sp. nov. *immigrans group*

Male.—Arista with about seven branches above and five below. Carina large and flat. Second oral bristle nearly as large as first. Middle orbital one-fourth size of the other two. Greatest width of cheek one-sixth height of eye. Head yellowish brown, ocellar dot blackish, front with slight whitish reflection.

Mesonotum yellowish brown, slightly grayish pollinose. Scutellum and pleuræ brown. Legs brownish yellow, front femora darker. The usual row of spines on front femora; front tarsi plain.

Only one large bristle at apex of first costal section. Wings clear, cross veins faintly clouded. Costal index 3.5; fourth vein index 1.3; 5x index 1; 4c index 1.7.

Abdomen yellowish brown, each segment with a dark posterior band.

Length, 2.5 millimeters.

The females before me have paler legs and long slender egg guides.

Los Baños, Laguna Province, Luzon (*Baker 984*), type. Los Baños, Mount Maquiling, Philippine Islands (*Baker*) paratypes, three females.

DROSOPHILA (PARADROSOPHILA) LURIDA Walker.

Discomyza punctipennis v. d. WULP.

Mount Maquiling, Luzon, Philippine Islands (*Baker*), two specimens.

I have examined the type (from Macassar, Celebes), and a Javan specimen determined by de Meijere. These agree with each other and with the Philippine specimens.

DROSOPHILA (PARADROSOPHILA) ACUTA sp. nov.

Female.—Arista with about ten branches above and four below. Second oral nearly as long as first. Middle orbital one-third other two. Carina large, broad, and flat. Second antennal joint with an unusually long and heavy bristle on its inner surface. Front dark reddish brown, a silvery spot on the occiput on each side of the ocellar region. Face black, cheeks dark brown. Greatest width of cheek about one-fourth height of eye. Eyes pilose.

Prescutellars large. Acrostichal hairs in at least eight rows. Thorax dull black. Legs brown, front femora blackish, all tarsi yellowish. Halteres white.

Wings clear, blackish at base. Costal index about 1.8; fourth vein index about 1.8; 5x index about 0.9; 4c index about 1.4.

Abdomen dull black. Egg guides brown, slender, drawn out into an acute tip.

Length, 2.7 millimeters.

Mount Maquiling, Luzon, Philippine Islands (*Baker*), type and only specimen.

DROSOPHILA MELANOGASTER Meigen.

Drosophila ampelophila LOEW.

Nungambaukam, Madras, India (*Mason*).

I also have specimens from Peking, China, and from Fukuoka and Shinano, Japan. The species is cosmopolitan. Duda argues that Loew's name should be used, but I am not convinced.

DROSOPHILA ANANASSAE Doleschall.

Nungambaukam, Madras, India (*Mason*), many specimens of both sexes. One of the females has an egg just protruding from the ovipositor; this egg has two anterior filaments.

The species is recorded from Formosa, Java, Sumatra, and New Guinea.

DROSOPHILA TAKAHASHII sp. nov.

Male.—Arista with about five branches above and four below. Second oral nearly as long as first. Middle orbital one-fourth the other two. Carina low, flat. Front, antennæ, face, and cheeks brownish yellow. Greatest width of cheek about one-tenth height of eye. Eyes pilose.

Acrostichal hairs in eight rows; no prescutellars. Mesonotum and scutellum yellowish red, subshining. Pleuræ and legs yellow. On the undersurface of the basal joint of the front tarsi are short stiff black bristles, arranged in six short transverse rows; two such rows also on the undersurface of the second joint of the front tarsi.

Wings clear. Costal index about 2.3; fourth vein index about 2.6; 5x index about 2; 4c index about 1.3.

Abdomen shining black, each of the three basal segments with a basal yellowish band.

Length, 2 millimeters.

The females agree with the above description, except that the front tarsi are plain and the fourth abdominal segment has a basal yellow band.

Taihoku, Formosa, March, 1924 (*Takahashi*), type and nineteen paratypes.

