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II. The *Drosophila immigrans* Species-group of the
Subgenus *Drosophila*

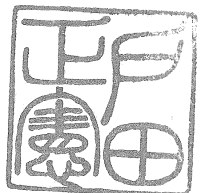
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Drosophilidae (Diptera) in Burma
II. The *Drosophila immigrans* Species-group of the
Subgenus *Drosophila*

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Abstract Seven new and eleven known species of the *Drosophila immigrans* species-group are reported from Burma.

The *Drosophila immigrans* species-group has certainly originated in the Oriental Region, and has been diversified there so extensively that, together with the *D. melanogaster* species-group of the subgenus *Sophophora* STURTEVANT, this species-group comprises the greater part of the drosophilid fauna in the Oriental Region (BOCK & WHEELER, 1972; THROCKMORTON, 1975; OKADA, 1981). WILSON *et al.* (1969) recognized five subgroups in this species-group: the *immigrans*, *nasuta*, *quadrilineata*, *lineosa* and *hypocausta* subgroups. However, at present, the *lineosa* subgroup is invalid, *i.e.*, all species of this subgroup were transferred to the genera *Phorticella* DUDA or *Zaprionus* COQUILLET by OKADA and CARSON (1983).

All specimens, except for those of *D. neohypocausta* sent from culture strains by Dr. H. IKEDA of Ehime University, were collected by the author himself mainly by traps baited with fermenting banana and supplementally by sweeping with an insect net at various places. All holotypes and a part of paratypes are deposited in the Entomological Institute, Hokkaido University, Sapporo, Japan, and the remaining paratypes in author's collection.

Subgenus *Drosophila* FALLÉN

Drosophila FALLÉN, 1823, Dipt. Svec. Geomyz., 2: 4; STURTEVANT, 1939: 139; 1942: 30; WHEELER & TAKADA, 1964: 178. Type species: *Musca funebris* FABRICIUS.

Diagnosis. Ventral receptacle finely coiled; posterior pair of Malpighian tubes fused; 3 or 4 tapering filaments on egg; dark posterior bands of at least 2 basal abdominal tergites thinner or broken in median dorsal line (STURTEVANT, 1939). Testes long, spiral; sterno-index usually 0.5 or more; cheeks often wide; puparial "horns" often more than 1/5 length of puparium (STURTEVANT, 1942). Prescutellars usually undeveloped; propleural bristle absent (WHEELER & TAKADA, 1964).

D. immigrans Species-group

D. immigrans species-group, STURTEVANT, 1942: 32.

Diagnosis. Fore femur with 1 row of stout spinules on inner side.

***D. immigrans* Species-subgroup**

D. immigrans species-subgroup, WILSON *et al.*, 1969: 211.

Diagnosis. ♂ fore tarsus often with some degree of modification and/or ornamentation. Aedeagus dorsosubmedially with characteristic process. One pair of distinct hypandrial processes usually present on inner margins of novasternum.

✓ ***Drosophila (Drosophila) immigrans* STURTEVANT**

Drosophila immigrans STURTEVANT, 1921, Carn. Inst. Publ., 301: 83.

Drosophila (Spinulophila) immigrans: STURTEVANT, 1927: 367; KIKKAWA & PENG, 1938, Jap. J. Zool., 7: 524.

Drosophila (Acanthophila) immigrans: DUDA, 1924 c, Ann. Mus. nat. hung., 22: 200.

Drosophila (Drosophila) immigrans: STURTEVANT, 1942: 32; PATTERSON, 1943, Univ. Texas Publ., 4313: 180; HSU, 1949, Univ. Texas Publ., 4920: 111; OKADA, 1955, Kontyû, Tokyo, 23: 98; 1956, Syst. Study: 147.

Drosophila brouni HUTTON, 1901, Trans. N. Z. Inst., 33: 91 (name officially suppressed).

Drosophila tripunctata STURTEVANT, 1918, Bull. Am. Mus. nat. Hist., 38: 445 (nec *tripunctata* LOEW, 1862).

Drosophila (Spinulophila) tripunctata: DUDA, 1924 a, b, Arch. Naturg., 90A (3): 210, 246.

Drosophila cilifemur VILLENEUVE, 1923, Bull. Soc. ent. fr., 1923: 28.

Drosophila (Drosophila) flexipilosa PIPKIN, 1964, Ent. Soc. Washington, 66: 238.

Specimens examined. Burma: 136 ♂, 80 ♀, Maymyo, 30. XII. 1981–6. I. 1982, ex traps; 62 ♂, 96 ♀, Mandalay, 26. XII. 1981–6. I. 1982, ex traps; 5 ♂, 2 ♀, Mandalay, 31. XII. 1981, ex fallen fruits; 1 ♀, Rangoon, 11–15. I. 1982, ex trap.

Distribution. Cosmopolitan. Burma (n. loc.): Maymyo, Mandalay, Rangoon.

✓ ***Drosophila (Drosophila) formosana* DUDA**

Acanthophila (Spinulophila) tripunctata var. *formosana* DUDA, 1926 a, Ann. Mus. nat. hung., 23: 250.

Drosophila (Acanthophila) formosana: DUDA, 1926 b, Suppl. Ent., 14: 83, 86.

Drosophila immigrans var. *formosana*: STURTEVANT, 1927: 368.

Drosophila (Drosophila) formosana: WILSON *et al.*, 1969: 211.

Specimens examined. Burma: 27 ♂, 7 ♀, Maymyo, 30. XII. 1981–6. I. 1982, ex traps; 51 ♂, 45 ♀, Mandalay, 26. XII. 1981–6. I. 1982, ex traps; 2 ♂ Mandalay, 31. XII. 1981, ex fallen fruits.

Distribution. Taiwan, Thailand, Sri Lanka, Singapore, Sumatra, Borneo (Sabah); Burma (n. loc.): Maymyo, Mandalay.

✓ ***Drosophila (Drosophila) burmae* sp. nov.**

(Figs. 1–5)

Diagnosis. Hypandrial process broad, apically round; surface smooth, without

small thorn-like projections (Fig. 2). Dorsal process of aedeagus broad, distally bifurcated, serrate on margins, laterally with 1 pair of small, distally serrate flaps (Figs. 2, 3). Anterior paramere broad, quadrate, smooth, apically with *ca.* 2 sensilla (Fig. 2). ♂ posterior tergites entirely yellow. Ovipositor submedially much broad, distally tapering (Fig. 4). 4V-index *ca.* 1.4 (range: 1.25–1.49). C3-fringe ratio *ca.* 0.5 (0.47–0.60).

♂, ♀. Body length, ♂ *ca.* 2.3 mm (2.05–2.52), ♀ *ca.* 2.7 mm (2.27–3.15). Thorax length (including scutellum), ♂ *ca.* 1.1 mm (0.94–1.12), ♀ *ca.* 1.3 mm (1.13–1.40).

Head: Eye tannish red, with thick pile. Antenna with 2nd joint brownish yellow, 3rd paler. Arista with *ca.* 7 (6–8) upper and *ca.* 4 (3–5) lower branches in addition to terminal small fork. Frons slightly narrower than 1/2 of head width (mean=0.47, 0.44–0.50, measured at level of anterior ocellus), brownish yellow, anteriorly with a few frontal hairs; ocellar triangle brown on inside margins of ocelli; periorbits yellow. Posterior reclinate orbital nearer to proclinate than to inner vertical. Anterior reclinate *ca.* 1/2 (0.48, 0.41–0.60) length of posterior reclinate; proclinate *ca.* 5/6 (0.82, 0.72–0.95) length of posterior reclinate. Face brownish yellow; carina high, broad. Clypeus yellowish brown. Cheek yellow, *ca.* 1/6 (0.17, 0.13–0.20) as broad as maximum diameter of eye. Second oral *ca.* 7/8 (0.87, 0.74–1.00) length of vibrissa. Palpus yellow, with a few prominent setae.

