

PAPUAN AGROMYZIDAE (Diptera)<sup>1</sup>By Mitsuhiro Sasakawa<sup>2</sup>

B. P. BISHOP MUSEUM, HONOLULU, HAWAII

*Abstract:* Descriptions and distributional data are presented for 43 Papuan species. Of these, 23 are new species: 18 from New Guinea, 4 from New Britain and 1 from Solomon Is. Keys are given for the species of *Japanagromyza*, *Melanagromyza*, *Shizukoa* and *Phytobia*.

This is a preliminary paper on the Agromyzidae of New Guinea and the Solomon Islands. Up to the present, only 10 species have been recorded from New Guinea. The collection in the Bishop Museum contains specimens of 9 genera and 43 species, among which 23 species are new to science, and 10 species are newly recorded for the agromyzid fauna of the Papuan Subregion. The terminology and abbreviations are the same as described by me (Pacific Ins. 3: 307-472, 1961).

Before going further I wish to express my gratitude to Dr. J. Linsley Gressitt for his kindness rendered during the present study.

Genus *Agromyza* Fallén1. *Agromyza papuensis* Sasakawa, n. sp. Fig. 1.

*Male:* Head black; front matt, parafrontalia and ocellar triangle subshining; lunule, gena and antenna brown, antennal segment 3 darkened on apical 1/2; palpus dark brown. Thorax and abdomen shiny black, slightly gray-dusted; mesopleural suture and base of wing brown. Wing hyaline; veins pale brown; calypter yellowish white, with margin and fringe ochreous; halter yellow. Legs black but fore knee narrowly yellowish and tarsal segments 1-2 brownish yellow and 3-5 brownish.

*Head:* Front slightly wider than long, 1.3× as wide as eye, almost parallel-sided, distinctly hairy along ventral margin just above lunule; parafrontalia 1/4 width of front, narrowing ventrad from *ori*. Ocellar triangle of normal size, bearing 12 setulae plus *oc*. Lunule small, 1/5 as high as length of front. Parafrontalia with 4 *or*, an additional short seta ventrad of 2. *ori*; *ors* directed up- and slightly outwards; *ori* up- and slightly inwards; *oh* in a row. In profile parafrontalia projecting above eye; eye almost bare, about 1.5× as high as wide; gena about 1/9 eye height; *vi* differentiated from 15-16 *pm* which are arranged in 2 rows. *Antennae* linearly separated by carina; segment 3 subspherical,

1. This study was partly financed by a grant from the National Institutes of Health (E-1723) to Entomology Dept., Bishop Museum.
2. Permanent address: Entomological Laboratory, Kyoto Prefectural University, Kyoto, Japan.

as long as wide, with rather

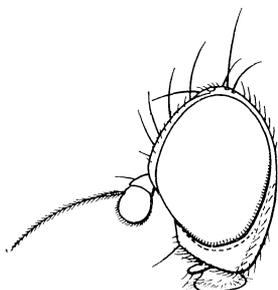


Fig. 1. Head, in profile, of *Agromyza papuensis* Sasakawa, n. sp.

distinct pile; arista  $2\times$  as long as whole length of antenna, swollen on basal  $1/5$ , distinctly pubescent. *Thorax*: Mesonotum with  $0+3$  *dc*, 1. *dc*  $1/2$  length of 2. and almost at level of *sa*; 8 rows of *acr*, 4 rows of them extending caudad from 2. *dc*; *prsc* as long as 2. *dc* or *ia*; *ipa* slightly shorter than *ia* and about  $1/3$  length of *opa*; humerus and mesopleura each with 14–16 setulae; sternopleura with 4 short setae before *sp*. *Wing*: Costa reaching to  $M_{1+2}$ , with sections 2–4 in proportion of  $108 : 40 : 26$ ; r-m at middle of discal cell; m-m  $2/3$  length of penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  about  $2.7\times$  as long as penultimate; ultimate section of  $M_{3+4}$  nearly  $1/2$  length of penultimate. *Leg*: Mid tibia with 3 posterodorsal bristles. *Abdomen*: Tergites densely setigerous; tergite 6 as long as 5; sternite 5 slightly longer than tergite 6, incised on caudal  $1/2$ . *Terminalia*: Epan-

drium a little less than  $1/2$  length of tergite 6; cercus  $4/5$  as high as epandrium, with a sensilla at ventral apex; surstylus with 20–21 spines and a few setae; processus longus normal. Hypandrium with sidepiece  $1/2$  length of phallapodeme; apodeme  $1/4$  length of sidepiece; praegonite with 2 setae and numerous setulae on membranous part; postgonite with 3–4 short hairs. Distiphallus typical in form with grass-miners, as long as hypandrium; para- and hypophallus each with membranous process ventrally; endophallus slightly longer than  $1/2$  length of paraphallus, spinose internally, covered with minute spinulae at apex. Ejaculatory apodeme of normal shape,  $148\ \mu$  long and  $144\ \mu$  in greatest width. *Length*: Body 2.76 mm, wing 2.64.

**DISTRIBUTION**: SE New Guinea (Papua).

Holotype ♂ (BISHOP 3430), Mendi, 1660 m, S. Highlands, Papua, 8.X.1958, J. L. Gressitt. Female unknown.

The chaetotaxy and structures of the ♂ terminalia relate this species to *A. papillata* Sasakawa from Vietnam, from which it can be distinguished by a paler fringe on the calypter, yellow fore knee, distinctly plumose arista, 3 mid-tibial bristles and densely spinose surstylus.

## 2. *Agromyza subantennalis* Sasakawa, n. sp. Fig. 2.

*Female*: Head with front orangish yellow, dorsal  $1/2$  of frontalia brownish; ocellar triangle, occiput and postgena black; brown of vertex extending anteriorly to level of 2. *ors*; lunule, gena, antenna and palpus yellow; arista and antennal groove pale brown. Thorax and abdomen shiny black, the former and anterior 2 abdominal tergites slightly graydusted; lateral side of mesonotum brown-tinged. Wing hyaline; veins pale brown, whitish basally; calypter yellowish white, with margin yellow and fringe pale yellowish brown; halter yellow. Legs dark brown, all tarsi paler; fore knee narrowly yellow.

*Head*: Front slightly wider than eye ( $18 : 15$ ), converging ventrally; parafrontalia  $1/5$  width of front. Ocellar triangle with ventral tip acute, not reaching to level of 2. *ors*. Lunule small, semicircular,  $1/5$  as high as length of front. In profile ventral part of parafrontalia distinctly projecting above eye; 2 *ors* directed upward; 2. *ors* shorter than 1. *ori*; 2–3 *ori* inwards; *oh* rather long, in a sparse row; eye bare, height and width ratio as 35 :

24; gena 1/7 eye height, extremely narrowing anteriorly; 14 *pm* arranged in 2 rows. *Antennae* approximated at base; segment 3 slightly longer than broad, with long pile; arista about 2× as long as whole length of antenna, swollen on basal 1/5, distinctly pubescent. *Thorax*: Mesonotum with 0+3 *dc*, accompanying 1 short seta before suture and 2 setae which are 1.5× as long as length of *acr* behind suture; 6 rows of *acr* before suture but 4–5 rows of them extending posteriorly and 2 rows ending at level of 3. *dc*; *prsc* strong; *ia* accompanying a short seta just before it; *ipa* about 1/3 length of *opa* (bristles and setulae on left side damaged); mesopleura with 5 dorsally directed setulae. *Wing*: Costa reaching  $M_{1+2}$ , with sections 2–4 in proportion of 60 : 28 : 18; wing tip distinctly nearer  $R_{4+5}$  than  $M_{1+2}$ ; r-m at middle of discal cell; m-m about 2/3 length of penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  3.5× as long as penultimate; ultimate section of  $M_{3+4}$  length of penultimate. *Leg*: Mid tibia with 2 posterodorsal bristles. *Abdomen*: Tergites covered sparsely with long setae; ovipositor sheath 1.5× as long as tergite 6, pubescent on distal 1/3. *Length*: Body 1.93 mm, wing 1.88.

DISTRIBUTION: NW New Guinea.

Holotype ♀ (BISHOP 3431), Manokwari, 75 m, Vogelkop, NW New Guinea, 19.VII.1957, D. E. Hardy. Male unknown.

This species is generally similar to *A. antennalis* Spencer from Indonesia, but is readily distinguished by the darker fringe on the calypter, the prominent parafrontalia and 2 mid-tibial bristles.

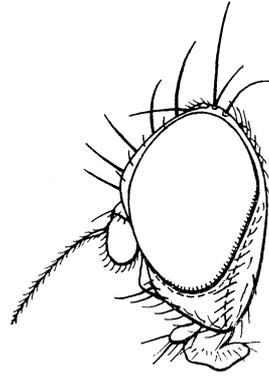


Fig. 2. Head, in profile, of *Agromyza subantennalis* Sasakawa, n. sp.

Genus **Japanagromyza** Sasakawa

KEY TO PAPUAN SPECIES OF JAPANAGROMYZA

- 1. Halter with knob entirely yellow..... 2
- Halter with knob brown or partly yellow..... 3
- 2. Cross-vein r-m only slightly before middle of discal cell; wing length 2.4 mm ..... **triformis**
- Cross-vein r-m far before middle of discal cell; wing length 1.9 mm..... **displicata\***
- 3. Mesonotum with prescutellar bristle..... 4
- Mesonotum without prescutellar bristle ..... 5
- 4. Gena 1/8–1/10 eye height..... **duchesneae**
- Gena 1/20 eye height ..... **multiplicata\***
- 5. Mid tibia with 1 posterodorsal bristle ..... **sordidata**
- Mid tibia with 2 posterodorsal bristles ..... **clavata\***

3. **Japanagromyza triformis** Spencer

*Japanagromyza triformis* Sp., 1962, Pacific Ins. 4 (3) : 653.

DISTRIBUTION: NW New Guinea.

\* Described as new.

The characteristic features of this species are the narrow front and gena (1/13 eye height), the entirely yellow knob of the halter, the extremely narrow surstylus bearing 5 heavy spines and a seta, and the long, tubular para- and hypo-phallus. Spencer stated that the parafrontalia has only 1 or 2 detectable orbital hairs as one of the characteristic features of this species. I consider, however, that this is not a good specific character because the holotype has 7-9 orbital hairs arranged in a row as in many species of this genus.

#### 4. *Japanagromyza displicata* Sasakawa, n. sp.

*Male*: Head black; front slightly grayish pollinose, parafrontalia weakly shining; lunule brown, silvery pruinose; antenna and palpus brownish black. Thorax and abdomen black, densely gray dusted; pleura brown-tinged. Wing hyaline; veins pale brown; calypter dirty white, with margin and fringe brownish black; halter brown but knob entirely yellow. Legs black.

*Head*: Front slightly wider than long,  $1.5\times$  as wide as eye; parafrontalia about 1/5 width of front, almost parallel-sided. Ocellar triangle normal, with 4 setulae plus *oc*. Lunule lower than semicircular, about 1/4 as high as length of front. Fronto-orbitals 4; 1. *ors* directed up- and outwards, 2. *ors* and 1. *ori* upwards, 2. *ori* inwards; *oh* in a sparse row. In profile parafrontalia slightly projecting above eye; eye almost bare,  $1.25\times$  as high as wide; gena about 1/10 eye height; *pm* 4, short. *Antennae* separated by carina; segment 3 as long as broad, with distinct pile which is as long as arista thickness, arista about  $2.5\times$  as long as whole length of antenna, swollen on basal 1/7, microscopically pubescent. *Thorax*: Mesonotum with 0+2 *dc*, and an additional seta, which is  $3\times$  as long as length of *acr*, situated before 1. *dc*; 6-7 rows of *acr*, 4 rows of them ending before *prsc*; *prsc* 1/3 length of posterior *dc*; *ipa* 1/4 length of *opa*; humerus with 3 setulae plus *h*; mesopleura with 6 dorsally directed setulae; sternopleura with 3 setae before *sp*. *Wing*: Costa with sections 2-4 in proportion of 85 : 25 : 20; r-m before middle of discal cell (10 : 17); ultimate section of  $M_{1+2}$  nearly  $2.5\times$  as long as penultimate; ultimate section of  $M_{3+4}$  4/5 length of penultimate. *Legs*: Fore tibia with 1 external bristle; mid tibia with 2 postero-dorsal bristles. *Abdomen*: Tergites sparsely covered with setae; tergite 6 as long as 5; sternite 5 slightly longer than tergite 6, incised on caudal 1/3. *Terminalia*: Epandrium about 1/2 as long as tergite 6; cercus as high as epandrium, broadening ventrally but somewhat constricted at dorsal 1/3; processus longus with a pair of strong setae; surstylus lobate, as high as epandrium, with 10-11 spines and 11-13 setae. Hypandrium 1/2 as long as phallopodeme, with apodeme 2/3 length of sidepiece and distinctly curved dorsally on anterior 1/2. Phallic hood and distiphallus similar to those of *duchesneae* (Pacific Ins. 3: 332, 1961), but distiphallus more well-developed and paraphallus longer, 1/2 length of phallopodeme. Ejaculatory apodeme 171  $\mu$  long, 72  $\mu$  in greatest width. *Length*: Body 2.16 mm, wing 1.86.

**DISTRIBUTION**: Solomon Is. (Guadalcanal).

Holotype ♂ (BISHOP 3432), Suta, 500-1200 m, Guadalcanal, Solomon Is., 27. VI. 1956, J. L. Gressitt. Female unknown.

This species closely resembles *J. duchesneae* (Sasakawa), but it is readily distinguishable by the entirely yellow knob of the halter, sparser rows of the acrostichals and a pair of additional short dorso-central bristles. The general structure of ♂ terminalia of this species is the same as that of *duchesneae* and *variihalterata* (Malloch), but the surstylus,

hypandrial apodeme and paraphallus are entirely different from each other.

##### 5. *Japanagromyza duchesneae* (Sasakawa)

*Agromyza duchesneae* Sasa., 1954, Sci. Rep. Saikyo Univ. Agr. 6: 106.

DISTRIBUTION: Japan, SE New Guinea (new record), New Hebrides.

SE NEW GUINEA (Papua): 2♂♂, 2♀♀, Oriomo Gov't. Sta., W. District, 26-28.X. 1960, J. L. Gressitt.