The species resembles *D. melanogaster* and *D. ananassae*. The cheeks are narrower in *takahashii*, and the structure of the male front tarsi is different. In *melanogaster* the small black bristles are confined to one diagonal row on the inner dorsal surface of the basal joint; in *ananassae* there are several transverse rows on the ventral surface, but the bristles are yellowish instead of black.

DROSOPHILA MONTIUM de Meijere var. ATROPYGA Duda.

Nungambaukam, Madras, India (*Mason*), one male.

DROSOPHILA TRISTIPENNIS Duda.

Nungambaukam, Madras, India (*Mason*), one male.

DROSOPHILA HYDEI Sturtevant.

Taihoku, Formosa, March, 1924 (*Takahashi*), one specimen.

Recorded by Malloch from Sydney, Australia, and occurs from Massachusetts to California, Panama, and Porto Rico. It is distinguishable from *D. repleta* in that it has smaller eyes and no lateral pale spots on the dark abdominal bands.

DROSOPHILA HIRTISCUTELLATA sp. nov.

Male.—Arista with five branches above and three below. Only one prominent oral bristle. Middle orbital one-third the other two. Head dark brown. Greatest width of cheek one-sixth height of eye. Eyes pilose.

Thorax and legs dark dull brown, tarsi yellowish. Margin of scutellum with a few hairs; about three in front of anterior scutellar bristle and three behind it.

Wings clear. Costal index about 2; fourth vein index about 2; 5x index about 1.3; 4c index about 1.2.

Basal abdominal segment brown, with dark fascia on each side; remaining segments dark dull brown, each with a narrow apical border that is paler.

Length, 2.2 millimeters.

Mount Maquiling, Luzon, Philippine Islands (*Baker*), type and only specimen.

The hairs on the scutellum will serve to identify this species. The character is not known in any other member of the family, if one excludes the genus *Curtonotum* and its relatives from the Drosophilidæ (as I am inclined to do).

DROSOPHILA ELONGATA sp. nov.

Male.—Arista with about six branches above and three below. Only one prominent oral bristle. Middle orbital hairlike. Carina low, broad, flat. Front shining yellow. Face whitish. Antennæ and cheeks yellow. Greatest width of cheek one-sixth height of eye. Eyes bare. Head bristles all brown.

Acrostichal hairs in eight rows. Prescutellar region damaged in the type. Mesonotum and scutellum shining yellow. Pleuræ and legs yellow. First tarsal joint of front leg as long as the four distal joints. Thoracic bristles and hairs all yellowish.

Costal, marginal, and apex of submarginal cells black; wings otherwise clear. Distal costal incision well marked. Costal index about 1.5; 5x index about 1.1; 4c index about 1.

Abdomen elongate; shining yellow above, shining black laterally, dull yellow below; bristles yellow.

Length, 2.7 millimeters.

Los Baños, Laguna Province, Luzon, Philippine Islands (*Baker*), type and only specimen.

This species is scarcely a *Drosophila*, the bare eyes and elongate abdomen being distinctly out of place here. Perhaps it is a member of one of the groups placed by Duda near *Mycodrosophila*, but I am unable to satisfy myself as to the status of these forms without more material than is now available. Malloch has previously expressed doubts as to the treatment that should be accorded to this general group.

NOTES ON TYPE SPECIMENS OF ORIENTAL DROSOPHILIDÆ DESCRIBED BY WALKER

DROSOPHILA FINIGUTTA Walker.

Drosophila finigutta WALKER, Proc. Linn. Soc. 3 (1859) 126, Aroe.

This is a sapromyzid.

DROSOPHILA ILLATA Walker.

Drosophila illata WALKER, Proc. Linn. Soc. 4 (1860) 168, Macassar, Celebes.

This is a *Drosophila*, of the *melanogaster* group; but the type is so badly damaged that specific identification will probably not be possible.

DROSOPHILA LATERALIS Walker.