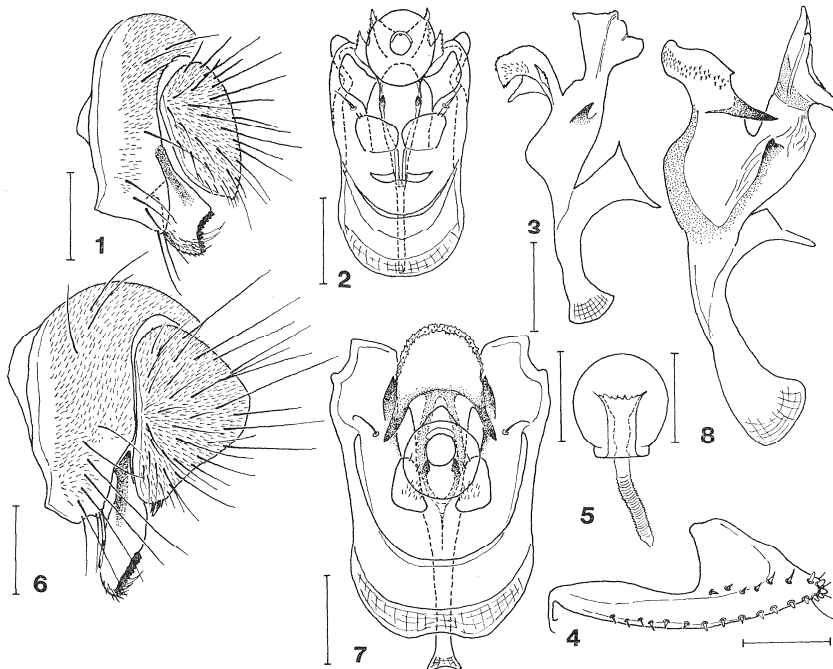
Thorax: Mesoscutum brownish yellow, somewhat darker between dorsocentrals. Scutellum brownish yellow. Thoracic pleura yellow; episternum darker. Humerals 2; lower one longer. Acrostichal hairs in 8 rows. Anterior dorsocentrals *ca.* 2/3 (0.65, 0.61–0.70) length of posteriors; cross distance of dorsocentrals *ca.* 2.2 (2.00–2.63) length distance. Anterior scutellars *ca.* 6/7 (0.86, 0.79–0.92) length of posteriors. Sterno-index *ca.* 0.6 (0.51–0.63).

Legs yellow. Fore femur with *ca.* 11 (8–15) spinules. Preapicals on all tibiae; apicals on fore and mid tibiae. ♂ fore tarsus anteriorly with long recurved hairs on entire length. Mid and hind tarsi each with row of minute cuneiform bristles on underside. Fore metatarsus as long as 2 and 3 succeeding tarsal joints together in ♂ and ♀, respectively; mid and hind metatarsi as long as rest together.

Wing hyaline, somewhat fuscous. Veins brownish yellow; posterior cross vein cloud^v; longitudinal veins without apical dark spots. R_{2+3} gently convex medially, slightly curved to costa at tip; R_{4+5} and M nearly parallel. C1-bristles 2. Wing indices: C *ca.* 3.4 (2.82–3.96), ~~C4~~ *ca.* 0.7 (0.58–0.77), 5x *ca.* 1.1 (1.00–1.25), Ac *ca.* 2.0 (1.75–2.26). Halteres grey.

Abdomen: Tergites yellow; 2nd and 3rd tergites in ♂ and 2nd to 4th tergites in ♀ each with narrow, not sharply demarcated, medially interrupted, caudal dark brown band; posterior tergites entirely yellow in both sexes.

Periphallallic organs (Fig. 1): Epandrium pubescent in submedian to upper part, with *ca.* 2 or 3 bristles in upper part, *ca.* 1 in middle part, *ca.* 5 or 6 in lower part; anterior and posterior margins nearly parallel; heel rectangular; toe some-



Figs. 1-8. 1-5, *Drosophila (Drosophila) burmae* sp. nov. 6-8, *D. (D.) shwezayana* sp. nov.
 1, 6: Peripheral phallic organs; 2, 7: phallic organs (ventral view); 3, 8: aedeagus (lateral view);
 4: ovipositor; 5: spermatheca. (Scale-line=0.1 mm.)

what pointed. Surstylus somewhat quadrate, with *ca.* 11 or 12 primary teeth in concave row on entire length of distal margin and *ca.* 2 long, stout spines on inner surface, caudoventrally with numerous small setae. Cercus oval, caudoventrally somewhat pointed, nearly entirely pubescent, separate from epandrium, with *ca.* 29 long bristles.

Phallic organs (Figs. 2, 3): Aedeagus distally expanded like trumpet, laterally with 1 pair of small, acute, sclerotized projections. Novasternum nearly quadrate, with 1 pair of short submedian spines near bases of hypandrial processes.

♀ reproductive organs: Ovipositor (Fig. 4) with *ca.* 18 marginal and *ca.* 6 apically pointed discal teeth; basal ithmus short, narrow. Spermatheca (Fig. 5) bulb-shaped, with constriction near base; introvert distally somewhat expanded, serrate on margin.

Holotype ♂, Burma: Maymyo, 30. XII. 1981, by sweeping on forest floor.

Paratypes, Burma: 1 ♂, same data as holotype; 122 ♂, 77 ♀, Maymyo, 30. XII. 1981-6. I. 1982, *ex* traps; 4 ♂, 6 ♀, Mandalay, 26. XII. 1981-6. I. 1982, *ex* traps; 2 ♀, Rangoon, 16. XII. 1981, 11-15. I. 1982, *ex* traps.

Distribution. Burma: Maymyo, Mandalay, Rangoon.

Relationships. This species is closely related to *D. synpanishi* OKADA, but clearly distinguishable from the latter by the diagnostic characters. It should be, however, noted that there are some confusions in terminology of the description of the latter species. OKADA (1964) did not discriminate hypandrial process from anterior paramere, and termed dorsal process of aedeagus as posterior parameres (?). Recently, re-examining the type specimens, OKADA (pers. comm.) confirmed that hypandrial process is clearly separate from anterior paramere also in *D. synpanishi*.

✓ *Drosophila (Drosophila) shwezayana* sp. nov.

(Figs. 6–8)

Diagnosis. Hypandrial process slender, sclerotized, acutely pointed at tip (Fig. 7). Dorsal process of aedeagus finely serrate on broadly round distal margin, lateroproximally with 1 pair of long, sclerotized, apically pointed processes (Figs. 7, 8). ♂ fore metatarsus with thick hair tuft on inner side, not particularly shortened, slightly longer than 2 succeeding tarsal joints together; 2nd tarsal joint without thick hair tuft. Fore femur with 7 or 8 spinules.

Some characters commonly seen in the foregoing species, *D. burmae*, are not referred to in the following description.

♂. Thorax length *ca.* 1.5 mm.

Head: Arista with 6 or 7 upper and 3 lower branches. Frons brownish yellow, without silvery shining. Posterior reclinate orbital nearer to inner vertical than to proclinate. Anterior reclinate *ca.* 3/7 (0.43) length of posterior reclinate; proclinate *ca.* 7/9 (0.78) length of posterior reclinate. Face brownish yellow, without black markings. Clypeus brownish yellow. Cheek yellow, not black at base of vibrissa, *ca.* 1/5 (0.20) as broad as maximum diameter of eye. 2nd oral *ca.* 7/10 (0.69) length of vibrissa. Palpus yellow, flattened, with 1 apical and 1 lateral prominent setae.

Thorax: Mesoscutum entirely brownish yellow. Acrostichal hairs in 10 somewhat irregular rows. Anterior dorsocentrals *ca.* 5/8 (0.64) length of posteriors; cross distance of dorsocentrals *ca.* 2.7 length distance. Anterior scutellars *ca.* 4/5 (0.81) length of posteriors. Sterno-index *ca.* 0.7.