The distinguishing features of this species are the dorsally yellow knob of the halter, the situation of the cross-vein r-m, the endophallus of the ♂ terminalia with a dorsal fork and a ventral coiled process, the spinulose spermathecae and a long ventral receptacle with the cotyledonous distal lobe of the ♀ terminalia.

##### 6. *Japanagromyza multiplicata* Sasakawa, n. sp. Fig. 3.

*Female*: Head black; ocellar triangle and parafrontalia weakly shining; lunule brown, silvery pruinose; antenna and gena slightly brown-tinged; palpus black. Thorax and abdomen black, densely gray-dusted, very weakly shining; notopleura brown-tinged; mesopleural suture and base of wing brown. Wing hyaline; veins brown; calypter grayish, with margin and fringe dark brown; halter with stalk dark brown, knob testaceous brown but pale yellow on apical 1/4. Legs black.

*Head*: Front narrower than long, as wide as eye; parafrontalia 1/7 width of front, parallel-sided. Ocellar triangle of normal size, bearing 12 setulae plus short *oc* which is subequal to 2. *ori* in length. Lunule semicircular, a little lower than 1/3 length of front. Parafrontalia with 4 *or*; *ors* and 1. *ori* directed upwards, 2. *ori* inwards; *oh* minute, in a row. In profile parafrontalia not or scarcely projecting above eye; eye with sparsely minute hairs, 1.5× as high as wide; gena very narrow, about 1/20 eye height; *vi* differentiated from 4-5 short *pn*. *Antennae* slightly separated by carina; segment 3 orbicular, as long as wide, with minute pile; arista 3× as long as whole length of antenna, swollen on basal 1/6, microscopically pubescent. *Thorax*: Mesonotum with 0+2 *dc*; 10 rows of *acr*; 8 rows of setulae between *dc* and *sa*-row; *prsc* strong; humerus with 9-10 setulae plus *h*; mesopleura with 12 dorsally directed setulae; sternopleura with 2 setae before *sp*. *Wing*: Costa reaching  $M_{1+2}$ , with sections 2-4 in proportion of 95 : 35 : 24; r-m before middle of discal cell (24 : 34); m-m 2/3 length of penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  about 3.4× as long as penultimate; ultimate section of  $M_{3+4}$  very weak on distal 1/2, 4/5 length of penultimate. *Legs*: Fore tibia with 1 bristle; mid tibia with 2 bristles. *Abdomen*: Tergites densely setigerous, *mar* slightly longer; tergite 6 as long as 5; sternite 6 as long as tergite 6, slightly protruded posteromesally. *Terminalia*: Ovipositor sheath subequal to tergite 6, densely covered with setae at middle; apodeme of normal shape, 3× as long as wide, pouched on apical 1/3. Egg guide 220 μ long, with 55-58 minute teeth of serration and 3 rows of about 40 brown spines on basal membrane. Segment 9 of normal shape, tergite 92 μ long, sternite 144 μ long, spinose on basal membranous part; cercus 60 μ long, with 4 *ts*. Spermatheca pale brown, orbicular, spinulate, 14×20-20×16 μ; neck pale brown, 16 μ long, duct 180-240 μ long, 10 μ in diameter. Ventral receptacle characteristic as figured, pale brown except black capsule, and transparent apical tube, 4080 μ long and folded 11× proximally. *Length*: Body 2.58-2.76 mm, wing 2.46-2.58.

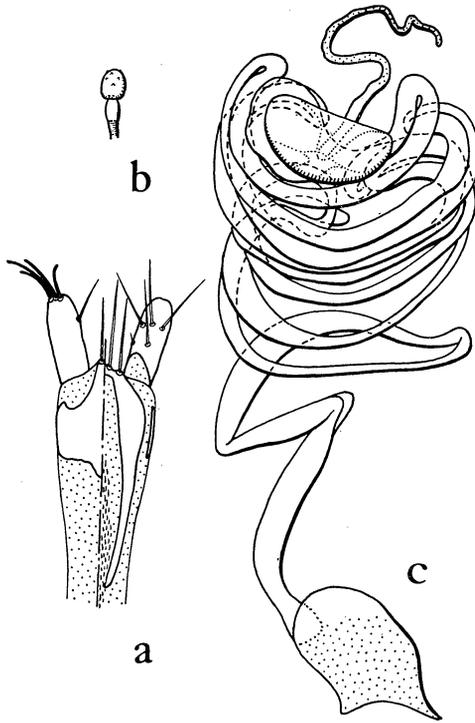


Fig. 3. ♀ terminalia of *Japanagromyza multiplicata* Sasakawa, n. sp. a, tergite 9 (left side) and sternite 9 (right) and cerci; b, spermatheca; c, ventral receptacle.

**DISTRIBUTION:** E. New Guinea (Papua, NE).

Holotype ♀ (BISHOP 3433), Aroa Estate, 1 m, W of Redscar Bay, NE New Guinea, 30.IX.1958, J. L. Gressitt. Paratype ♀, Maprik area, 160 m, Sepik, SE New Guinea, 27.VIII.1957, D. E. Hardy. Male unknown.

This species is similar to *J. yanoi* (Sasakawa) in having the partly dark halteres and the narrow front, but is distinguishable by the incurved 2nd lower fronto-orbitals, the longer ultimate section of  $M_{3+4}$ , 1 fore-tibial bristle, the characteristic spermathecae and ventral receptacle and the absence of an additional dorsocentral bristle.

**7. *Japanagromyza sordidata* (Spencer), n. comb.**

*Melanagromyza sordidata* Sp., 1962, Pacific Ins. 4 (3): 657.

Differs from *clavata* in the following points: front equal to width of eye, parafrontalia not projecting above eye; *oh* rather long and arranged in a row; gena 1/20 eye height; *dc* not accompanying short seta; humerus with 5 setulae plus *h*; 3 setae before *sp*; wing length 2.1 mm, costal sections

2-4 in proportion of 80 : 20 : 19, r-m at middle of discal cell; mid tibia with 1 posterodorsal bristle. Surstylus with 24 long spines; hypandrium 4/5 length of phallapodeme, with apodeme 1/3 length of sidepiece; distiphallus 3/5 length of phallapodeme, hypophallus quadrate, endophallus about 2× as long as hypophallus, surrounded by suborbicular membrane at distal end; ejaculatory apodeme 280 μ long, 160 μ in greatest width.

**DISTRIBUTION:** New Britain.

The narrow front and gena, the direction of the 1st lower fronto-orbital bristle, the presence of the short fore-tibial external bristle (overlooked by Spencer), and the long, narrow hypandrium indicate that this species belongs to *Japanagromyza*.

**8. *Japanagromyza clavata* Sasakawa, n. sp. Fig. 4.**

**Male:** Head black; frontalia matt, tinged with brown; parafrontalia subshiny; ocellar triangle very weakly shining; lunule, gena, antenna and palpus brown. Thorax and abdomen shiny black, slightly gray-dusted. Wing hyaline; veins brown; calypter white, with margin yellowish brown and fringe brown; halter brown, dorso-inner side somewhat paler. Legs black.

**Head:** Front narrower than long, slightly wider than eye (27 : 22); parafrontalia about 1/5 width of front, almost parallel-sided. Ocellar triangle narrow, extending ventrally at level of 2. *ors*, with 2 setulae plus *oc*. Lunule semicircular, 1/3 as high as length of front. In profile dorsal part of parafrontalia slightly projecting above eye; 1. *ors* directed up- and outwards, 2. *ors* and 1. *ori* upwards, 2. *ori* up- and inwards; *oh* in a dense row, accompanying an additional row ventrad from 2. *ors*; eye bare, height and width ratio as 50 : 35; gena about 1/10 eye height; *vi* slightly longer than anterior *pm*; 10–11 *pm* in 2 rows. **Antennae** approximated at base; segment 3 as long as broad, with minute pile; arista 2.5× as long as whole length of antenna, swollen on basal 1/5, distinctly pubescent. Palpus with dense setae apically. **Thorax:** Mesonotum with 0+2 *dc*, 1. *dc* just behind level of *sa*, 1–2 short additional setae (1.5× as long as length of *acr*) before 1. *dc*; 8 irregular rows of *acr*, ending just behind level of 2. *dc*; *prsc* lacking; *ipa* 1/8 length of *opa*; humerus with 10–12 setulae plus *h*; mesopleura with 5–8 dorsally directed setulae; sternopleura with 4 short setae before *sp*. **Wing:** Costa reaching  $M_{1+2}$ , with sections 2–4 in proportion of 96 : 29 : 23; r-m slightly before middle of discal cell; m-m about 2/3 length penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  2.5× as long as penultimate; ultimate section of  $M_{3+4}$  3/5 length of penultimate. **Legs:** Fore tibia with 1 external bristle; mid tibia with 2 posterodorsal bristles. **Abdomen:** Tergites densely setigerous; tergite 6 slightly longer than 5; sternite 5 as long as tergite 6, incised on caudal 1/5. **Terminalia:** Epandrium 1/3 as long as tergite 6, broadened ventrally; surstylus as long as ventral length of epandrium, bearing 23–29 spines on anterior 1/2 and 20–22 setae on posterior; cercus slightly higher than 1/2 height of epandrium, with 5–6 spine-like setae on posteroventral 1/2. Hypandrium subequal to phallapodeme in length; apodeme as long as side-piece; praegonite small, with 4 sensillae. Distiphallus 1/2 length of phallapodeme, para- and hypophallus scarcely sclerotized, endophallus with a pair of spinose, clavate processes internally. Ejaculatory apodeme 178  $\mu$  long, 110  $\mu$  in greatest width. **Length:** Body 2.60–2.89 mm, wing 2.34–2.48.

**DISTRIBUTION:** New Britain.

Holotype ♂ (BISHOP 3434), St. Paul's, 350 m, Baining, Gazelle Pen., New Britain, 8. IX. 1955, J. L. Gressitt. Paratopotype ♂, 9. IX. 1955, Gressitt. Female unknown.

This species is closely related to *J. setigera* (Malloch) from Taiwan in having the entirely dark halter and not having the prescutellar bristle, but is immediately distinguishable by the paler antenna, distinctly plumose arista, convex parafrontalia and smaller size. Similar to *A. orbitalis* Frost, from Barro Colorado I., Canal Zone, in coloration and chaetotaxies of

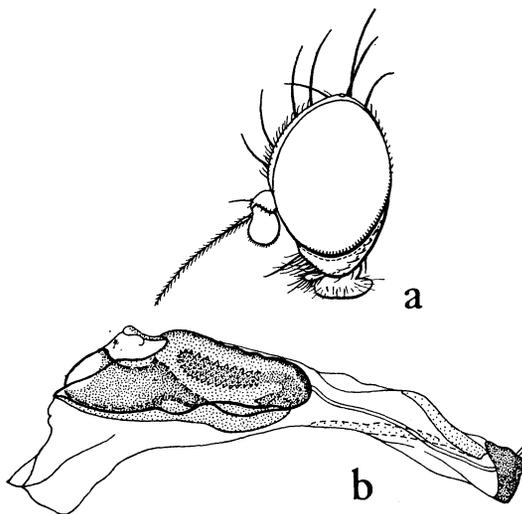


Fig. 4. *Japanagromyza clavata* Sasakawa, n. sp. a, head in profile; b, phallus, lateral view.

head and thorax. But it may be separated by the following points: it is larger than *orbitalis* (holotype) which is 2.02 mm in wing length; the gena is narrower (1/7 eye height in *orbitalis*); the cross-vein r-m is situated before the middle of the discal cell, while in *orbitalis* it is located beyond the middle (33 : 20).

### Genus *Melanagromyza* Hendel

#### KEY TO PAPUAN SPECIES OF MELANAGROMYZA

- |          |   |                     |
|----------|---|---------------------|
| 1.       | Fringe on calypter white to yellowish.....                        | 2                   |
|          | Fringe on calypter brown to blackish .....                        | 13                  |
| 2 (1).   | Mesonotum black .....   | 3                   |
|          | Mesonotum distinctly greenish or bluish shining .....             | 4                   |
| 3 (2).   | Abdomen shiny black; gena narrow .....                            | <b>normalis</b>     |
|          | Abdomen greenish or bluish; gena prominent ventrally.....         | <b>sojae</b>        |
| 4 (2).   | Fore tibia with 1 external bristle.....                           | <b>sensoriata*</b>  |
|          | Fore tibia without bristle.....                                   | 5                   |
| 5 (4).   | Large species, wing length 2.7–3.5 mm .....                       | <b>lasiops</b>      |
|          | Smaller species .....   | 6                   |
| 6 (5).   | Ocellar triangle small .....                                      | 7                   |
|          | Ocellar triangle large, extending to dorsal margin of lunule..... | <b>obtuosa</b>      |
| 7 (6).   | Mesonotum greenish.....   | 8                   |
|          | Mesonotum bluish.....   | 12                  |
| 8 (7).   | Eye bare .....  | 9                   |
|          | Eye in ♂ with a patch of hairs.....                               | 11                  |
| 9 (8).   | Large species, wing length 2.5 mm .....                           | <b>cordiophoeta</b> |
|          | Smaller species, wing length about 1.9 mm .....                   | 10                  |
| 10 (9).  | Mid tibia with 1 posterodorsal bristle.....                       | <b>geminata</b>     |
|          | Mid tibia with 2 posterodorsal bristles .....                     | <b>albisquama</b>   |
| 11 (8).  | Arista minutely pubescent .....                                   | <b>bispinosa*</b>   |
|          | Arista distinctly pubescent.....                                  | <b>metallica</b>    |
| 12 (7).  | Mid tibia with 2 posterodorsal bristles .....                     | <b>lividula*</b>    |
|          | Mid tibia with 3 posterodorsal bristles .....                     | <b>bryani</b>       |
| 13 (1).  | Eye bare.....   | 14                  |
|          | Eye in ♂ with a patch of long hairs.....                          | <b>oculata*</b>     |
| 14 (13). | Fore tibia with 1 external bristle .....                          | <b>papuensis</b>    |
|          | Fore tibia without bristle .....                                  | 15                  |
| 15 (14). | Mid tibia with 1 bristle; abdomen black.....                      | 16                  |
|          | Mid tibia with 2 bristles; abdomen reddish .....                  | <b>surrufa*</b>     |
| 16 (15). | Antennal segment 3 minutely pubescent.....                        | <b>atomella</b>     |
|          | Antennal segment 3 distinctly pilose.....                         | <b>conspicua</b>    |

#### 9. *Melanagromyza normalis* Spencer

*Melanagromyza normalis* Sp., 1962, Pacific Ins. 4(3) : 656 (New Ireland, ♂).