Drosophila rudis WALKER, Proc. Linn. Soc. 4 (1860) 169, Macassar, Celebes.

A *Leucophenga*, apparently near *L. salatigae* de Meijere.

DROSOPHILA LURIDA Walker.

Drosophila lateralis WALKER, Proc. Linn. Soc. 4 (1860) 169, Macassar, Celebes.

See above, under subgenus *Paradrosophila*.

DROSOPHILA MELANOSPILA Walker.

Drosophila melanospila WALKER, Proc. Linn. Soc. 3 (1859) 126, Aroe.

This is a sapromyzid.

DROSOPHILA PINGUIS Walker.

Drosophila pinguis WALKER, Proc. Linn. Soc. 8 (1865) 168, New Guinea.

This is a sapromyzid.

DROSOPHILA RUDIS Walker.

Drosophila rudis WALKER, Proc. Linn. Soc. 4 (1860) 168, Macassar, Celebes.

A *Leucophenga*, apparently not recognized since Walker's time. Walker's description of the wing pattern is accurate and should serve to identify the species. The palpi are yellow.

DROSOPHILA SOLENNIS Walker.

Drosophila solennis WALKER, Proc. Linn. Soc. 4 (1860) 168, Macassar, Celebes.

This is a true *Drosophila*. I have seen no other specimens agreeing with it, but Duda's table suggests that it may be the same as *D. obscuricornis* (de Meijere). The species suggests *D. immigrans*, but lacks the femoral spines of *Spinulophila*. The middle orbital is nearly two-thirds the length of the upper one; second oral nearly as long as first; carina large and flat; acrostichal hairs in eight rows; four dark stripes on mesonotum, the outer ones interrupted; costal index about 3.6, fourth vein index about 1.5, 5x index about 1.1, 4c index about 0.7; abdomen yellow, each segment with a broad posterior dark brown band that is broader in the median dorsal line.

NOTIPHILA LINEOSA Walker.

Notiphila lineosa WALKER, Proc. Linn. Soc. 4 (1860) 170, Macassar, Celebes.

This is a *Zaprionus*, and is included in the discussion of that genus presented in this paper.

SCIOMYZA LEUCOMELANA Walker.

Sciomyza leucomelana WALKER, Proc. Linn. Soc. 4 (1860) 144, Macassar, Celebes.

As was pointed out to me by Maj. E. E. Austen, this belongs to the genus *Stegana*, as here understood.

BIOLOGY OF THE LARGE PHILIPPINE FOREST SCORPION

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FOUR PLATES

The large forest scorpion *Palamnaeus longimanus* Herbst is rather common on certain islands of the Philippines but, strangely enough, it seems to be absent on other islands of the group, particularly Luzon. During the last twenty years certainly sufficient collecting has been carried on in Luzon to have revealed this species if it were present at all. Our records show the species from various localities in Mindanao, Palawan and, lately, from Tawitawi in the Sulu group.

Although several authors have on various occasions identified Mindanao specimens of this large forest scorpion as *P. longimanus*, the correctness of this identification seems open to doubt, due to the following facts. In the course of the work on the biology of these scorpions it occurred to me that even in the comparatively young stage it should be possible to distinguish males from females, since in *longimanus* the male has rather long and slender chelipeds and in the female they are much stouter, shorter, and broader. Since I was unable to find any appreciable difference in this respect in the different individuals which I raised, I examined over one hundred fifty specimens of alcoholic material in our collection, and to my astonishment found not a single specimen that could be recognized as male by the long chelipeds.

A few Mindanao specimens were examined by Professor Borelli of Turin, and determined by him as *P. longimanus* females and, in a letter recently received from him, he states, "the females of *P. longimanus* and of *P. oatesii* are very difficult to distinguish."

From the above-mentioned facts, I am inclined to the belief that the large Mindanao forest scorpion may possibly not be *P. longimanus* Herbst but *P. oatesii* Pocock or a subspecies of the latter since in *oatesii* the two sexes, according to the descrip-