Legs: ♂ fore tarsus anteriorly without long recurved hairs. Mid metatarsus slightly longer than, hind metatarsus as long as 3 succeeding tarsal joints together.

Wing slightly pointed at tip. R_{2+3} nearly straight at tip. Wing indices: C *ca.* 3.5, 4 V_{λ} *ca.* 1.3, 4C *ca.* 0.6, 5x *ca.* 1.0, Ac *ca.* 1.6, C3-fringe *ca.* 0.5. Halteres brownish grey.

Abdomen: 2nd to 4th tergites each with relatively broad, medially not interrupted, pale brown caudal band.

Periphallallic organs (Fig. 6): Epandrium nearly entirely pubescent, except for

lower margin areas, broad, but somewhat narrowing and truncated below, with *ca.* 3 bristles in upper part, *ca.* 10 in lower part. Surstylus slender, with *ca.* 11 primary teeth in nearly straight row on submedian to lower distal margin, caudoventrally with several small setae. Cercus broad, triangular, with *ca.* 38 long bristles and tuft of short stout bristles at caudoventral corner.

Phallic organs (Figs. 7, 8): Anterior paramere somewhat elongated, triangular, submedially slightly pubescent.

Holotype ♂, Burma: Mandalay (Shwezayan), 30. XII. 1981-6. I. 1982, *ex trap.*

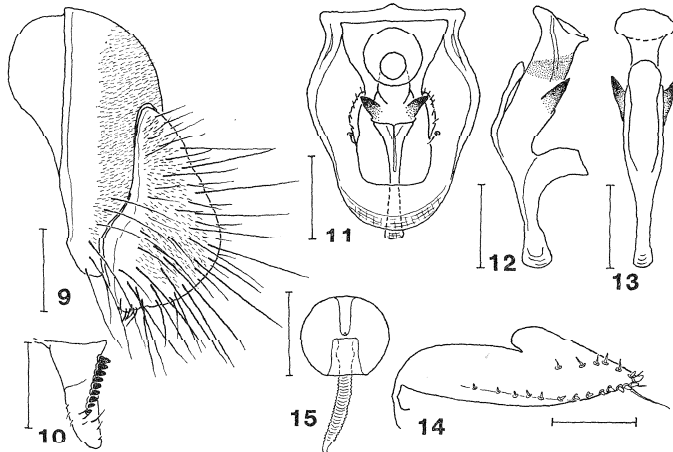
Distribution. Burma: Mandalay.

Relationships. This species somewhat resembles *D. sui* LIN et TSENG, but differs from the latter in phallic organs and ♂ fore tarsus.

✓ *Drosophila (Drosophila) kitagawai* sp. nov.

(Figs. 9-15)

Diagnosis. Posterior cross vein clear. 2nd oral weak, relatively short, *ca.* 1/2 (0.48, 0.43-0.53) length of vibrissa. Posterior paramere forming transverse bar connecting caudolateral corners of novasternum (Fig. 11). Dorsal process of aedeagus simply shaped, elongate, flattened flap (Figs. 12, 13). Epandrium dorsally broad, ventrally much narrowing (Fig. 9). Spermatheca spherical, apically deeply indented (Fig. 15).



Figs. 9-15. *Drosophila (Drosophila) kitagawai* sp. nov. 9: Periphallallic organs; 10: surstylus; 11: phallic organs (ventral view); 12: aedeagus (lateral view); 13: ditto (dorsal view); 14: ovipositor; 15: spermatheca. (Scale-line=0.1 mm.)

Some characters commonly seen in *D. burmae* are not referred to in the following description.

♂, ♀. Body color generally yellowish. Body length, ♀ *ca.* 2.9 mm. Thorax length, ♂ *ca.* 1.4 mm, ♀ *ca.* 1.3 mm.

Head: Eye with thin, sparse pile. Arista with *ca.* 5 upper and *ca.* 3 lower branches. Frons slightly narrower than 1/2 of head width (0.49). Anterior reclinate orbital *ca.* 1/2 (0.52, 0.43–0.61) length of posterior reclinate; proclinate *ca.* 7/8 (0.87, 0.80–0.93) length of posterior reclinate. Cheek width *ca.* 1/5 (0.19, 0.16–0.21) of maximum diameter of eye.

Thorax: Humerals 2, subequal. Anterior dorsocentrals *ca.* 2/3 (0.64, 0.55–0.72) length of posteriors; cross distance of dorsocentrals *ca.* 2.4 (2.29–2.40) length distance. Anterior scutellars *ca.* 7/9 (0.76, 0.75–0.76) length of posteriors. Sterno-index *ca.* 0.5 (0.46–0.56).

Legs: Fore femur with 10 or 11 spinules. ♂ fore tarsus anteriorly without long recurved hairs; metatarsus with thick hair tuft on inner side. Fore metatarsus slightly longer than 2 succeeding tarsal joints together.

Wing indices: C *ca.* 4.5 (4.45–4.50), 4V *ca.* 1.2 (1.17–1.24), 4C *ca.* 0.5, 5x *ca.* 0.9 (0.81–0.95), Ac *ca.* 1.3 (1.28–1.34), C3-fringe *ca.* 0.5 (0.45–0.50).

Periphallallic organs (Figs. 9, 10): Epandrium pubescent in caudal half, with 6 or 7 bristles in lower part. Surstylus elongate, triangular, with 8 or 9 primary teeth in slightly oblique row on upper to middle distal margin and several small setae in lower part. Cercus large, oval, submedially pubescent, with *ca.* 45 long bristles and tuft of several short bristles at caudoventral corner.

Phallic organs (Figs. 11–13): Aedeagus laterally with 1 pair of relatively large, acute, sclerotized projections. Anterior paramere(?) located posteriorly to submedian spine, with several sensilla. Hypandrial process not differentiated or fused to anterior paramere.

Ovipositor (Fig. 14) submedially broad, apically pointed, with *ca.* 15 marginal and *ca.* 5 discal teeth.

Holotype ♂, Burma: Maymyo, 30. XII. 1981–6. I. 1982, *ex trap*.

Paratype, Burma: 1 ♀, same data as holotype.

Distribution. Burma: Maymyo.

Relationships. This species certainly belongs to the *immigrans* subgroup, because of ♂ having fore metatarsus with thick hair tuft, but is relatively unique in morphology of ♂ genitalia, *e.g.*, surstylus, posterior paramere, dorsal process of aedeagus, and anterior paramere and/or hypandrial process. Furthermore, apical deep indentation of spermatheca and absence(?) of hypandrial process are characters common to species of the *nasuta* subgroup.

Remarks. The specific name is dedicated to Prof. O. KITAGAWA, Tokyo Metropolitan University, the leader of the 3rd Expedition of the "Family Drosophilidae for the Pan-Indian Ocean, South East Asia and the Pacific Ocean Areas".