*Female*: Head black; frontalia matt, parafrontalia subshining brown; ocellar triangle glossy, dark brown; lunule and gena brown, the former grayish pruinose; antenna and pal-

pus brownish black. Thorax black; mesonotum densely gray-dusted, weakly shining; notop and pteropleura brown-tinged. Wing hyaline; veins pale brown; calypter white, with margin yellowish and fringe white; halter dark brown. Legs black. Abdomen shiny black.

*Head*: Front slightly wider than eye (24 : 20); ocellar triangle ventrally extending midway between 1. and 2. *ors*, with 2 setulae plus *oc*; lunule lower than semicircular, 1/4 as high as length of front. In profile parafrontalia not projecting above eye; 2 *ors* directed upwards, 2 *ori* inwards; *oh* reclinate, in a row; eye bare, height and width ratio as 38 : 27; gena 1/12 eye height; *vi* differentiated from 6 *pm*. *Antennae* separated from each other at base; segment 3 as long as broad, with minute pile; arista about 3× as long as whole length of antenna, swollen on basal 1/6, almost bare. *Thorax*: Mesonotum with 0+2 *dc* (missing but detectable by their pits), 1. *dc* behind level of *sa*; 8 rows of *acr*, 6 rows of them ending just before level of 2. *dc*; *ipa* 1/5 length of *opa*; humerus with 4 setulae plus *h*; mesopleura with 6 dorsally directed setulae. *Wing*: Costa reaching to  $M_{1+2}$ , with sections 2-4 in proportion of 72 : 20 : 17; r-m distinctly beyond middle of discal cell (25 : 14); m-m as long as penultimate section of  $M_{1+2}$ ; ultimate section  $M_{1+2}$  about 4× as long as penultimate; ultimate section of  $M_{3+4}$  a little longer than 2/3 length of penultimate. *Leg*: Mid tibia with 1 posterodorsal bristle. *Abdomen*: Tergites densely setigerous; tergite 6 is 1.5× as long as 5; ovipositor sheath glossy black. *Length*: Body 2.05 mm, wing 1.8.

**DISTRIBUTION**: New Ireland.

**SW NEW IRELAND**: 1♀, Gilingil Plantation, 2 m, 16. VII. 1956, J. L. Gressitt.

The allotype designated here agrees with the ♂ holotype, except in the smaller ocellar triangle and narrower gena (gena 1/10 eye height in the holotype, not 1/7). The original description should be corrected in the following important points: mid tibia provided with a distinct posterodorsal bristle; cross-vein r-m situated beyond middle of discal cell (23 : 16). The ♂ terminalia are characteristic in having the large basiphallus and ventral process. This species differs from *M. alternata* Spencer, from Taiwan, in the brilliantly shining ocellar triangle, narrower gena and the smaller size.

#### 10. *Melanagromyza sojae* (Zehntner)

*Agromyza sojae* Zehnt., 1900, Ind. Natuur. **11**: 113.

This species is widely distributed throughout the Ethiopian, Oriental and Australian Regions. Mesonotum entirely shining black and abdomen greenish or bluish; gena conspicuously rounded; wing length 1.9-2.4 mm and fringe on calypter whitish. The larva of this species is a stem-feeder in Leguminosae. New to the fauna of Papuan Subregion.

**SOLOMON IS.**: 1♂, Egolo, 1-25 m, Rendova I., New Georgia Group, 14. VII. 1959, J. L. Gressitt.

#### 11. *Melanagromyza sensoriata* Sasakawa, n. sp. Fig. 5.

*Male*: Head black; front and lunule tinged with brown, the latter grayish pollinose; ocellar triangle strongly shining; parafrontalia subshiny; gena brown; antenna and palpus brownish black. Thorax black; mesonotum, scutellum, and notopleura strongly greenish shining; mesopleural suture brown. Wing hyaline; veins brown; calypter white, with margin yellow to orangish and fringe yellowish white; halter with stalk brown but knob black.

Legs black. Abdomen black, with coppery luster.

**Head:** Front narrower than long, slightly wider than eye (25 : 20); parafrontalia 1/6 width of front, parallel-sided but a little diverging ventrad from level of 1. *ori*. Ocellar triangle extremely narrowing ventrad and reaching midway between 2. *ors* and 1. *ori* or almost to level of 1. *ori*, with 4 setulae plus *oc*. Lunule more or less constricted at middle, higher than semicircular, 3/4 as high as length of front. Parafrontalia not projecting above eye in profile, bearing 4 *or*; 1. *ors* directed up- and outwards, 2. *ors* up- and inwards, *ori* in- and slightly upwards; *oh* reclinate, in a dense row, accompanying a sparse additional row ventrad from 2. *ors*; eye with a patch of minute hairs dorsad from level of 1. *ori* but

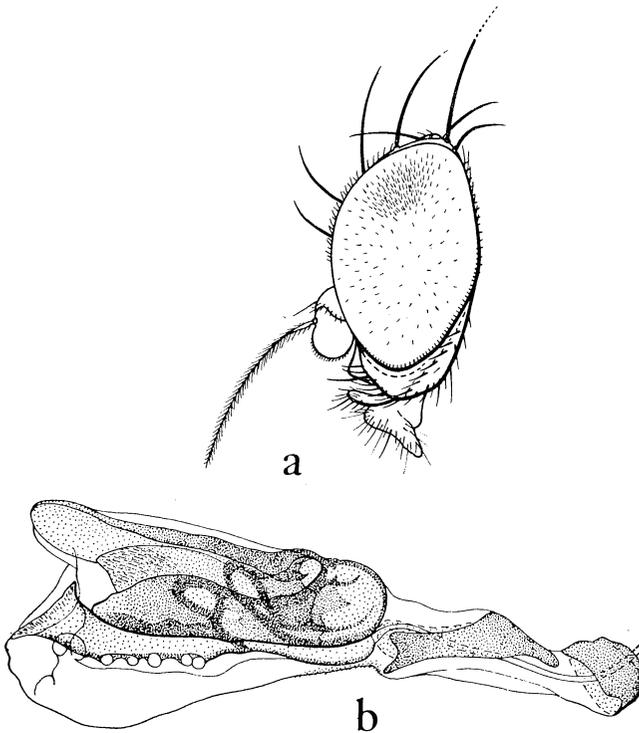


Fig. 5. *Melanagromyza sensoriata* Sasakawa, n. sp. a, head in profile; b, phallus, lateral view.

sparsely hairy on ventral part, height and width ratio as 45 : 28; gena 1/11 eye height; *vi* slightly longer than 8 *pm*. **Antennae** approximated at base; segment 3 as long as broad, with minute pile; arista 2.5× as long as whole length of antenna, swollen on basal 1/7, with long pubescence which is more than 2× as long as basal thickness of arista. Palpus covered with many short setae apically. **Thorax:** Mesonotum with 0+2 *dc*, 1. *dc* far behind level of *sa*; 10–12 rows of *acr*, 6–7 rows of them ending at level of 2. *dc*; mesopleura with 11 dorsally directed setulae. **Wing:** Costa reaching  $M_{1+2}$ , with sections 2–4 in proportion of 80 : 23 : 18; r-m beyond middle of discal cell (25 : 20); m-m slightly shorter than penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  3.3 × as long as penultimate; ultimate section of  $M_{3+4}$  about 3/5 length of penultimate.

**Legs:** Fore tibia with 1 external bristle; mid tibia with 2–3 posterodorsal bristles. **Abdomen:** Tergites densely setigerous; tergite 6 as long as 5; sternite 5 is 1.3× as long as tergite 6, incised on caudal 1/5. **Terminalia:** Epandrium 1/3 length of tergite 6; surstylus projected anteroventrally, bearing 18–20 spines and 6–8 setae; cercus 1/2 as high as epandrium, with 6 spine-like setae posteriorly. Hypandrium slightly longer than 1/2 length of phallapodeme, sidepiece rather broad, with short apodeme; praegonite with 7–8 sensillae. Basiphallus short; distiphallus as long as hypandrium, endophallus well sclerotized, with several orbicular sensillae on ventral part. Ejaculatory apodeme 245  $\mu$  long, 125  $\mu$  in greatest width. **Length:** Body 2.48 mm, wing 2.05.

DISTRIBUTION: NW New Guinea, Solomon Is. (Guadalcanal).

Holotype ♂ (BISHOP 3435), Jef Lio I., 1–5 m, Sele Straits, Vogelkop, NW New Guinea, 15. VIII. 1957, D. E. Hardy. Paratype ♂, Suta, 500–1200 m, Guadalcanal, Solomon Is., 27. VI. 1956, J. L. Gressitt, in light trap. Female unknown.

On the basis of the known New Guinean species, there are no closely allied species. The ♂ terminalia are distinctive. In general appearance, this species is similar to the North American *M. caerulea* (Malloch), but *caerulea* is distinctly more robust, with the body length 2.60–3.78 (holotype) mm and wing length 2.51–3.06 (holotype) mm and has a more strongly greenish abdomen. *Melanagromyza papuensis* Spencer is similar to the present species in having the fore-tibial bristle and the distinctly plumose arista, but it belongs to the other group with the dark fringe on the calypter.

## 12. *Melanagromyza lasiops* (Malloch)

*Agromyza lasiops* Mall., 1914, Ann. Hist.-Nat. Mus. Hung. **12**: 324.

*Melanagromyza lasiops*: Hennig, 1941, Ent. Beihefte **8**: 174.

DISTRIBUTION: Taiwan, Vietnam, NW New Guinea (new record).

NW NEW GUINEA: 1 ♀, Bokondini, ca. 1300 m, 40 km N of Baliem Val., 16–23. XI. 1961, S. & L. Quate.

Large greenish black species, with wing length 3.16 mm; parafrontalia not projecting above eye in profile, bearing 4 strong *or*; *oh* densely arranged; lunule high; gena about 1/12 eye height; arista conspicuously plumose; calypter with margin yellow and fringe whitish; mid tibia with 2 strong posterodorsal bristles.

## 13. *Melanagromyza obtusa* (Malloch)

*Agromyza obtusa* Mall., 1914, Ann. Hist.-Nat. Mus. Hung. **12**: 323.

*Melanagromyza obtusa*: Hennig, 1941, Ent. Beihefte **8**: 174.

NW NEW GUINEA: 1 ♀, Guega, 1200 m, W of Swart Val. 15. XI. 1958, Gressitt; 1 ♀, Swart Val., 1350 m, Karubaka, 18. XI. 1958, Gressitt, in light trap.

DISTRIBUTION: Taiwan, Indonesia, Malaya, India, Ceylon, NW New Guinea (new record).

Large black species, with greenish or metallic sheen on mesonotum and abdomen and elongated ocellar triangle, and is known as a tur-pod pest of the various Leguminosae from the oriental countries.

## 14. *Melanagromyza cordiophoeta* Spencer Fig. 6.

*Melanagromyza cordiophoeta* Sp., 1961, Trans. R. Ent. Soc. Lond. **113**(4): 71; 1962, Pacific Ins. **4**: 655 (New Guinea, New Britain).

The specimens examined are quite agreeable to the original description and illustration, especially of the ♂ terminalia, but the margin of the calypter is yellow (not distinctly brownish) and 1♂ has only 1 mid-tibial bristle. I will redescribe some characters of the ♂ and ♀ terminalia.

*Terminalia*: ♂—Epandrium about 1/3 as long as tergite 6, broadening ventrally; surstylus produced anteroventrally, bearing 15–16 heavy spines and 16 setae. Hypandrium 2/3

length of phallapodeme, with broad but short apodeme; praegonite with 6 sensillae. Distiphallus as long as sidepiece of hypandrium; para- and hypophallus less than 1/3 length of endophallus. Ejaculatory apodeme spatulate, 300  $\mu$  long and 168  $\mu$  broad. ♀—Ovipositor sheath slightly shorter than tergite 6; apodeme extending anterior 3/4 of tergite 5, weakly sclerotized, slightly pouched on anterior end. Egg guide 230  $\mu$  long, with 34–35 teeth of serration and 10 sensillae on basal transverse plate. Segment 9 is 208  $\mu$  long, tergite and sternite well sclerotized on both ends, setulose on lateral membranous parts; sternite with 2 pairs of *nsm*; cercus 40  $\mu$  long, with 2 *ts* about 1/4 length of cercus. Spermatheca elliptical, partite proximally, 88 $\times$ 40–100 $\times$ 56  $\mu$ ; neck 28–36  $\mu$  long; duct 680  $\mu$  long and 6  $\mu$  in diameter. Ventral receptacle of normal form, 128  $\mu$  long.

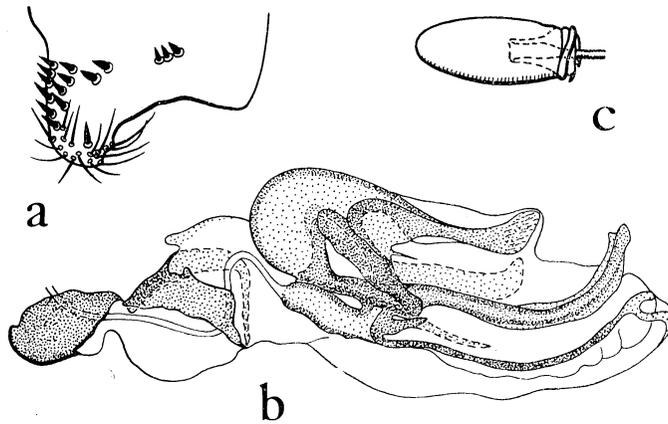


Fig. 6. *Melanagromyza cordiophoeta* Spenc. a, surstylus; b, phallus, lateral view; c, spermatheca.

cal, partite proximally, 88 $\times$ 40–100 $\times$ 56  $\mu$ ; neck 28–36  $\mu$  long; duct 680  $\mu$  long and 6  $\mu$  in diameter. Ventral receptacle of normal form, 128  $\mu$  long.

NE NEW GUINEA: 1♂, Goroka, 1550 m, 25. VI. 1955, J. L. Gressitt; 1♀, Gurakor Village, 950 m, nr. Wau, Wampit, 7. VII. 1957, D. E. Hardy. NEW BRITAIN: 1♂, Linga Linga Plantation, 1 m, W of Willaumez Penin., 14. IV. 1956, Gressitt; 1♂, St. Paul's, 350 m, Baining, Gazelle Penin., 8. IX. 1955, Gressitt.

DISTRIBUTION: Malaya (Singapore), NE New Guinea, New Britain.

### 15. *Melanagromyza geminata* Spencer

*Melanagromyza geminata* Sp., 1962, Pacific Ins. 4 (3): 655.

DISTRIBUTION: New Guinea.

Small black species, with greenish shining mesonotum and whitish squamal fringe; ocellar triangle and parafrontalia strongly shining; front narrow, subequal to width of eye; gena approximately 1/15 eye height (not 1/20); arista rather distinctly pubescent; wing length 1.93 mm (not 2.2 mm), r-m beyond middle of discal cell (25:18), ultimate section of  $M_{3+4}$  3/4 length of penultimate; mid tibia with a short posterodorsal bristle; endophallus of ♂ terminalia similar to *cordiophoeta* in shape.

### 16. *Melanagromyza albisquama* (Malloch)

*Agromyza* (*Melanagromyza*) *albisquama* Mall., 1927, Proc. Linn. Soc. N. S. Wales 52: 425.

NW NEW GUINEA: 6 ♂♂, W. shore Lake Anggi Giji, 1850 m, Sururai Vill. area, Vogelkop, 25. VII. 1957, D. E. Hardy; 1♀, N of Lake Anggi Giji, 1850 m, Irai R. area, Vogelkop, 31. VII. 1957, Hardy. NE NEW GUINEA: 1♂, Goiburung, 1560–1650 m, E of Korn Farm, W. Highlands, 16. X. 1958, J. L. Gressitt. NEW BRITAIN: 1♂, 1♀, St.

Paul's, 350 m, Bainings, Gazelle Pen., 8. IX. 1955, Gressitt.

**DISTRIBUTION:** Vietnam, Indonesia, Micronesia, NW & NE New Guinea (new record), Fiji, Australia, Ceylon, South Africa.

**17. *Melanagromyza bispinosa* Sasakawa, n. sp. Fig. 7.**

**Male:** Head black; front dorsally and inner side of parafrontalia slightly brown-tinged; ocellar triangle and dorsal part of parafrontalia strongly shining; lunule brown, silvery pruinose; gena brown; antenna black, arista and palpus dark brown. Thorax and abdomen black, strongly greenish shining. Wing hyaline; veins pale brown; calypter white, with margin yellowish and fringe yellowish white; halter black. Legs black.

**Head:** Front wider than long,  $1.6\times$  as wide as eye; parafrontalia a little wider than  $1/6$  width of front, slightly diverging ventrally. Ocellar triangle large, extending ventrally midway between 2. *ors* and 1. *ori*, bearing 4 setulae plus *oc*. Lunule higher than semicircular,  $2/5$  as high as length of front. Parafrontalia with 4 *or*; 1. *ors* directed up- and outwards, 2. *ors* missing; *ori* inwards; *oh* almost erect, in a row, an additional row ventrad of 1. *ori*. In profile parafrontalia not projecting above eye; eye height and width ratio as 40 : 30, with a distinct patch dorsad from level of 1. *ori*; gena about  $1/8$  eye height; *vi* longer than 4–5 *pm*. **Antennae** approximated to each other at base; segment 3 shorter than broad, with white pile; arista about  $3\times$  as long as whole length of antenna, swollen on basal  $1/6$ , microscopically pubescent. **Thorax:** Mesonotum with 0+2 *dc*, 1. *dc* slightly behind level of *sa*; 8 rows of rather long *acr*; humerus with 8 setulae plus *h*; mesopleura with 6–7 dorsally directed setulae; sternopleura with 2 setae and 2 setulae before *sp*.

**Wing:** Costa with sections 2–4 in proportion of 90 : 24 : 20; r-m almost at middle of discal cell (28 : 25); ultimate section of  $M_{1+2}$  about  $3\times$  as long as penultimate; ultimate section of  $M_{3+4}$   $3/5$  length of penultimate. **Leg:** Mid tibia with 2 strong posterodorsal bristles. **Abdomen:** Tergite densely setigerous; tergite 6 as long as 5; sternite 5 is  $1.4\times$  as long as tergite 6, incised on caudal  $1/12$ . **Terminalia:** Epandrium  $1/3$  as long as tergite 6; surstylus produced,  $1/2$  as high as epandrium, bearing 2 groups of spines, 14–15 spines of dorsal row stronger than 28–30 of ventral; cercus about  $1/2$  as high as epandrium. Hypandrium  $2/3$  length of phallopodeme, sidepiece very broad, apodeme short. Distiphallus  $1/2$  length of

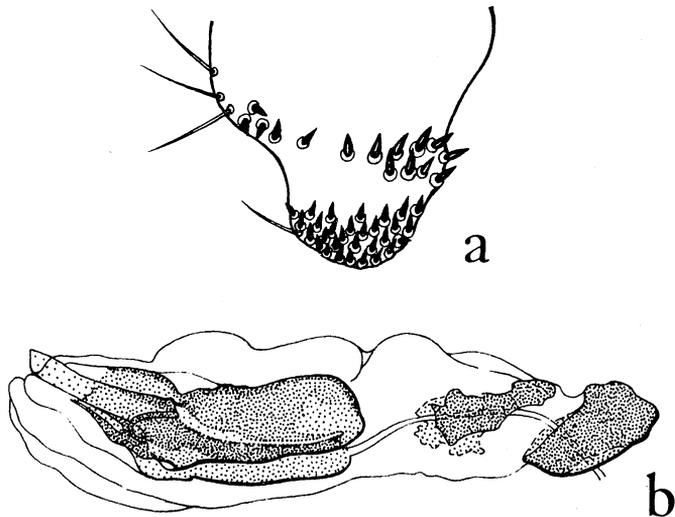


Fig. 7. *Melanagromyza bispinosa* Sasakawa, n. sp. a, surstylus, inner view; b, phallus, lateral view.

phallapodeme; paraphallus and hypophallus very short. Ejaculatory apodeme 190  $\mu$  long, 145  $\mu$  in greatest width. *Length*: Body 2.6 mm, wing 2.28.

*Female*: Similar to ♂, but mesonotum more or less shining bluish green, eye without patch of hairs, and antennae slightly separated from each other.

**DISTRIBUTION**: SE New Guinea (Papua).

Holotype ♂ (BISHOP 3436), Tororo, 1560 m, Goilala, Owen Stanley Range, SE New Guinea, 15.II.1958, W. W. Brandt. Allotype ♀, Kokoda-Pitoki, 450 m, SE New Guinea, 24. III. 1956, J. L. Gressitt.

This species superficially resembles *M. metallica* Thomson, but is immediately distinguishable by the microscopically pubescent arista, densely spinose surstylus and the smooth endophallus.

### 18. *Melanagromyza metallica* (Thomson)

*Agromyza metallica* Thom., 1869, Eugenes Resa. Dipt., 609.

*Melanagromyza metallica*: Spencer, 1959, Trans. R. Ent. Soc. Lond. **111**: 278; 1962, Pacific Ins. **4**: 656 (New Guinea, Solomons, New Hebrides).

NW NEW GUINEA: 1♂, Urapura, Kamo V., 1530 m, Wisselmeren, 10.IV.1955, Gressitt; 1♀, Itouda, Kamo V., 1500 m, Wisselmeren 12.IV.1955, Gressitt; 1♀, Karubaka, 1550 m, Swart Val., 8.XI.1958, Gressitt, 1♂, 3♀♀, Hamadi, 50 m, Hollandia area, 13.VII.1957, Hardy; 4♂♂, 5♀♀, Kampong Landbouw, 40 m, 30 km NE of air strip, Biak I., 16.VII.1957, Hardy; 1♀, E of Hol Maffen, River Tor (mouth), 4 km, 4.VII.1959, Maa; 3♀♀, Waris, S of Hollandia, 450–500 m, 27.VII–7.VIII.1959, Maa, at light; 2♂♂, 4♀♀, W of Lake Anggi Giji, 1850 m, Sungwadis Vill., Vogelkop, 2.VIII.1957, Hardy; 2♀♀, Mangrowawa, 50–100 m, Biak I., 31.X.1959, Gressitt, on Compositae; 1♀, Hollandia, 24.I.1960, Maa; 1♂, 40 km N of Baliem Val., ca. 1300 m, Bokondini, 16–23.XI.1961, L. W. Quate. NE NEW GUINEA: 1♀, Kerowagi area, 1700 m, Waghi V., 24.VI.1957, Hardy; 1♂, Maprik, Sepik Distr., 150 m, 20.VI.1961, L. & M. Gressitt; 1♀, Upper Jimmi Wau, V., Taenga, 1200 m, 14.VII.1955, Gressitt; 1♂, nr. Gurakor Village, 950 m, Wampit V., nr. 7.VII.1957, Hardy; 1♂, Bulolo, 885 m, 19.VIII.1956, E. J. Ford, Jr.; 2♂♂, 4♀♀, Maprik area, 160 m, Sepik, 23–27.VIII.1957, Hardy; 1♂, Funyende, 1200 m, Saidor, Finisterre Range, 24.IX.1958, W. W. Brandt; 1♂, Eliptamin Valley, 1350–1665 m, 23.VI.1959, Brandt; 1♂, Eliptamin Valley, 1200–1350 m, 1.VII.1959, Brandt; 1♂, 1♀, Wau, Morobe Distr., 1200 m, 30.VI.1961, J. Sedlacek. SE NEW GUINEA (Papua): 2♂♂, Bisianumu, 500 m, E of Port Moresby, 24.VIII.1955, Gressitt; 1♂, Kokoda-Pitoki, 400 m, 23.III.1956, Gressitt; 2♀♀, Brown River, nr. Port Moresby, 17.VI.1957, Hardy; 2♀♀, Loloipa, Goilala, Owen Stanley Range, 25.XI–31.XII.1957, Brandt; 1♂, Bisianumu, 500 m, E of Port Moresby, 3.IX.1959, Maa; 1♂, N of Port Moresby, 500 m, Daradae Plantation, 4.IX.1959, Maa; 1♂, Oriomo Govt. Sta., W. District, 26–28.X.1960, Gressitt, on *Ipomoea*, 1♀, on *Crotalaria*. BISMARCK ARCH.: 1♀, Lorengau, 1–75 m, Manus I., 27.VI.1959, Gressitt on *Ipomoea*. SW NEW IRELAND: 1♂, Gilingil Plantation, 2 m, 4.VI.1956, Gressitt, at light. NEW BRITAIN: 1♀, Keravat, 30 m, 3.IV.1956, Gressitt, on *Ipomoea*; 3♂♂, N of coast, 600 m, Sio, 24.VII.1956, Ford; 2♂♂, Nakanai Mts., 150 m, Silanga, 29–30.VII.1956, Ford; 1♂, Vunakanau, 350 m, 10.X.1957, Gressitt. SOLOMON IS.: 2♂♂, 2♀♀, nr. Crown Prince Ra., 900 m, Kokure, Bougainville (S), 9–11.VI.1956, Gressitt; 1♂, 1♀, nr. Kieta, 1 m, Arawa Plantation, Bougainville (S), 11.VI.1956, Gressitt; 1♀, Gold Ridge,

800 m, Guadalcanal, 23. VI. 1956, Gressitt; 1♂, 1♀, Suta, 500–1200 m, Guadalcanal, 27. VI. 1956, Gressitt; 2♀♀, Tangtalau, 150–200 m, Malaita, 25–30. IX. 1957, Gressitt; 1♀, Auki, 2–20 m, 18. IX. 1957, Gressitt, on *Ipomoea*; 1♀, Munda, 10–30 m, New Georgia I., 21. VII. 1959, Gressitt; 1♂, Auki, 2–20 m, Malaita, 22. IX. 1957, Gressitt.

New to the fauna of Bismarck Archipelago.

19. *Melanagromyza lividula* Sasakawa, n. sp. Fig. 8.

*Male*: Head blackish brown, including antenna and palpus, but vertical angle and occiput black; ocellar triangle and parafrontalia strongly shining; lunule and gena paler, the former silvery pruinose. Thorax with mesonotum and scutellum blue-black, strongly shining; pleura brown-tinged. Wing hyaline; veins brown; calypter whitish, with margin yellow and fringe whitish; halter blackish brown. Legs brownish black. Abdomen blackish brown, posteriorly bluish subshining, tergites 5–6 and epandrium brown.

*Head*: Front slightly wider than long, 1.3× as wide as eye; parafrontalia 1/6 width of front, parallel-sided. Ocellar triangle with ventral tip acute, just beyond level of 2. *ors*, bearing 4 setulae plus relatively short *oc*. Lunule distinctly higher than semi-circular, almost 1/2 as high as length of front. Parafrontalia with 4 *or*; 1. *ors* directed upwards, 2. *ors* and 1. *ori* up- and inwards; 2. *ori* inwards; *oh* rather long, reclinate, in a row. In profile parafrontalia not projecting above eye; eye almost bare, height and width ratio as 50 :

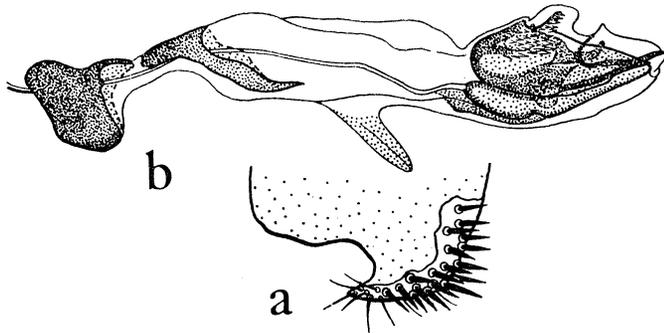


Fig. 8. *Melanagromyza lividula* Sasakawa, n. sp. a, surstylus, inner view; b, phallus, lateral view.