Drosophila (Drosophila) ruberrima DE MEIJERE

(Figs. 16-20)

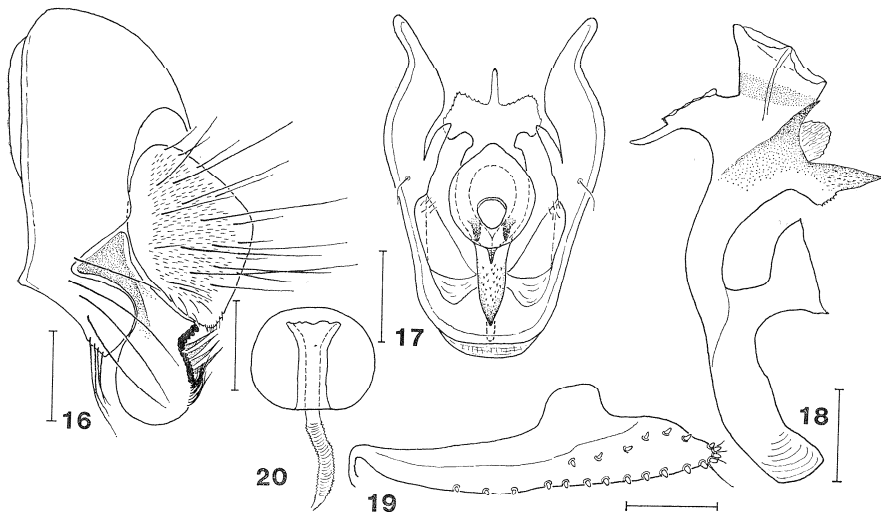
Drosophila ruberrima DE MEIJERE, 1911, Tijdsch. Ent., 54: 403.*Spinulophila ruberrima*: DUDA, 1924 a, Arch. Naturg., 90A (3): 210, 231.*Acanthophila (Drosophila) ruberrima*: DUDA, 1926 b, Suppl. Ent., 14: 82, 86.*Drosophila (Drosophila) ruberrima*: STURTEVANT, 1942: 32; LIN & TSENG, 1973, Bull. Inst. Zool., Acad. Sin., 12: 16.

Diagnosis. Posterior cross vein and last section of 5th longitudinal vein cloud. Aedeagus medioventrally with fan-shaped, finely wrinkled flap and large, sclerotized, finely serrate, acute process; base of latter process somewhat expanded in lateral view and marginally serrate (Figs. 17, 18). ♂ fore leg with thick hair tufts on inner side of proximal 2 tarsal joints; metatarsus shorter than 2 succeeding tarsal joints together. ♀ fore metatarsus as long as 2 succeeding together.

Some characters commonly seen in *D. burmae* are not referred to in the following description.

♂, ♀. Body color generally brownish yellow. Body length, ♂ *ca.* 2.9 mm (2.61-3.18), ♀ *ca.* 3.0 mm (2.55-3.28). Thorax length, ♂ *ca.* 1.5 mm (1.31-1.58), ♀ *ca.* 1.6 mm (1.27-1.76).

Head: Arista with *ca.* 6 (5-7) upper and *ca.* 4 (3-4) lower branches. Frons width *ca.* 1/2 (0.49, 0.46-0.52) of head width. Posterior reclinate orbital nearly equidistant from proclinate and from inner vertical. Anterior reclinate *ca.* 2/5



Figs. 16-20. *Drosophila (Drosophila) ruberrima* DE MEIJERE. 16: Peripheral organs; 17: phallic organs (ventral view); 18: aedeagus (lateral view); 19: ovipositor; 20: spermatheca. (Scale-line = 0.1 mm.)

(0.39, 0.28–0.47) length of posterior reclinate; proclinate *ca.* 5/8 (0.62, 0.55–0.70) length of posterior reclinate. Cheek width *ca.* 1/6 (0.16, 0.14–0.17) of maximum diameter of eye. Second oral *ca.* 7/10 (0.69, 0.53–0.80) length of vibrissa.

Thorax: Humerals 2, subequal. Anterior dorsocentrals *ca.* 7/10 (0.69, 0.61–0.76) length of posteriors; cross distance of dorsocentrals *ca.* 2.5 (2.07–2.78) length distance. Anterior scutellars *ca.* 8/9 (0.88, 0.75–0.97) length of posteriors. Sterno-index *ca.* 0.6 (0.52–0.70).

Legs: Fore femur with *ca.* 11 (9–13) spinules. ♂ fore tarsus anteriorly without long recurved hairs.

Wing indices: C *ca.* 4.1 (3.36–5.10), 4V *ca.* 1.3 (1.20–1.49), 4C *ca.* 0.6 (0.46–0.71), 5x *ca.* 1.0 (0.77–1.24), Ac *ca.* 1.5 (1.33–1.86), C3-fringe *ca.* 0.6 (0.57–0.73).

Abdomen: 2nd and 3rd tergites each with faint, medially interrupted, brownish caudal band.

Periphallalic organs (Fig. 16): Epandrium not pubescent, dorsally broad, deeply concaved at insertion of surstylus, ventrally narrow, with *ca.* 10 (8–13) bristles in lower part; heel conspicuous; toe somewhat pointed. Surstylus elliptical below, with *ca.* 14 (13–15) primary teeth in concave row on upper to middle distal margin, numerous setae on lower distal margin, and 4 or 5 long, stout spines on inner surface. Cercus oval, submedially pubescent, with *ca.* 25 (21–28) long bristles and tuft of several short setae at caudoventral corner.

Phallic organs (Figs. 17, 18): Dorsal process of aedeagus mediocaudally with elongate, acute projection, laterally with 1 pair of broad, marginally serrate flaps. Hypandrial process elongate, apically somewhat pointed. Anterior paramere long, triangular, with *ca.* 5 sensilla.

♀ reproductive organs: Ovipositor (Fig. 19) slender, apically narrowly round, with *ca.* 16 marginal and *ca.* 6 discal teeth. Spermatheca (Fig. 20) spherical; introvert deep, distally expanded and somewhat irregular on margin.

Specimens examined. Burma: 7 ♂, 7 ♀, Maymyo, 30. XII. 1981–6. I. 1982, ex trap; 1 ♂, same data except Mandalay (Shwezayan).

Distribution. Taiwan, Sumatra, Java; Burma (n. loc.): Maymyo, Mandalay.

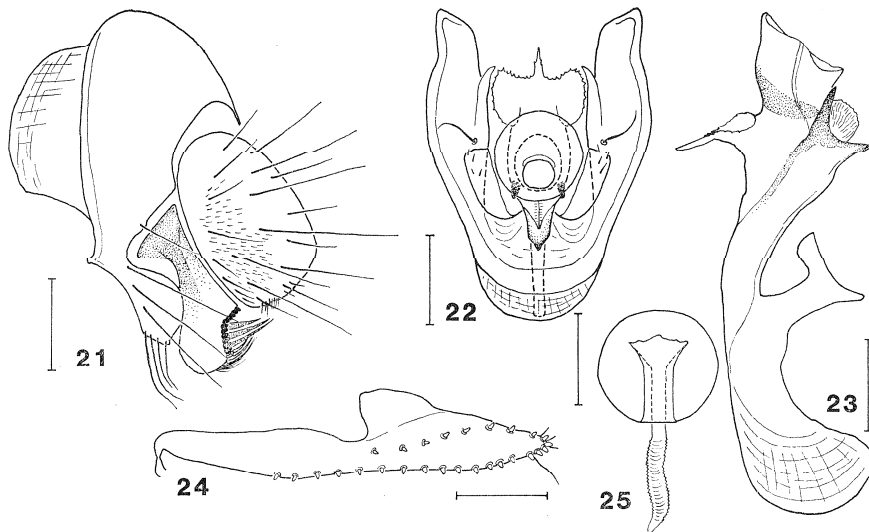
✓ *Drosophila (Drosophila) parviprocessata* sp. nov.

(Figs. 21–25)

Diagnosis. Posterior cross vein and last section of 5th longitudinal vein cloud. Aedeagus medioventrally with fan-shaped, finely wrinkled flap and small, sclerotized, triangular projection (Figs. 22, 23). ♂ fore leg without thick hair tufts on inner side of proximal 2 tarsal joints; metatarsus longer than 2 succeeding tarsal joints together. ♀ fore metatarsus as long as 3 succeeding together.

This species is very close to the foregoing species, *D. ruberrima*. The following description is made referring only to the differences from the latter.

♂, ♀. Head and thorax orange yellow; legs and abdomen yellowish. Body



Figs. 21-25. *Drosophila (Drosophila) parviprocessata* sp. nov. 21:Periphallic organs; 22: phallic organs (ventral view); 23: aedeagus (lateral view); 24: ovipositor; 25: spermatheca. (Scale-line=0.1 mm.)

length, ♂ *ca.* 2.7 mm (2.68-2.77), ♀ *ca.* 3.1 mm (2.71-3.40). Thorax length, ♂ *ca.* 1.4 mm (1.29-1.39), ♀ *ca.* 1.6 mm (1.57-1.58).