33; gena about 1/14 eye height; parafacialia as wide as facial carina; *vi* differentiated from 6 *pm*. *Antennae* approximated at base; segment 3 subspherical, slightly shorter than broad, with whitish pile; arista 2.7× as long as whole length of antenna, swollen on basal 1/6, with very long pubescence except on basal thickness. Palpus densely setigerous on apical part. *Thorax*: Mesonotum with 0+2 *dc*, 1. *dc* behind level of *sa*; 8–9 irregular rows of *acr*, about 6 rows of them extending caudad from 1. *dc* and 1 pair behind level of 2. *dc*; humerus with 3 setulae plus *h*; mesopleura with 5 dorsally directed setulae; sternopleura with 2 setae before *sp*. *Wing*: Costa with sections 2–4 in proportion of 94 : 27 : 23; r-m distinctly beyond middle of discal cell (32 : 23); m-m slightly shorter than penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  about 3× as long as penultimate; ultimate section of  $M_{3+4}$  about 3/5 length of penultimate. *Leg*: Mid tibia with 2 postero-dorsal bristles. *Abdomen*: Tergites moderately setigerous; tergite 6 slightly longer than 5; sternite 5 as long as tergite 6, incised on caudal 1/7. *Terminalia*: Epandrium 1/3 length of tergite 6; surstylus with 17–19 spines and 8–9 setae along caudal margin; cercus about 3/5 height of epandrium. Hypandrium with sidepiece broad, 2/3 length of phallopodeme; apodeme short and narrow. Phallic hood with 3 teeth laterally. Praegonite with 3–4 sen-

sillae. Distiphallus as long as hypandrium; paraphallus very short, ventral process strongly protruded but weakly sclerotized; endophallus distinctly spinose dorsally on lateral lobe. Ejaculatory apodeme of normal form, with basal projection, 188  $\mu$  long, 68  $\mu$  in greatest width. *Length*: Body 2.16 mm, wing 2.06.

**DISTRIBUTION**: New Britain.

Holotype ♂ (BISHOP 3437), St. Paul's, 350 m, Bainings, Gazelle Pen., New Britain, 4. IX. 1955, J. L. Gressitt. Female unknown.

This species belongs to the *cleomae*-group in having the blue-black mesonotum, but is easily recognizable by the plumose arista. The distiphallus of *lividula* is quite distinct: The ventral process is spine-like; the endophallus is similar to that of *ipomoeavora* Spencer and *sporoboli* Sasakawa but the dorsal spinulae are more distinct.

## 20. *Melanagromyza bryani* Sasakawa

*Melanagromyza bryani* Sasa., 1963, Pacific Ins. 5 (3): 493.

Shining blue species and characterized by the shiny ocellar triangle, dense rows of the acrostichals and 3 mid-tibial bristles. A ♀ from Solomons agrees closely with the holotype except for the more greenish abdomen and smaller size, measuring 2.2 mm in wing length.

**DISTRIBUTION**: Samoa, Solomon Is. (new record).

SOLOMON IS.: 1 ♀, Buruku to summit of Rendova Pk., 1050 m, Rendova I., New Georgia Group, 17. VII. 1959, J. L. Gressitt.

## 21. *Melanagromyza oculata* Sasakawa, n. sp. Fig. 9 a-b.

*Male*: Head black; ocellar triangle strongly shining; parafrontalia weakly shining; lunule and gena blackish brown; antenna and palpus black. Thorax black, notopleura and pteropleura slightly tinged with brown; mesonotum matt, densely gray-dusted, slightly shining when viewed from behind. Wing hyaline; veins brown; calypter grayish, with margin and fringe brown; halter black. Legs black. Abdomen shining bluish black.

*Head*: Front wider than long, about 1.5× as wide as eye; parafrontalia nearly 1/7 width of front. Ocellar triangle extending to level of 1. *ori*, bearing 6 setulae plus *oc*. Lunule lower than semicircular, nearly 1/2 as high as length of front. Parafrontalia with 4 *or*; 1. *ors* directed upwards, 2. *ors* and 1. *ori* up- and inwards, 2. *ori* inwards; *oh* mostly reclinate, in a dense row, accompanying an additional row ventrad from 2. *ors*. In profile parafrontalia projecting above eye; eye height and width ratio as 37 : 28, with a distinct patch of long hairs, which are almost 2× as long as *oh*, dorsad from mid-point between 2. *ors* and 1. *ori*; gena about 1/10 eye height; *vi* differentiated from 5 *pm*. *Antennae* very slightly separated at base by carina; segment 3 slightly shorter than broad, with minute pile; arista 2.5× as long as whole length of antenna, swollen on basal 1/6, with rather distinct pubescence. Palpus densely setigerous at apex. *Thorax*: Mesonotum with 0+2 *dc*, 1. *dc* far behind level of *sa*; 8-9 rows of *acr*, 6 rows of them ending at level of 2. *dc*; *ipa* 1/6 length of *opa*; humerus with 6 setulae plus *h*; mesopleura with 5 dorsally directed setulae. *Wing*: Costa reaching  $M_{1+2}$ , with sections 2-4 in proportion of 73 : 22 : 16; r-m beyond middle of discal cell (25 : 17); m-m shorter than penultimate section of  $M_{1+2}$ ;

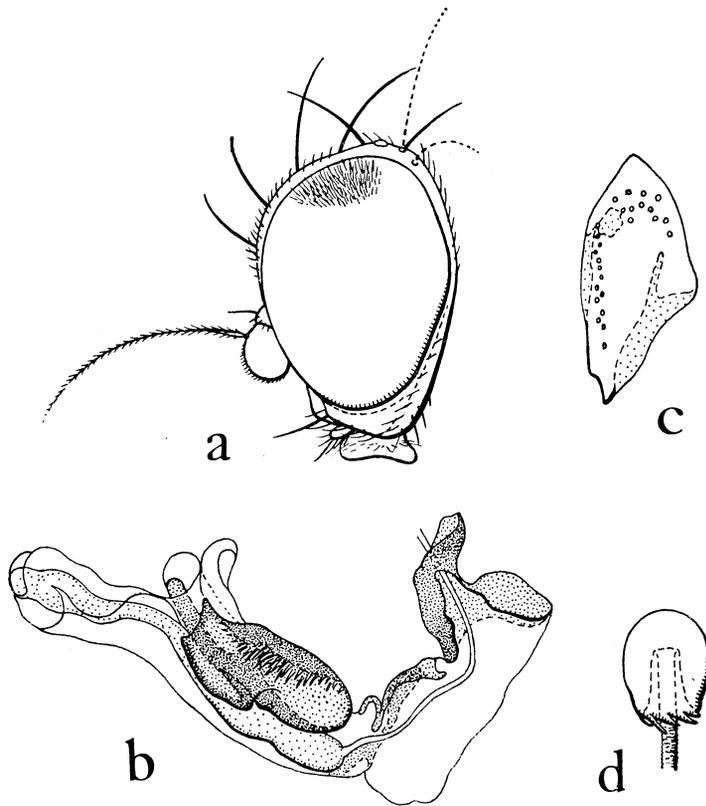


Fig. 9. *Melanagromyza oculata* (a-b) and *M. surrufa* Sasakawa (c-d), n. spp. a, head in profile; b, phallus, lateral view; c, egg guide, lateral view; d, spermatheca.

ultimate section  $M_{1+2}$   $3.5\times$  as long as penultimate; ultimate section of  $M_{3+4}$  almost  $3/4$  length of penultimate (27 : 40). *Leg*: Mid tibia with 2 posterodorsal bristles. *Abdomen*: Tergite 6 longer than 5; sternite 5 as long as tergite 6, incised on caudal  $1/5$ . *Terminalia*: Epandrium  $1/4$  as long as tergite 6; surstylus as wide as ventral length of epandrium, bearing 42–43 spines along distal margin; cercus about  $1/2$  as high as epandrium. Hypandrium broadly united basally,  $1/2$  as long as phallopodeme, with apodeme  $1/3$  length of sidepiece; praegonite covered with minute spinulae, with 4 sensillae. Basiphallus and paraphallus very small; endophallus heavily spinose on inner dorsal side. Ejaculatory apodeme  $165\ \mu$  long,  $110\ \mu$  in greatest width. *Length*: Body 2.3 mm, wing 1.93.

**DISTRIBUTION**: New Britain.

Holotype ♂ (BISHOP 3438), St. Paul's, 350 m, Baining, Gazelle Pen., New Britain, 8. IX. 1955, J. L. Gressitt. Female unknown.

This species is most distinctive in the coloration of the abdomen and the possession of a patch of long hairs on the eye.

**22. *Melanagromyza papuensis* Spencer**

*Melanagromyza papuensis* Sp., 1962, Pacific Ins. 4 (3) : 657 (New Guinea).

DISTRIBUTION: New Guinea.

The distinguishing features of this species are the mesonotum and abdomen with faint purplish tinge, the very broad gena, the fore tibia with external bristle, and the short ultimate section of  $M_{3+4}$ . Wing length 2.9 mm.

**23. *Melanagromyza surrufa* Sasakawa, n. sp. Fig. 9 c-d.**

*Female*: Head black; ocellar triangle and dorsal part of parafrontalia shining; lunule and gena slightly brown-tinged, the former gray-whitish pruinose; antenna and palpus brownish black. Thorax and abdomen black, slightly pollinose; mesonotum weakly or strongly greenish shining; notopleura dark brown; mesopleural suture brown; abdomen with strong reddish sheen. Wing hyaline; veins pale brown; calypter gray, with margin and fringe brown; halter brownish black. Legs black.

*Head*: Front slightly wider than eye (24 : 20), very slightly convergent ventrally; parafrontalia 1/6 width of front. Ocellar triangle relatively large, with ventral tip extending to level of 2. *ors*, bearing 6 minute setulae plus *oc*. Lunule higher than semicircular, 1/2 as high as length of front. Parafrontalia not or linearly projecting above eye in profile, bearing 2 reclinate, equal *ors* and 2 *ori*, directed in- and slightly upwards; *oh* reclinate, in a dense row; eye covered sparsely with minute hairs, height and width ratio as 45 : 30; gena 1/12-1/15 eye height; *vi* slightly longer than 4-5 *pm*. *Antennae* narrowly separated at bases; segment 3 as long as broad; arista 2.8× as long as whole length of antenna, swollen on basal 1/5, with distinct pubescence which is as long as or slightly longer than pile on segment 3. *Thorax*: Mesonotum with 0+2 *dc*, anterior *dc* far behind level of *sa*; 10-12 irregular rows of *acr*, 8 rows of them extending sparsely between *dc*; *ipa* less than 1/5 length of *opa*; mesopleura with 7 dorsally directed setulae; sternopleura with 2 setae before *sp*. *Wing*: Costa reaching  $M_{1+2}$ , with sections 2-4 in proportion of 93 : 25 : 18; r-m slightly beyond middle of discal cell (30 : 24); m-m 4/5 length of penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  3× as long as penultimate; ultimate section of  $M_{3+4}$  nearly 1/2 length of penultimate. *Leg*: Mid tibia with 2 strong posterodorsal bristles. *Abdomen*: Tergites densely setigerous; tergite 6 as long as 5; sternite 6 as long as tergite 6. *Terminalia*: Ovipositor sheath 1.5× as long as tergite 6; apodeme slightly shorter than sheath, strongly sclerotized, pouched on anterior 1/4. Tergite 9 is 220  $\mu$  long, sternite 9 only sclerotized apically, 45  $\mu$  long, setulose on basal membranous part, bearing 6 *nsm*; cercus with 4 *ts*. Egg guide subtriangular, 130  $\mu$  long, well sclerotized, with many sensillae. Spermatheca suboval, 56×47-62×58  $\mu$ , partite proximally; duct brown-tinged at basal part, 450  $\mu$  long, 10  $\mu$  in diameter. Ventral receptacle of normal size and form. Uterus with a pair of triangular sclerites at end. *Length*: Body 2.40-2.48 mm, wing 2.06-2.34.

DISTRIBUTION: New Britain.

Holotype ♀ (BISHOP 3439), Sio, N. coast, 600 m, C. New Britain, 24. VII. 1956, E. J. Ford, Jr.; paratypes, 1 ♀, same locality as holotype; 1 ♀, Ti, Nakanai Mts., 26. VII. 1956, Ford.

This species is quite specific in the coloration of the abdomen. It is closely related to Oriental *M. ricini* de Meijere in having 2 mid-tibial bristles, but differs in its smaller size

and in having a distinctly pubescent arista.

**24. *Melanagromyza atomella* (Malloch)**

*Agromyza atomella* Mall., 1914, Ann. Hist.-Nat. Mus. Hung. **12**: 331.

*Melanagromyza atomella*: Hennig, 1941, Ent. Beihefte **8**: 174.—Spencer, 1962, Pacific Ins. **4**: 655 (New Guinea).

SE NEW GUINEA (Papua): 2♂♂, Oriomo Govt. Sta., W. District, 26–28. X. 1960, Gressitt. NEW BRITAIN: 1♀, St. Paul's, 350 m, Baining, Gazelle Pen., 9. IX. 1955, Gressitt. SOLOMON IS.: 1♀, Buin (Kangu), 10–50 m, Bougainville (S), 31. V. 1956, Gressitt.

This is a minute black species, with wing length 1.38–1.65 mm, characterized by the shining mesonotum, fine and short mid-tibial bristle, short distiphallus and minute spermathecae. New to the agromyzid-fauna of New Britain and Solomon Is.

**25. *Melanagromyza conspicua* Spencer** Fig. 10.

*Melanagromyza conspicua* Sp., 1961, Trans. R. Ent. Soc. Lond. **113** (4): 71; 1962, Pacific Ins. **4**: 655 (New Guinea, New Britain, New Hebrides).