Head: Arista with *ca.* 7 (6-8) upper and *ca.* 4 (4-5) lower branches. Frons width *ca.* 1/2 (0.48, 0.46-0.51) of head width. Anterior reclinate *ca.* 3/8 (0.37, 0.31-0.46) length of posterior reclinate; proclinate *ca.* 2/3 (0.66, 0.61-0.70) length of posterior reclinate. Cheek width *ca.* 1/7 (0.14, 0.12-0.16) of maximum diameter of eye. 2nd oral *ca.* 2/3 (0.68, 0.63-0.80) length of vibrissa.

Thorax: Anterior dorsocentrals *ca.* 7/10 (0.70, 0.63-0.76) length of posteriors; cross distance of dorsocentrals *ca.* 2.5 (2.24-2.56) length distance. Anterior scutellars *ca.* 6/7 (0.86, 0.76-0.95) length of posteriors. Sterno-index *ca.* 0.6 (0.54-0.63). Fore femur with *ca.* 11 (10-12) spinules.

Wing indices: C *ca.* 4.1 (3.70-4.55), 4V *ca.* 1.3 (1.25-1.38), 4C *ca.* 0.6 (0.50-0.60), 5x *ca.* 1.0 (0.89-1.17), Ac *ca.* 1.6 (1.41-1.80), C3-fringe *ca.* 0.7 (0.54-0.73).

Periphallic and phallic organs (Figs. 21-23): Epandrium with *ca.* 8 bristles in lower part. Surstylus somewhat slender in lower part, nearly rectangular at caudoventral corner, with *ca.* 8 upper black and *ca.* 4 lower pale primary teeth in concave row on entire length of distal margin, 3 or 4 long, stout spines on submedial inner surface, and numerous setae on lower inner surface. Cercus with *ca.* 20 (18-22) long bristles. Anterior paramere with *ca.* 4 sensilla.

♀ reproductive organs: Ovipositor (Fig. 24) distally tapering, with *ca.* 20 marginal and *ca.* 7 discal teeth. Spermatheca (Fig. 25) nearly same as that of *D.*

ruberrima.

Holotype ♂, Burma: Mandalay (Shwezayan), 30. XII. 1981–6. I. 1982, *ex* trap.

Paratypes, Burma: 2 ♀, same data as holotype; 1 ♂, Mandalay, 26. XII. 1981–4. I. 1982, *ex* trap; 1 ♂, Rangoon, 16. XII. 1981, *ex* trap; 1 ♂, Rangoon, 18. XII. 1981, *ex* fallen fruits.

Distribution. Burma: Mandalay, Rangoon.

Relationships. As mentioned above, this species is closely related to the foregoing species, *D. ruberrima*. The diagnostic differences from the latter are seen only in medioventral projection of aedeagus and fore tarsus. Both species have a particular character, medioventral fan-shaped flap on aedeagus, which is commonly seen in species of the *nasuta* subgroup. Furthermore, the present species seems to resemble also *D. rubra* STURTEVANT. According to STURTEVANT's (1927) description, not referring to ♂ genitalia, there are slight differences in length of anterior reclinate orbital and 2nd oral between the two species. However, these characters are quantitative and usually variable to a considerable extent even among conspecific individuals. Therefore, it cannot be ruled out that this species is conspecific to *rubra*, until the type of the latter, only 1 ♂ from the Philippines, is re-examined especially for ♂ genitalia. Unfortunately, it is unknown where the type is deposited, though STURTEVANT (1927) mentioned, "the types of the new species based on Philippine material have been returned to Professor BEZZI".

D. nasuta Species-subgroup

D. nasuta species-subgroup, WILSON *et al.*, 1969: 207.

Diagnosis. ♂ frons usually with silvery-whitish markings. ♂ fore tarsus without ornamentation. Hypandrial process not differentiated on novasternum. Dorsal process of aedeagus cylindrical, distally with numerous tentacle-like processes. Spermatheca usually with deep indentation at apex.

♀ specimens of this species-subgroup are very hard, if not impossible, to be identified to species. Therefore, collection records of ♀ specimens are presented followingly without identification of species.

Collection records of ♀ specimens. Burma: 19 ♀, Maymyo, 30. XII. 1981–6. I. 1982, *ex* traps; 213 ♀, Mandalay, 26. XII. 1981–6. I. 1982, *ex* traps; 6 ♀, Mandalay, 25, 31. XII. 1981, *ex* fallen fruits; 154 ♀, Rangoon, 16. XII. 1981, 11–15. I. 1982, *ex* traps; 2 ♀, Rangoon, 13. I. 1982, by sweeping on grove floor; 6 ♀, Rangoon, 16, 17. XII. 1981, *ex* fallen fruits; 1 ♀, Rangoon, 22. XII. 1981, *ex* garbage.

Drosophila (Drosophila) albomicans DUDA

Drosophila (Spinulophila) albomicans DUDA, 1924 a, b, Arch. Naturg., 90A (3): 209, 245; 1923, Ann. Mus. nat. hung., 20: 47 (*nomen nudum*).

Drosophila (Drosophila) albomicans: WILSON *et al.*, 1969: 213; KITAGAWA *et al.*, 1982, Jap. J. Genet., **57**: 114.

Drosophila (Spinulophila) komaii KIKKAWA *et al.* PENG, 1938, Jap. J. Zool., **7**: 525.

Drosophila (Drosophila) komaii: OKADA, 1956, Syst. Study: 151.

Specimens examined. Burma: 5 ♂, Maymyo, 30. XII. 1981–6. I. 1982, *ex* traps; 60 ♂, Mandalay, 26. XII. 1981–6. I. 1982, *ex* traps; 1 ♂, Mandalay, 31. XII. 1981, *ex* tree trunk; 1 ♂, same data except *ex* fallen fruits; 10 ♂, Rangoon, 11–15. I. 1982, *ex* traps.

Distribution. Ryukyus, Taiwan, Hong Kong, Thailand, Malaya, India; Burma (n. loc.): Maymyo, Mandalay, Rangoon.

✓ *Drosophila (Drosophila) kohkoa* WHEELER

Drosophila (Drosophila) kohkoa WHEELER, in WILSON *et al.*, 1969: 217; KITAGAWA *et al.*, 1982, Jap. J. Genet., **57**: 115.

Specimens examined. Burma: 17 ♂, Mandalay, 26. XII. 1981–4. I. 1982, *ex* traps; 1 ♂, Mandalay, 31. XII. 1981, *ex* fallen fruits; 8 ♂, Rangoon, 11–15. I. 1982, *ex* traps; 2 ♂, Rangoon, 16. XII. 1981, *ex* fallen fruits.

Distribution. Philippines, Cambodia, Thailand, Malaya, Singapore, Borneo; Burma (n. loc.): Mandalay, Rangoon.

✓ *Drosophila (Drosophila) sulfurigaster albostrigata* WHEELER

Drosophila (Drosophila) sulfurigaster albostrigata WHEELER, in WILSON *et al.*, 1969: 217; KITAGAWA *et al.*, 1982, Jap. J. Genet., **57**: 115.

Specimens examined. Burma: 16 ♂, Maymyo, 30. XII. 1981–6. I. 1982, *ex* traps; 1 ♂, Maymyo, 30. XII. 1981, by sweeping on forest floor; 226 ♂, Mandalay, 26. XII. 1981–6. I. 1982, *ex* traps; 14 ♂, Mandalay, 31. XII. 1981, *ex* fallen fruits; 104 ♂, Rangoon, 16. XII. 1981, 11–15. I. 1982, *ex* traps; 2 ♂, Rangoon, 16. XII. 1981, *ex* fallen fruits; 2 ♂, same data except 17. XII. 1981; 1 ♂, Rangoon, 18. XII. 1981, by sweeping at cliff shelter or ditch; 1 ♂, Rangoon, 22. XII. 1981, *ex* garbage.

Distribution. Philippines, Cambodia, Thailand, Sri Lanka, Malaya, Singapore, Borneo; Burma (n. loc.): Maymyo, Mandalay, Rangoon.

D. hypocausta Species-subgroup

D. hypocausta species-subgroup, WILSON *et al.*, 1969: 212.

✓ *Drosophila (Drosophila) hypocausta* OSTEN-SACKEN

Drosophila hypocausta OSTEN-SACKEN, 1882, Berl. ent. Z., **26**: 245; PIPKIN, 1956, Ent. Soc. Washington, Proc., **58**: 256.

Drosophila (Drosophila) hypocausta: WHEELER & TAKADA, 1964: 182; HIHARA & IJIN, 1984, Bull. Inst. Zool., Acad. Sin., **23**: 207.

Specimens examined. Burma: 1 ♂, Rangoon, 17. XII. 1981, ex fallen fruits; 4 ♀, Rangoon, 22. XII. 1981, ex garbage; 12 ♂, 10 ♀, Rangoon, 11–15. I. 1982, ex traps.

Distribution. Ryukyus, Taiwan, Philippines, Caroline Is., Thailand, India, Malaya, Singapore, Sumatra, Java, Borneo, Palau, Yap, Truk, Ponape; Burma (n. loc.): Rangoon.

Drosophila (Drosophila) siamana HIHARA et LIN

Drosophila (Drosophila) siamana HIHARA et LIN, 1984, Bull. Inst. Zool., Acad. Sin., 23: 207.

Specimens examined. Burma: 1 ♂, Maymyo, 30. XII. 1981–6. I. 1982, ex trap; 102 ♂, 112 ♀, Mandalay, 26. XII. 1981–6. I. 1982, ex traps; 7 ♂, 2 ♀, Mandalay, 31. XII. 1981, ex fallen fruits; 1 ♀, Rangoon, 11–15. I. 1982, ex trap.

Distribution. Thailand, Malaya, Borneo; Burma (n. loc.): Maymyo, Mandalay, Rangoon.

Drosophila (Drosophila) neohypocausta LIN et WHEELER

Drosophila (Drosophila) neohypocausta LIN et WHEELER, in LIN & TSENG, 1973, Bull. Inst. Zool., Acad. Sin., 12: 23; HIHARA & LIN, 1984, Bull. Inst. Zool., Acad. Sin., 23: 207.

Specimens examined. 30 ♂, 22 ♀, from a culture strain originated from 1 ♀ collected at Mandalay, Burma, 4–6. I. 1982, ex trap; 31 ♂, 17 ♀, from a strain originated from Taiwan; 42 ♂, 56 ♀, hybrid between the above two strains.

Distribution. Taiwan; Burma: Mandalay.

γ *D. quadrilineata* Species-subgroup

D. quadrilineata species-subgroup, WILSON *et al.*, 1969: 212.

Diagnosis. Mesoscutum orange-yellow, with conspicuous black longitudinal stripes. Aedeagus often with serrations on ventrosubmedial margins, dorsosubmedially without any processes.

Drosophila (Drosophila) clarinervis sp. nov.

(Figs. 26–28)

Diagnosis. Cross veins clear. Each tibia with 2 brown markings. Mid sternopleurals slightly longer (1.05×) than anteriors. Surstylus with 1 straight row of ca. 10 primary teeth on middle to lower distal margin (Fig. 26).

♂. Thorax length ca. 1.2 mm.

Head: Eye with fine pile. Antenna with 2nd joint brownish yellow, 3rd basally darker. Arista with 6 or 7 upper and 2 lower branches in addition to

terminal fork. Frons slightly narrower than $1/2$ of head width (0.48), yellow, with 1 pair of anteriorly convergent brown stripes, with a few frontal hairs on anterior part of stripes. Posterior reclinate orbital nearer to proclinate than to inner vertical. Anterior reclinate *ca.* $1/2$ (0.52) length of posterior reclinate; proclinate *ca.* $7/10$ (0.70) length of posterior reclinate. Face yellow; carina high, narrow, dark brown below. Clypeus brownish yellow. Cheek entirely yellow, *ca.* $1/6$ (0.18) as broad as maximum diameter of eye. Second oral *ca.* $4/7$ (0.58) length of vibrissa. Palpus dark brown, with 2 prominent setae.

Thorax: Mesoscutum yellow, with 7 brown longitudinal stripes; median stripe paler, including 2 rows of acrostichal hairs, and running through nearly entire length of mesoscutum; inner pair of stripes starting slightly posteriorly, running along line of dorsocentrals, and continuing to stripes on scutellum; middle pair paler, from transverse suture to base of inner postalars; outer pair from anterolateral corner just above humerus to base of outer postalars, interrupted at transverse suture. Scutellum yellow, with 1 pair of brown, longitudinal, posteriorly convergent stripes. Thoracic pleura yellow, with 3 brown longitudinal stripes; upper one narrow, short from upper part of episternum to base of wing; middle one broad, long from upper part of propleurite to base of halteres; lower one broad, running through nearly entire length of sternoepisternum. Humerals 2, subequal. Acrostichal hairs in 6 rows. Dorsocentrals, 2 pairs; anteriors *ca.* $2/3$ (0.65) length of posteriors; cross distance of dorsocentrals *ca.* 1.7 length distance. Prescutellar bristles absent. Anterior scutellars slightly longer ($1.06\times$) than posteriors; posteriors nearly equidistant to each other and to anteriors. Sterno-index *ca.* 0.6.

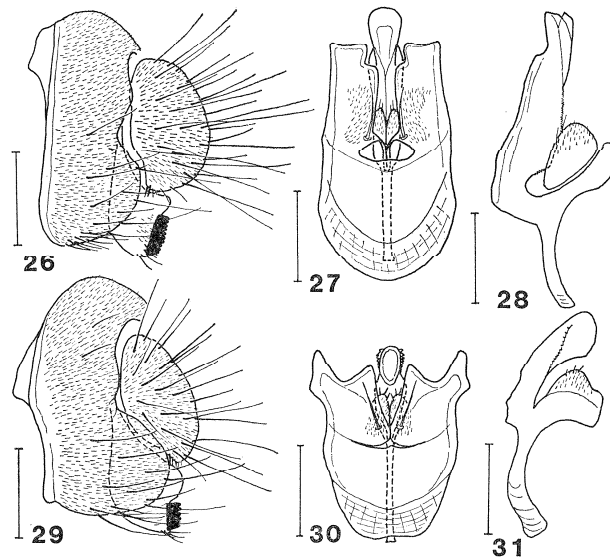
Legs yellow; fore coxa brown in proximal and distal parts, mid and hind coxae partly brown; each femur submedially with 1 brown marking. Fore femur with 8 or 9 stout spinules. Preapicals on all tibiae; apicals on fore and mid tibiae. Fore metatarsus as long as 3 succeeding tarsal joints together; mid and hind metatarsi slightly shorter than rest together. Mid and hind tarsi without row of minute cuneiform bristles.

Wing hyaline, slightly yellowish. Veins brownish yellow. R_{2+3} slightly curved to costa at tip; R_{4+5} and M nearly parallel. C1-bristles 2. Wing indices: C *ca.* 3.6, 4V *ca.* 1.6, 4C *ca.* 0.7, 5x *ca.* 1.4, Ac *ca.* 2.3, C3-fringe *ca.* 0.3. Halteres yellowish white, with dark brown stalk.

Abdomen: Tergites yellow; 1st tergite with 1 pair of dark brown spots on lateral margins; 2nd to 6th tergites each with dark brown caudal band interrupted at middle and 1 pair of spots on lateral margins.