Black species, with brown gena and black fringe on calypter; antennal segment 3 distinctly pilose; mesonotum shining when viewed from behind; abdomen shiny; wing length, ♂ 1.65–2.07 mm, ♀ 1.89–2.30. The New Guinean specimens closely agree with the original description except for following points: Parafrontalia slightly or distinctly beyond above eye-margin in profile; gena more or less narrower, 1/5–1/7 as high as eye height; cross-vein r-m situated beyond middle of discal cell (25: 15–23). *Terminalia*: Male—Epandrium 1/3 as long as tergite 6; surstylus 2/3 as long as ventral length of epandrium, bearing 38–44 spines; cercus 3/5 as high as epandrium, with 10 stout bristles posteriorly. Hypandrium 5/7 length of phallapodeme; apodeme broad, 2/3 length of sidepiece; praegonite setulose

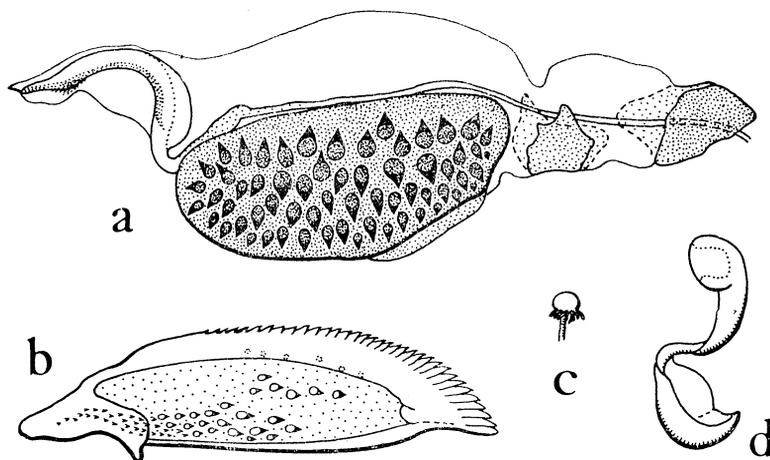


Fig. 10. *Melanagromyza conspicua* Spenc. a, phallus, lateral view; b, egg guide, lateral view; c, spermatheca; d, ventral receptacle.

ventrally and with 5–6 sensillae. Distiphallus slightly longer than 1/2 length of phallopodeme; endophallus with dorsal lobes covered with 120–200 heavy spines, minutely spinose before apex. Ejaculatory apodeme 300–335  $\mu$  long, 160–191  $\mu$  in greatest width. Female—Ovipositor sheath slightly longer than tergite 6; apodeme as long as sheath, pouched on anterior 1/2. Egg guide 278  $\mu$  long, 76  $\mu$  wide, with 30–34 teeth of serration and 12 sensillae on basal transverse plate. Tergite 9 well developed, 190  $\mu$  long, 45  $\mu$  wide; sternite longer than tergite, 240  $\mu$  long, 1/2 as wide as tergite, with 2 pairs of *nsm*; cercus 49  $\mu$  long, with 4 *ts*. Spermatheca minute, semiorbicular, transparent, 9×18  $\mu$ , partite proximally; duct 267  $\mu$  long. Ventral receptacle of normal form, 145  $\mu$  long.

NW NEW GUINEA: 1♂, 5♀♀, Kampong Landbouw, 40 m, 30 km NE of air strip, Biak, 16. VII. 1957, D. E. Hardy; 1♂, Wamena, 1700 m, 10–25. II. 1960, T. C. Maa. NE NEW GUINEA: 1♂, 3♀♀, Minj area, 1700 m, 3. VII. 1957, Hardy; 1♀, nr. Gurakor Village, 950 m, Wampit V., 7. VII. 1957, Hardy; 1♀, Goiburung, E of Korn Farm, 1560–1650 m, W. Highlands, 16. X. 1958, Gressitt. NEW BRITAIN: 1♂, Wunung Plantation, Jacquinet Bay, 30. IV. 1956, Gressitt.

DISTRIBUTION: Singapore, Ceylon, Taiwan, New Guinea (NE, NW), New Britain, New Hebrides, Australia.

#### Genus *Ophiomyia* Braschnikov

#### 26. *Ophiomyia gressitti* Sasakawa, n. sp. Fig. 11.

*Female*: Black; front matt, parafrontalia subshining; ocellar triangle brownish anteriorly, strongly shining; gena somewhat brown-tinged; arista dark brown. Thorax and abdomen shiny, thorax more densely pollinose. Wing hyaline; veins pale brown; calypter grayish, with margin and fringe brownish black; halter black. Legs black.

*Head*: Front distinctly wider than long, 1.8× as wide as eye, distinctly converging ventrally; parafrontalia 1/7 width of front, parallel-sided. Ocellar triangle with ventral tip extending almost to level of 2. *ors*; lunule entirely hidden under frontalia. Parafrontalia not projecting above eye in profile, bearing 4 *or* (*ors* missing but detectable by their pits), 1. *ori* directed in- and upwards, 2. *ori* inwards; *oh* in a row; eye 1.4× as high as wide, almost bare; gena 1/8 eye height; vibrissal angle slightly protruded; *pm* arranged densely near *vi*; carina narrow, only slightly widening below base of antennae.

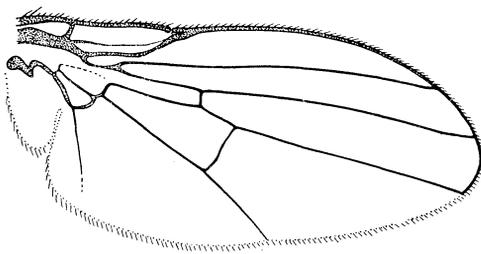


Fig. 11. Wing of *Ophiomyia gressitti* Sasakawa, n. sp.

*Antennae* separated at base; segment 3 subspherical, as long as wide, with minute pile; arista 2× as long as whole length of antenna, swollen on basal 1/6, almost bare. *Thorax*: Mesonotum with 0+2 *dc*; 1. *dc* before level of *sa*; 8 irregular rows of *acr*, 4 rows of them extending caudad from 1. *dc*; *ipa* 1/4 length of *opa*; humerus with 5 setulae plus *h*; mesopleura

with 4 dorsally directed setulae; sternopleura with 4 short setae before *sp*. *Wing*: Costa with sections 2–4 in proportion of 65 : 15 : 14; r-m distinctly beyond middle of discal cell;

ultimate section of  $M_{1+2}$  about  $5\times$  as long as penultimate; ultimate section of  $M_{3+4}$  about  $2/3$  length of penultimate. *Leg*: Mid tibia with a posterodorsal bristle. *Abdomen*: Tergites sparsely setigerous; tergite 6 as long as 5. *Length*: Body 2.4 mm, wing 2.64.

DISTRIBUTION: NE New Guinea.

Holotype ♀ (BISHOP 3440), N of Banz, 1900 m, Sepik-Waghi Divide, W. Highlands, NE New Guinea, 11. VII. 1955, J. L. Gressitt. Male unknown.

In general appearance this species is somewhat intermediate between *M. cicerivora* Spencer and *negrosensis* Spenc. in having a black fringe on the calypter and a narrow carina. However, this species may be distinguished by its larger size (in the allied species the wing length is 2 mm), approximating cross-veins (in allied species, the cross-vein r-m is slightly beyond middle of the discal cell), and mid-tibial bristle.

**27. Ophiomyia negrosensis** Spencer

*Ophiomyia negrosensis* Sp., 1962, Pacific Ins. 4 (3): 675.

*Ophiomyia lantanae* Sp. (*nec* Froggatt), 1962, *ibid.*: 659.

Entirely black species, with wing length 1.9 (holotype)—2.06 mm in ♂ and black squamal fringe. Gena  $1/9$  eye height; carina narrow; ocellar triangle pollinose and scarcely shining, differing from *gressitti*.

One ♂ from New Guinea, determined as *lantanae* by Spencer, is referable to this species by the examination of characteristic ♂ terminalia. The cercus has 7–8 spine-like setae on anteroventral part; the surstylus is narrowly projected and provided with 11 spines and 6 minute setae. The endophallus is about  $3\times$  as long as para- and hypophallus and surrounded by large, well-sclerotized lobe which is densely spinose on the ventroproximal  $1/3$ .

DISTRIBUTION: Philippines, New Guinea.

Genus **Shizukoa** Sasakawa

KEY TO THE KNOWN SPECIES OF THE WORLD

- 1. Fore tibia with 1 external bristle..... 2
- Fore tibia without bristle..... 3
- 2 (1). Mid tibia with 1 posterodorsal bristle (New Guinea)..... **prolata\***
- Mid tibia with 3 posterodorsal bristles (North Borneo)..... **seticopia**
- 3 (1). Prescutellar bristle present..... 4
- Prescutellar bristle lacking (New Guinea, New Britain)..... **furcata\***
- 4 (3). Large species, wing length 4.2 mm (Taiwan)..... **magna**
- Smaller species, wing length 2.6–3.9 mm..... 5
- 5 (4). Mid tibia with 1 bristle (Vietnam)..... **propinqua**
- Mid tibia with 2 bristles..... 6
- 6 (5). Abdominal tergites 4–5 with yellow caudal margins..... 7
- Tergite entirely black (New Guinea)..... **terminalis\***
- 7 (6). Gena  $1/12$  eye height; endophallus weakly sclerotized (Thailand, New Guinea, Bismarcks)..... **maai**

Gena  $1/16$  eye height; endophallus with a pair of lateral processes (New Guinea)

..... *hirticula*\*

28. *Shizukoa prolata* Sasakawa, n. sp. Fig. 12 a-b.

*Female.* Head black; parafrontalia slightly shining; lunule pale brown, silvery pruinose; face, gena and palpus dark brown; antenna brown. Thorax black, densely gray-dusted, slightly shining; pleura brown-tinged; abdomen shiny black. Wing hyaline; veins brown; calypter brownish gray, with margin and fringe brownish black; halter with stalk pale brown and knob yellow. Legs black.

*Head:* Front slightly wider than long,  $1.5\times$  as wide as eye; parafrontalia  $1/6$  width of front, converging ventrally. Ocellar triangle elongated ventrally, flattened, reaching level of 2. *ors*, with 10 setulae plus rather short *oc*. Lunule  $1/4$  as high as length of front. In profile parafrontalia and parafacialia slightly projecting above eye; parafrontalia with 2 dorsally directed *ors* and 2 inwardly directed *ori*, *oh* in a dense row; parafacialia  $1/4$  as wide as diameter of antennal segment 1; eye bare, height and width ratio as  $5:4$ ; gena  $1/8$  eye height; *vi* differentiated from 6 *pm*, accompanying 6 setulae. *Antennae* approximated to each other; segment 3 as long as broad, rounded, with white pile; arista  $2.5\times$  as long as whole length of antenna, swollen on basal  $1/5$ , pubescent. *Thorax:* Mesonotum with 1+3 *dc*, 7-8 rows of *acr*; *prsc* as long as *ipa* which is  $1/4$  length of *opa*; sternopleura with 5 setae before *sp*; other chaetotaxy similar to that of *seticopia*. *Wing:* Costa with sections 2-4 in proportion of  $120:31:26$ ; r-m slightly beyond middle of discal cell ( $35:28$ ); m-m shorter than penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  about  $4\times$  as long as penultimate; ultimate section of  $M_{3+4}$  about  $2/3$  length of penultimate. *Legs:* Fore tibia with 1 external bristle; mid tibia with 1 strong posterodorsal bristle. *Abdomen:* Tergites covered with dense setae, *mar* extremely long; tergite 6 is  $2\times$  as long as 5; sternite 6 is  $3/4$  length of tergite 6. *Terminalia:* Ovipositor sheath as long as tergite 6, dorsally

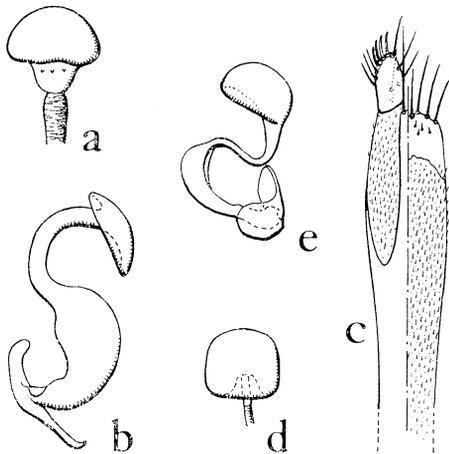


Fig. 12. *Shizukoa prolata* (a-b) and *S. furcata* Sasakawa (c-e), n. spp. a & d, spermthecae; b & e, ventral receptacles; c, tergite and sternite 9.

setigerous on posterior  $1/2$ , pubescent through whole length; apodeme long, extending to caudal margin of tergite 4, very weakly sclerotized. Egg guide suboval, pointed distally, almost transparent,  $100\mu$  long, with very minute serration laterally. Tergite 9 long,  $780\mu$  long,  $45\mu$  width, overspreading laterally, trifurcated at distal end; sternite with 3 pairs of *nsm* and setulose on distal  $1/3$  of membranous part; cercus  $45\mu$  long, with 2 *ts*. Spermtheca semiorbicular,  $40\times 67-44\times 67\mu$ , neck  $13\mu$  long, duct  $378\mu$  long and  $13\mu$  in diameter. Ventral receptacle typical of this genus,  $180\mu$  long, cap-like part very weakly sclerotized. *Length:* Body  $3.5$  mm, wing  $3.2$ .

DISTRIBUTION: NE New Guinea.

Holotype ♀ (BISHOP 3441), Bulolo, 730 m, NE New Guinea, 19. VIII. 1956, E. J. Ford, Jr. Male unknown.

This species is closely allied to *S. seticopia* Sasakawa, but may be immediately distinguished by having the elongated ocellar triangle, shorter ultimate section of  $M_{3+4}$  and 1 mid-tibial bristle.

29. *Shizukoa furcata* Sasakawa, n. sp. Fig. 12 c-e.

*Male*: Head black; front matt, parafrontalia and ocellar triangle subshining; lunule, face, parafacialia and gena brown-tinged; antenna slightly tinged with brown, arista brown; palpus black. Thorax black, densely gray-dusted; mesonotum matt; notopleura brown-tinged; suture pale brown. Wing hyaline; veins brown; calypter brownish gray, with margin and fringe brownish black; halter with stalk pale brown and knob yellow. Legs black. Abdomen blackish brown, very slightly shining.

*Head*: Front almost as long as wide, about  $1.7\times$  as wide as eye; parafrontalia  $1/6$  width of front, parallel-sided. Ocellar triangle with ventral tip slightly beyond level of 1. *ors*, bearing 6-7 setulae plus *oc*. Lunule semicircular,  $1/5$  as high as length of front. Parafrontalia projecting above eye in profile; *ors* 2, 2. *ors* directed up- and slightly inwards (1. *ors* missing); 1. *ori* up- and inwards, 2. *ori* inwards; *oh* minute, in a dense row; eye almost bare, height and width ratio as 45 : 34; gena  $1/9$  eye height; parafacialia somewhat broader; *vi* differentiated from 5-6 *pm*. *Antennae* slightly separated at base by carina; segment 3 slightly shorter than broad, with minute pile; arista  $2.7\times$  as long as whole length of antenna, swollen on basal  $1/6$ , microscopically pubescent. *Thorax*: Mesonotum with 1+3 *dc*, 1. *dc* slightly before level of *prs*, 3. *dc* just behind level of *sa*; 8-9 irregular rows of *acr*, about 6 rows of them ending at level of 4. *dc*; *ia* and *ipa* subequal to 2. *dc*; *ipa*  $1/2$  length of *opa*; *prsc* lacking; mesopleura with 10-12 dorsally directed setulae; sternopleura with 3-4 short setae before *sp*. *Wing*: Costa reaching  $M_{1+2}$ , with sections 2-4 in proportion of 102 : 30 : 21; r-m at distal  $1/4$  of discal cell; m-m  $1.8\times$  as long as penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  about  $10\times$  as long as penultimate; ultimate section of  $M_{3+4}$   $1.5\times$  as long as penultimate. *Leg*: Mid tibia with 1 strong postero-dorsal bristle. *Abdomen*: Tergites moderately setigerous, *mar* very long; tergite 6 subequal to 5; sternite 5 is  $1.5\times$  as long as tergite 6, very narrowly incised posteriorly. *Terminalia*: Epandrium about  $1/2$  as long as tergite 6; surstylus posteriorly projected, as long as epandrium, with 1 long and about 35 short setae; processus longus slightly shorter than epandrium, with posterior lobe large; cercus  $1/3$  as high as epandrium. Hypandrium nearly  $1/2$  length of phallopodeme; sidepiece broad, without apodeme; praegonite with a heavy spine and 5-7 sensory hairs. Basiphallus large; para- and hypophallus  $1/5$  length of phallopodeme, sparsely spinulate at ventral apex; ventral process strong; endophallus subequal to paraphallus. *Length*: Body and wing 2.75 mm.

*Female*: Similar to ♂, but front narrower,  $1.3\times$  as wide as eye; lunule  $1/4$  as high as length of front; gena much narrower,  $1/13$  eye height; *ipa* equal to 3. *dc* in length and  $4/5$  length of *opa*; costal ratio 2-3 as 85 : 30; m-m  $1.4\times$  as long as penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{3+4}$   $1.9\times$  as long as penultimate; tergite 6 is  $1.3\times$  as long

as 5; sternite 6 as long as tergite 5. *Terminalia*: Ovipositor sheath as long as tergite 5; apodeme tubular, broadened posteriorly, strongly sclerotized, anteriorly extending caudal margin of tergite 4,  $2.7\times$  as long as sheath, with a characteristic dorsal keel extending almost through whole length. Egg guide subrectangular, membranous but sclerotized on proximal part,  $85\ \mu$  long. Tergite 9 trifurcate on distal  $1/3$ ,  $388\ \mu$  long; sternite 9 only slightly sclerotized at apex, bearing 4 pairs of *nsm* and 9 sensillae; cercus setigerous laterally, with 4 *is*. Spermatheca suborbicular, with truncate proximal end,  $48\times 48$ – $52\times 48\ \mu$ ; neck  $28\ \mu$  long, duct  $460$ – $480\ \mu$  long and  $6\ \mu$  in diameter; ventral receptacle as figured,  $180\ \mu$  long. *Length*: Body 3.0 mm, wing 2.6.

DISTRIBUTION: NE New Guinea, New Britain.

Holotype ♂ (BISHOP 3442), Wau, 1200 m, Morobe Distr., NE New Guinea 30.VI.1961, J. Sedlacek. Allotype ♀, St. Paul's, 350 m, Bainings, Gazelle Pen., New Britain, 8.IX.1955, J. L. Gressitt.

This species is readily distinguishable from all known species by the absence of the prescutellar bristle and the longer ultimate section of  $M_{3+4}$ . The shape of ventral receptacle of ♀ terminalia is in common with many species of the Phytomyzinae.

**30. *Shizukoa terminalis* Sasakawa, n. sp.** Fig. 13 c-e.

*Male*: Head black; frontalia matt, parafrontalia weakly shining; lunule dark brown, grayish pruinose; antenna and palpus brownish black. Thorax and abdomen black, scarcely shining, densely gray-dusted; lateral side of mesonotum slightly brown-tinged; mesopleural suture and base of wing brown; tergites 4–5 with scarcely brownish caudal margins. Wing hyaline; veins brown; calypter brownish gray, with margin and fringe black; halter with stalk brown but knob yellow. Legs black.

*Head*: Front wider than long,  $1.4\times$  as wide as eye, almost parallel-sided; parafrontalia about  $1/6$  width of front. Ocellar triangle extending just beyond level of 2. *ors*, bearing 10 setulae plus *oc*. Lunule lower than semicircular, about  $1/4$  as high as length of front. Parafrontalia with 2 *ors* (1. *ors* missing) and 3 *ori*; 2. *ors* and 1. *ori* upwards, 2. and 3. *ori* up- and inwards; *oh* minute, reclinate, in a row, becoming sparser and longer ventrally. In profile parafrontalia distinctly and parafacialia linearly projecting above eye; eye with very sparse, minute hairs, eye height and width ratio as 57:40; gena about  $1/10$  eye height; parafacialia nearly  $1/3$  as wide as diameter of antennal segment 1; *vi* differentiated from 7–9 strong *pm*. *Antennae* separated at base; segment 3 as long as wide, minutely pilose; arista  $2.5\times$  as long as whole length of antenna, swollen on basal  $1/7$ , microscopically pubescent. *Thorax*: Mesonotum with 1+3 *dc*, 1. *dc* just before level of *prs*, 3. *dc* slightly behind level of *sa*; 10 irregular rows of *acr*; *prsc* strong; *ipa* about  $2/3$  length of *opa*; humerus with 8–10 setulae plus *h*; mesopleura with 19–21 dorsally directed setulae; sternopleura with 5 long setae before *sp*. *Wing*: Costa with section 2–4 in proportion of 116:30:24; r-m situated at distal  $1/3$  of discal cell (40:22); m-m subequal in length to penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  about  $5\times$  as long as penultimate; ultimate section of  $M_{3+4}$  as long as penultimate. *Leg*: Mid tibia with 2 strong postero-dorsal bristles. *Abdomen*: Tergite 6 subequal to 5; sternite 5 almost  $1.3\times$  as long as tergite 6, incised on caudal  $1/5$ . *Terminalia*: Very similar to that of *maai*, but epandrium with sparser setae on ventroposterior part; processus longus smaller; surstylus with 38–42

setae; praegonite with 2-3 long and 1-2 short setae and 2 sensillae; distiphallus subequal in length to hypandrium, endophallus well sclerotized, slightly constricted before apex and spinose internally; ejaculatory apodeme  $285\ \mu$  long,  $267\ \mu$  in greatest width, with minute projection at base. *Length*: Body 3.7 mm, wing 3.2 (paratype)-3.85 (holotype).

*Female*: Similar to ♂, but front  $1.5\times$  as wide as eye; parafrontalia with 2 *ori*; ovipositor sheath as long as tergite 6, pubescent on anterior  $2/3$ ; wing length 3.9 mm.

*DISTRIBUTION*: SE New Guinea (Papua).

Holotype ♂ (BISHOP 3443), allotype ♀, Brown River, 5 m, SE New Guinea, at stream pools, 23. X. 1960, J. L. Gressitt.

This species differs distinctly from *S. hirticula*, n. sp. and *maai* (Spencer) in its entirely black tergite, broader gena, denser rows of the acrostichals, longer ultimate section of  $M_{3+4}$ , and the spinulose endophallus.

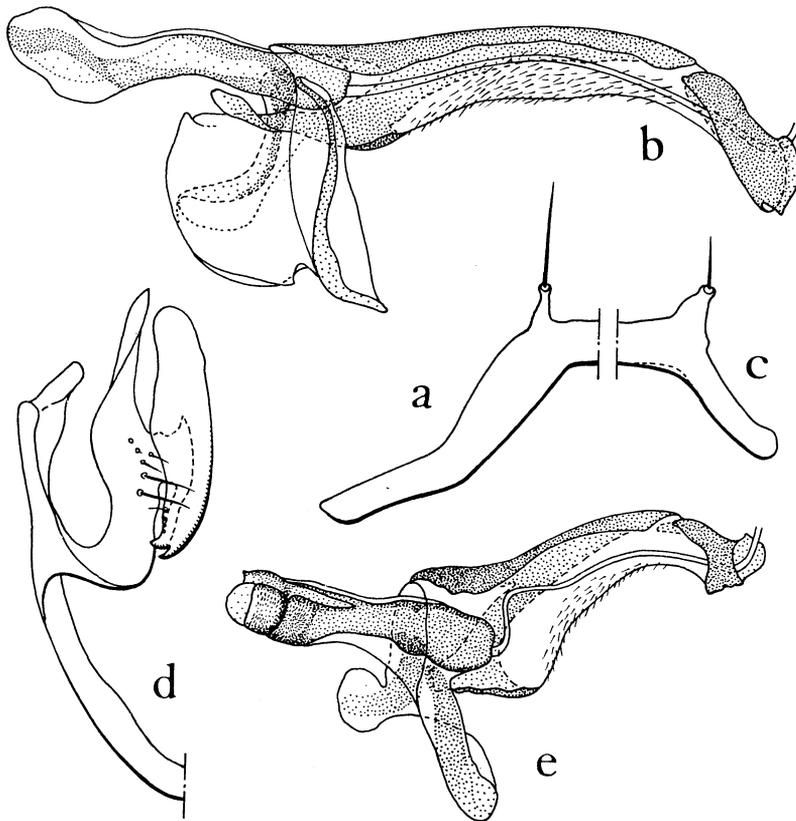


Fig. 13. *Shizukoa maai* Spenc. (a-b) and *S. terminalis* Sasakawa (c-e), n. sp. a & c, processus longus; b & e, phallus, lateral view; d, hypandrium, praegonite and postgonites.

**31. *Shizukoa maai*** (Spencer) Fig. 13 a-b.

*Agromyza maai* Sp., 1962, Pacific Ins. 4 (3): 664.

*Shizukoa maai*: Sasakawa, 1963, Pacific Ins. 5: 38.

*Male*: Head black; parafrontalia weakly shining; lunule yellowish or pale brown, silvery pruinose; face brownish black; antenna and palpus brown, antennal segment 3 darkened apically. Thorax subshiny black, densely gray-dusted; mesonotum with lateral side brown-tinged and yellow or brownish from base of wing to base of *opa*; dorsal margin of mesopleura, mesopleural suture and base of wing brownish yellow. Wing hyaline; veins brown; calypter yellow or brownish gray, with margin brown and fringe brownish black; halter yellow. Legs black, tarsi of holotype slightly tinged with brown. Abdomen matt, black, tergites 3-5 with yellow caudal margins; epandrium brown, apically yellowish; cercus pale brown, yellowish dorsally.

*Head*: Front slightly wider than long, 1.6-1.7× as wide as eye, converging ventrally; parafrontalia 1/6 width of front; ocellar triangle reaching almost level of 1. *ori*, with 6 setulae plus *oc*; lunule lower than semicircular, about 1/4 as high as length of front. In profile parafrontalia slightly or not projecting above eye; *ors* 2, *ori* 2; *oh* minute, reclinate, in a row; eye with very sparse minute hairs, height and width ratio as 33 : 20; gena 1/10-1/12 eye height; *vi* longer than 4-6 *pm*. *Antennae* separated at base; segment 3 rounded, with minute pile; arista nearly 3× as long as whole length of antenna, swollen on basal 1/6, microscopically pubescent. *Thorax*: Mesonotum with 1+3 *dc*, 1. *dc* behind level of *prs*, 3. *dc* midway between *sa* and *ia*; 8 irregular rows of *acr*; *prsc* strong. *Wing*: Costa with sections 2-4 in proportion of 68 : 20 : 17; r-m at or distinctly beyond middle of discal cell; m-m slightly shorter than penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  3.5-4.6× as long as penultimate; ultimate section of  $M_{3+4}$  4/5 to only slightly shorter than penultimate. *Leg*: Mid tibia with 2 strong posterodorsal bristles. *Abdomen*: Tergite 6 as long as 5; sternite 5 is 2× as long as tergite 6, incised on caudal 1/6. *Terminalia*: Epandrium densely setigerous on ventrocaudal part; cercus with long setae at ventral apex; processus longus with a pair of long setae; surstylus with 42-44 strong setae. Hypandrium rounded at anterior end, sidepiece shorter than 1/2 length of phallapodeme; praegonite with 5 long setae; postgonite with 1 short seta and 3-4 sensillae at ventromesal apex. Phallus as figured; endophallus weakly sclerotized; ejaculatory apodeme 216-248  $\mu$  long, 170-180  $\mu$  in greatest width. *Length*: Body 3.7 mm, wing 2.6-3.3.

**DISTRIBUTION**: Thailand, NE New Guinea, Bismarck Arch. (new record).

**NE NEW GUINEA**: 2♂♂, Wau, 1200 m, Morobe Distr., 30.VI.1961, J. Sedlacek. **BISMARCK ARCH.**; 1♂, Rossum, 180 m, 6 km SE of Lorengau, Manus I., 23.XII.1959, T. C. Maa.

**32. *Shizukoa hirticula*** Sasakawa, n. sp. Fig. 14.

*Male*: Head black; front matt, parafrontalia subshining; ocellar triangle weakly shining; lunule and antenna brown, the former silvery pruinose; gena brown-tinged; palpus brownish black. Thorax and abdomen weakly shiny, densely gray-dusted; pleura and abdomen tinged with brown; mesopleural suture and base of wing whitish brown; tergites 4-5 with yellow caudal margins. Wing hyaline; veins brown; calypter brownish gray, with margin and fringe brownish black; halter with stalk dark brown but knob entirely yellow. Legs black.