Periphallic organs (Fig. 26): Epandrium entirely pubescent, broad with round margin of lower part, with *ca.* 26 bristles in middle to lower part. Surstylus broad, submedially slightly pubescent; upper part strongly convex, bare. Cercus oval, pubescent, separate from epandrium, with *ca.* 2 short stout bristles at caudoventral apex and *ca.* 27 long bristles.

Phallic organs (Figs. 27, 28): Aedeagus slender, longer than aedeagal apodeme,



Figs. 26–31. 26–28, *Drosophila (Drosophila) clarinervis* sp. nov. 29–31, *D. (D.) flavitibiae* sp. nov. 26, 29: Periphallallic organs; 27, 30: phallic organs (ventral view); 28, 31: aedeagus (lateral view). (Scale-line=0.1 mm.)

apically round in ventral view but bifid in lateral view. Anterior paramere broad, triangular in lateral view, separate from novasternum, apically pubescent and with *ca.* 2 sensilla. Posterior paramere absent. Novasternum quadrate, submedially pubescent, with 1 pair of submedian spines on inner margins.

Holotype ♂, Burma: Maymyo, 30. XII. 1981–6. I. 1982, *ex trap.*

Distribution. Burma: Maymyo.

Relationships. This species somewhat resembles *D. annulipes* DUDA in the coloration of body and legs, but differs from the latter by having clear cross veins and longer mid sternopleurals.

♂ *Drosophila (Drosophila) flavitibiae* sp. nov.

(Figs. 29–31)

Diagnosis. Cross veins clear. All tibiae entirely yellow, without brown markings. Palpus yellowish brown, with 2 prominent bristles; apical bristle longer than vibrissa. Surstylus with 6 primary teeth on lower half distal margin (Fig. 29).

This species is very similar to the foregoing species, *D. clarinervis*, in general features, *e.g.*, body color pattern. The following description is made referring only to the differences from the latter.

♂. Thorax length *ca.* 1.1 mm.

Head: Arista with 7 upper branches. Frons slightly narrower than 1/2 of head width (0.45). Anterior reclinate orbital *ca.* 1/2 (0.47) length of posterior reclinate; proclinate *ca.* 7/9 (0.77) length of posterior reclinate. Carina broad. Cheek narrow, *ca.* 1/10 (0.09) as broad as maximum diameter of eye. 2nd oral *ca.* 5/9 (0.55) length of vibrissa.

Thorax: Anterior dorsocentrals *ca.* 3/5 (0.60) length of posteriors; cross distance of dorsocentrals *ca.* 2.4 length distance. Anterior scutellars slightly shorter (0.95×) than posteriors; posteriors nearer to each other than to anteriors. Mid sternopleurals *ca.* 1/2 (0.52) length of anteriors. Sterno-index *ca.* 0.7. Mid and hind metatarsi as long as rest of tarsal joints together.

Wing indices: C *ca.* 4.2, 4V *ca.* 1.6, 4C *ca.* 0.6, 5x *ca.* 1.7, Ac *ca.* 2.2, C3-fringe *ca.* 0.4.

Periphallic organs (Fig. 29): Epandrium broad especially in lower part, with *ca.* 2 bristles in upper part and *ca.* 14 in middle to lower part. Surstylus broad; upper half strongly convex and bare. Cercus with *ca.* 21 long bristles.

Phallic organs (Figs. 30, 31): Aedeagus as long as aedeagal apodeme, apically round in lateral view. Anterior paramere narrowly triangular in lateral view, fused to novasternum, with *ca.* 3 sensilla. Novasternum caudolaterally extended, pubescent around bases of submedian spines.

Holotype ♂, Burma: Mandalay, 26. XII. 1981–4. I. 1982, *ex trap.*

Distribution. Burma: Mandalay.

Relationships. This species is closely related to the foregoing species, *D. clarinervis*, but differs from the latter in the coloration of tibiae and the number of primary teeth on surstylus and by having very long apical bristle on palpus.

Drosophila (Drosophila) obscurinervis sp. nov.

(Figs. 32–36)

Diagnosis. Cross veins cloud.⁴ C3-fringe *ca.* 3/5 (0.61, 0.54–0.70). Face entirely yellow, without dark brown spot below carina. Fore tibia, mid femur and mid tibia entirely yellow, without brown markings. Posterior reclinate orbital equidistant from proclinate orbital and from inner vertical. Epandrium narrowing in upper part, pointed at toe (Fig. 32).

Some characters commonly seen in *D. clarinervis* are not referred to in the following description.

♂, ♀. Body length, ♂ *ca.* 3.1 mm (3.0–3.2), ♀ *ca.* 3.1 mm (2.7–3.5). Thorax length, ♂ *ca.* 1.4 mm (1.32–1.45), ♀ *ca.* 1.5 mm (1.20–1.75).

Head: Antenna with 3rd joint pale yellow. Arista with 3 lower branches. Frons slightly narrower than 1/2 of head width (0.47, 0.45–0.49). Anterior reclinate orbital *ca.* 3/5 (0.59, 0.52–0.72) length of posterior reclinate; proclinate *ca.* 2/3 (0.64, 0.56–0.71) length of posterior reclinate. Carina broad. Cheek dark brown at base of vibrissa, *ca.* 1/6 (0.17, 0.15–0.20) as broad as maximum diameter of eye.

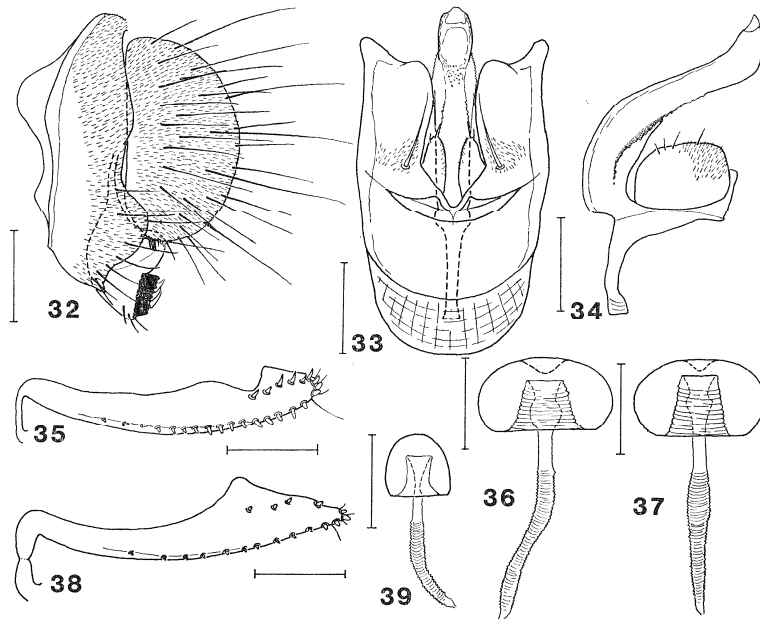
2nd oral *ca.* 4/7 (0.57, 0.47–0.67) length of vibrissa. Palpus yellow, with 2 or 3 prominent setae.

Thorax: Thoracic pleura with 3 dark brown stripes; upper one broad, running from upper part of propleurite to base of wing; middle one from center of episternum to base of halteres. Anterior dorsocentrals *ca.* 7/10 (0.70, 0.66–0.76) length of posteriors; cross distance of dorsocentrals *ca.* 1.9 (1.75–2.07) length distance. Anterior scutellars as long as posteriors (1.03, 0.94–1.09). Mid sternopleurals *ca.* 7/10 (0.70, 0.48–0.82) length of anteriors. Sterno-index *ca.* 0.7 (0.64–0.77).

Legs: Fore femur with *ca.* 13 (11–15) spinules. Fore metatarsus slightly shorter than, mid one as long as, hind one slightly longer than 3 succeeding tarsal joints together.

Wing indices: C ♂ *ca.* 4.4 (4.27–4.48), ♀ *ca.* 4.6 (4.39–5.23); 4V ♂ *ca.* 1.7 (1.68–1.72), ♀ *ca.* 1.5 (1.37–1.64); 4C ♂ *ca.* 0.6 (0.61–0.65), ♀ *ca.* 0.6 (0.47–0.61); 5x ♂ *ca.* 1.0 (0.97–1.11), ♀ *ca.* 1.0 (0.86–1.13); Ac ♂ *ca.* 1.8 (1.67–1.83), ♀ *ca.* 1.7 (1.57–1.85).

Periphallallic organs (Fig. 32): Epandrium with 12 or 13 bristles in middle to



Figs. 32–39. 32–36, *Drosophila (Drosophila) obscurinervis* sp. nov. 37, *D. (D.) annulipes* DUDA. 38, 39, *D. (D.) quadrilineata* DE MEIJERE. 32: Periphallallic organs; 33: phallic organs (ventral view); 34: aedeagus (lateral view); 35, 38: ovipositor; 36, 37, 39: spermatheca. (Scale line—0.1 mm.)

lower part. Surstylus with *ca.* 9 (8–10) primary teeth on lower half distal margin; upper half strongly convex, bare. Cercus large, with *ca.* 3 short stout bristles at caudoventral apex and *ca.* 35 long bristles.

Phallic organs (Figs. 33, 34): Aedeagus apically pointed. Anterior paramere large, quadrate in lateral view, with *ca.* 4 sensilla. Novasternum pubescent around bases of submedian spines.

♀ reproductive organs: Ovipositor (Fig. 35) narrow, apically round, with *ca.* 19 (16–20) marginal and *ca.* 5 (3–6) discal teeth; basal isthmus short, narrow. Spermatheca (Fig. 36) shaped somewhat depressed hemisphere, apically shallowly indented; basal introvert transversely wrinkled; duct proximally expanded in introvert.

Holotype ♂, Burma: Mandalay, 26. XII. 1981–4. I. 1982, *ex trap*.

Paratypes, Burma: 2 ♂, 7 ♀, same data as holotype; 1 ♀, Mandalay, 28. XII. 1981, by sweeping at cliff shelter; 1 ♂, Mandalay, 31. XII. 1981, *ex fallen fruits*; 1 ♀, Maymyo, 30. XII. 1981, by sweeping on forest floor; 1 ♀, Rangoon, 18. XII. 1981, *ex fallen fruits*.

Distribution. Burma: Maymyo, Mandalay, Rangoon.

Relationships. This species is related to *D. annulipes* and *D. maryensis* GUPTA et DWIVEDI, 1980, but differs from the latter in the coloration of legs and the shape of epandrium and by having larger C3-fringe ratio.

Drosophila (Drosophila) annulipes DUDA

(Fig. 37)

Drosophila (Spinulophila) annulipes DUDA, 1924 a, b, Arch. Naturg., 90A (3): 209, 221, 250; 1926 b, Suppl. Ent., 14: 84.

Drosophila (Drosophila) annulipes: WHEELER, 1949, Univ. Texas Publ., 4920: 187; WHEELER & TAKADA, 1964: 183.

Drosophila (Drosophila) virgata TAN *et al.*, 1949, Univ. Texas Publ., 4920: 203; OKADA, 1955, Kontyû, Tokyo, 23: 98; 1956, Syst. Study: 149.

♀. Spermatheca (Fig. 37) very similar to that of the foregoing species, *D. obscurinervis*, except for deeper introvert and submedial expansion of duct.

Specimen examined. Burma: 1 ♀, Mandalay, 26–30. XII. 1981, *ex trap*.

Distribution. Japan, Bonin Is., Korea, Taiwan, southern China, Nepal, Malaya, Sumatra; Burma (n. loc.): Mandalay.

Drosophila (Drosophila) quadrilineata DE MEIJERE

(Figs. 38, 39)

Drosophila quadrilineata DE MEIJERE, 1911, Tijdsch. Ent., 54: 396.

Chaetodrosophilella quadrilineata: DUDA, 1923, Ann. Mus. nat. hung., 20: 40; WHEELER & TAKADA, 1964: 198.

Chaetodrosophila quadrilineata: DUDA, 1924 a, Arch. Naturg., 90A (3): 180, 230; 1926 b, Suppl. Ent., 14: 85.

Drosophila (Chaetodrosophilella) quadrilineata: STURTEVANT, 1927: 367; ANGUS, 1967, Pap. Dept. Zool. Univ. Qld., 3: 33.

Drosophila (Drosophila) quadrilineata: WILSON *et al.*, 1969: 212.

♂, ♀. Body length, ♂ *ca.* 2.7 mm (2.4–3.0), ♀ *ca.* 2.7 mm (2.2–3.2). Thorax length, ♂ *ca.* 1.1 mm (0.83–1.21), ♀ *ca.* 1.2 mm (1.01–1.32).

Head: Eye bare. Arista with *ca.* 6 (6–7) upper and *ca.* 3 (2–3) lower branches in addition to terminal fork. Frons *ca.* 4/7 (0.57, 0.53–0.60) as broad as head, anteriorly with a few frontal hairs. Posterior reclinate orbital nearer to proclinate than to inner vertical. Anterior reclinate *ca.* 3/10 (0.29, 0.22–0.45) length of posterior reclinate; proclinate *ca.* 3/5 (0.63, 0.57–0.82) length of posterior reclinate. Cheek width *ca.* 1/4 (0.24, 0.19–0.28) of maximum diameter of eye. 2nd oral slightly shorter than vibrissa (0.90, 0.71–1.00).

Thorax: Dorsocentrals, *ca.* 4 pairs; 1st *ca.* 2/3 (0.66, 0.59–0.72), 2nd *ca.* 2/3 (0.67, 0.60–0.72), 3rd *ca.* 7/9 (0.78, 0.71–0.85) length of 4th; length distance from 1st to 2nd *ca.* 1/2 (0.49, 0.41–0.60), distance from 2nd to 3rd *ca.* 1/2 (0.48, 0.35–0.55), distance from 3rd to 4th *ca.* 4/7 (0.58, 0.52–0.68) cross distance between 3rds. Anterior scutellars *ca.* 6/7 (0.84, 0.79–0.89) length of posteriors. Sterno-index *ca.* 0.6 (0.53–0.71).

Legs: Preapicals absent on all tibiae; apicals present on fore and mid tibiae. Fore metatarsus as long as 3 succeeding tarsal joints together; mid and hind metatarsi as long as rest together. Mid and hind tarsi with row of minute cuneiform bristles on underside.

Wing indices: C *ca.* 1.7 (1.35–1.89), 4V *ca.* 1.3 (1.24–1.50), 4C *ca.* 1.2 (1.05–1.41), 5x *ca.* 1.0 (0.88–1.12), Ac *ca.* 2.3 (2.02–2.49), C3-fringe *ca.* 0.6 (0.52–0.67).

♀ reproductive organs: Ovipositor (Fig. 38) narrow, apically pointed, with *ca.* 15 marginal and *ca.* 3 discal small teeth; basal isthmus short, broad. Spermatheca (Fig. 39) shaped somewhat elongate hemisphere; duct distally expanded in introvert.

Specimens examined. Burma: 9 ♂, 3 ♀, Mandalay, 25. XII. 1981, by sweeping at ditches; 2 ♂, 2 ♀, Mandalay, 31. XII. 1981, *ex* decayed vegetables; 58 ♂, 38 ♀, Rangoon, 17. XII. 1981–13. I. 1982, by sweeping at bushes; 3 ♂, 5 ♀, Rangoon, 16. XII. 1981–10. I. 1982, *ex* fallen fruits.

Distribution. Ryukyus, Taiwan, Philippines, Mariana Is., Viet Nam, Thailand, India, Sri Lanka, Malaya, Singapore, Sumatra, Java, Borneo, Solomon Is., Admiralty Is.; Burma (*n. loc.*): Mandalay, Rangoon.

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