*Head*: Front wider than long, nearly  $2\times$  as wide as eye; parafrontalia  $1/7$  width of front, converging ventrally. Ocellar triangle with ventral tip almost extending to level of 1. *ors*, bearing 3 pairs of setulae plus *oc*. Lunule extremely lower than semicircular, about  $1/6$  length of front. Parafrontalia with 4 *or*; *ors* directed upwards, *ori* in- and upwards; *oh* in a row. In profile parafrontalia slightly projecting above eye-margin; eye with sparse, minute hairs, height and width ratio as  $56:47$ ; gena  $1/16$  eye height; *vi* differentiated from 5 *pm*, accompanying an additional row of 3-4 short hairs. *Antennae* slightly separated by sharp carina; segment 3 subspherical, with rather distinct pile; arista  $3\times$  as long as whole length of antenna, swollen on basal  $1/6$ , pubescent microscopically. *Thorax*: Mesonotum with 1+3 *dc*, 1. *dc* just before level of *prs*, as far apart from suture as 2. from that, 3. *dc* slightly behind level of *sa*; 8 rows of *acr*; *prsc* rather weak, about  $1/2$  length of 1. *dc*. *Wing*: Costa reaching  $M_{1+2}$ , with sections 2-4 in proportion of  $112:32:26$ ; r-m beyond middle of discal cell ( $34:24$ ); m-m slightly shorter than penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  about  $4\times$  as long as penultimate; ultimate section of  $M_{3+4}$  slightly shorter than penultimate ( $48:56$ ). *Leg*: Mid tibia with 2 posterodorsal

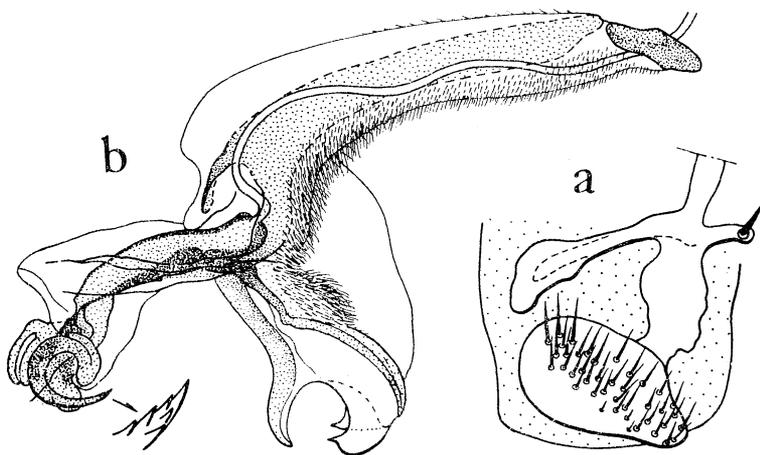


Fig. 14. *Shizukoa hirticula* Sasakawa, n. sp. a, surstylus and processus longus; b, phallus, lateral view.

bristles. *Abdomen*: Tergites sparsely setigerous; tergite 6 as long as 5; sternite 5 is  $2\times$  as long as tergite 6, incised on caudal  $1/5$ . *Terminalia*: Epandrium less than  $1/2$  length of tergite 6; surstylus  $1/4$  as high as epandrium, bearing 43-45 setae; postgonite and processus longus normal. Hypandrium a little less than  $1/2$  length of phallopodeme; praegonite with 6-7 setae. Phallic hood with apex bluntly protruded. Distiphallus as long as hypandrium, distinctly hairy on membrane; endophallus with a pair of claw-like, distal processess. Ejaculatory apodeme of normal shape,  $240\mu$  long,  $140\mu$  in greatest width. *Length*: Body 3.0 mm, wing 2.6.

**DISTRIBUTION**: SE New Guinea (Papua).

Holotype ♂ (BISHOP 3444), between Kokoda and Pitoki, 400 m, SE New Guinea (Papua), 23. III. 1956, J. L. Gressitt. Female unknown.

This species resembles *S. maai* (Spencer), but is immediately distinguishable by its smaller size and the yellow caudal margins on tergites 4-5. The structure of the distiphallus is highly distinctive.

Genus **Phytobia** Lioy

KEY TO PAPUAN SPECIES OF PHYTOBIA

1. Lunule semicircular ..... 3  
Lunule greatly higher than semicircular (*Poemyza* subgen.) ..... 2
2. Parafrontalia yellow ..... **longimentula**\*  
Parafrontalia brown ..... **curta**\*
3. Antennae widely separated at base ..... 4  
Antennae approximate or nearly so ..... 6
4. Front yellowish brown; ocellar triangle reaching lunule (*Icteromyza* subgen.) ..... 5  
Front brown; ocellar triangle smaller (*Dizygomyza* subgen.) ..... **ochreata**\*
5. Femora largely yellow ..... **piliseta**  
Femora black, knees narrowly yellow ..... **hardyi**\*
6. Parafrontalia distinctly raised above frontalia (*Praspedomyza* subgen.) ..... **prostrata**\*  
Parafrontalia not abruptly raised (*Trilobomyza* subgen.) ..... **lobata**\*

33. **Phytobia** (*Poemyza*) **longimentula** Sasakawa, n. sp. Fig. 15a.

*Male*: Head yellow, including antenna and palpus, but ocellar triangle brown, frontalia brownish ventrally, lunule and occiput brownish black, *vti* growing at edge of black area, face tinged with brown. Thorax and abdomen brownish black; mesonotum darker, subshining, slightly gray-dusted, with lateral side yellowish brown; posterior corner of humerus, dorsal margin of mesopleura and mesopleural suture yellow; tergites with yellow caudal margins, broadest on tergite 6; epandrium and cercus yellowish. Wing hyaline; veins pale brown, yellowish basally; calypter yellowish white, with margin and fringe yellowish brown; halter yellow. Legs with coxae and femora brown, distal 1/3 of fore knee and 1/4 of mid and hind knees yellow; tibiae and tarsi yellowish brown.

*Head*: Front 1.5× as wide as eye, slightly convergent ventrally; parafrontalia 1/5 width of frontalia, broadening ventrally, more than 1/3 of that at widest point. Ocellar triangle small; lunule almost 3× as high as length of front. Parafrontalia distinctly projecting above eye in profile, bearing 2 reclinate *ors* and 2 weaker *ori* (rarely 3), directed up- and inwards; *oh* rather long, in a sparse row; eye height and width ratio as 26 : 18, gena 1/5 eye height; *vi* differentiated from 2-3 *pm*. *Antennae* narrowly separated at base; segment 3 and arista missing. *Thorax*: Mesonotum with 2 strong *dc*, anterior *dc* at level of *sa*, additional 2 setae behind suture very weak and about 1/2 length of anterior *dc*; 6 irregular rows of *acr*, ending before hindmost *dc*; *ia* slightly shorter than *ipa* (mesonotum damaged). *Wing*: Costa with sections 2-4 in proportion of 54 : 25 : 17; r-m before middle of discal cell (13 : 20); m-m nearly 1/2 length of penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  3.3× as long as penultimate; ultimate section of  $M_{3+4}$  equal to penultimate. *Leg*: Mid tibia with 1 strong posterodorsal bristle. *Abdomen*: Tergite 6 about 2× as long as 5; sternite 5 is 2/3 length of tergite 6, incised on caudal 1/3. *Terminalia*: Epan-

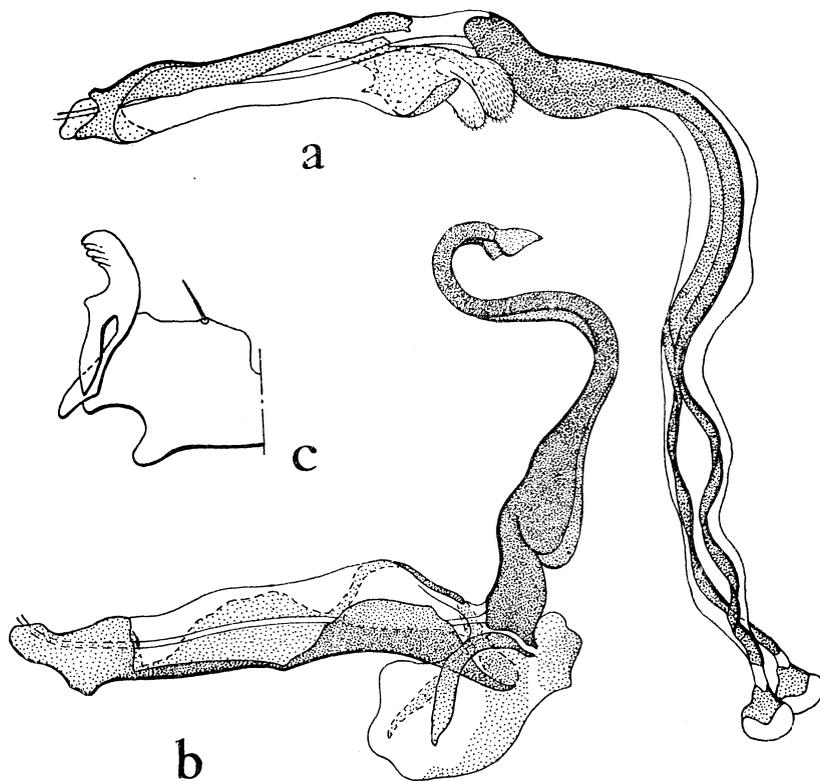


Fig. 15. *Phytobia* (Poë.) *longimentula* (a) and *curta* Sasakawa (b-c), n. spp. a & b. phallus, lateral view; c, processus longus, ventral view.

drium with apical process small, bearing 2 heavy spines and several setae on inner postero-ventral angle; surstylus narrowly lobate, bearing 13–15 setae; processus longus short, 1/2 length of epandrium, with several notches apically. Hypandrium about 1/2 length of phallapodeme, with short apodeme. Distiphallus 1.3× as long as phallapodeme; endophallus somewhat twisted on distal 1/2; ventral process membranous, setulose distally. **Length:** Body 1.58 mm, wing 1.76.

**Female:** Similar to ♂, but *vti* growing on yellow area, yellow caudal margins on tergites 2–3 indistinct; front 1.3× as wide as eye, eye height and width ratio as 33 : 24, gena 1/6 eye height; tergite 6 is 2× as long as 5; ovipositor sheath glossy, dark brown, as long as tergite 6. **Length:** Body 1.72 mm, wing 1.93.

**DISTRIBUTION:** NE New Guinea.

Holotype ♂ (ВІСНОР 3445), Dreikikir, 400 m, W of Maprik, Sepik Distr., NE New Guinea, 23. VI. 1961, M. & L. Gressitt; allotype ♀, Rain forest, 15 m, 10 km NW of Lae, NE New Guinea, 9. VII. 1957, D. E. Hardy.

This species is clearly distinct from *P. javana* de Meijere by the coloration of the

kness; *javana* has only the yellow fore knee. It may be separated from the South African *orbitona* Spencer and *setariae* Spenc. by the narrowly yellow knees of all its legs and the yellowish brown lateral sides of the mesonotum.

**34. *Phytobia* (*Poëmyza*) *curta* Sasakawa, n. sp.** Figs. 15 b-c, 16a.

*Male*: Head brown; frontalia and dorsal 1/2 of lunule black; occiput blackish; lateral margin of ocellar triangle and inner margin of parafrontalia linearly yellow; gena paler; antenna and palpus brown. Mesonotum shiny black, gray-dusted, with lateral side yellowish brown; scutellum brown; pleura blackish brown, dorsal margin of mesopleura and mesopleural suture yellow. Wing hyaline; veins pale yellowish brown, paler basally; calypter yellowish white, with margin and fringe yellow; halter yellow. Legs brownish black, only fore knee narrowly yellow, fore tibia and all tarsi paler. Abdomen brown, subshining, tergites 2-5 with yellow caudal margins.

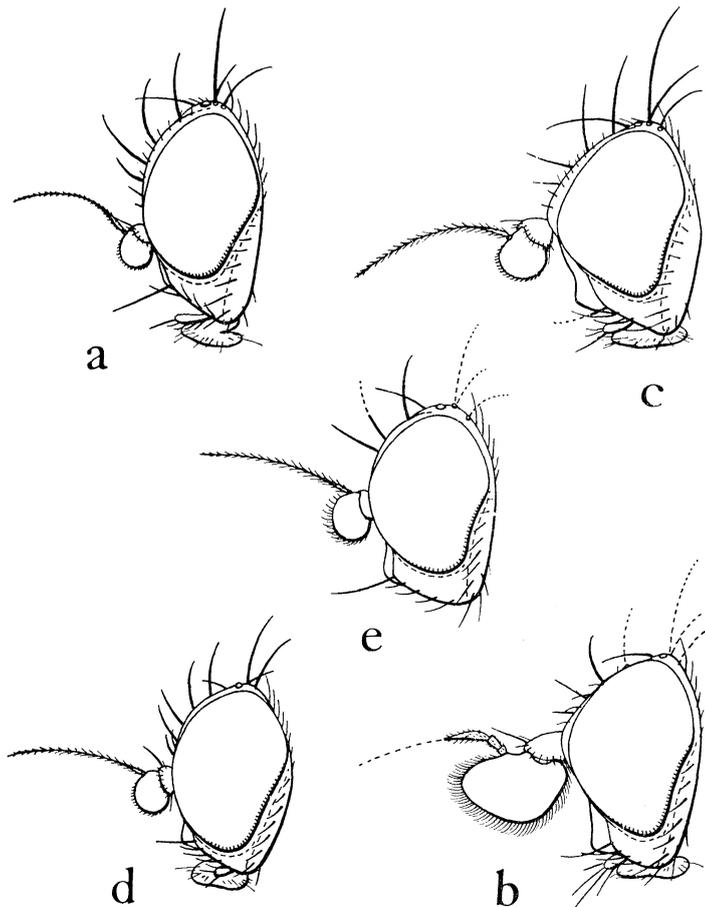


Fig. 16. Heads of *Phytobia*. a. *curta* n. sp.; b. *ochreatea* n. sp.; c. *hardyi* n. sp.; d. *prostrata* n. sp.; e. *lobata* n. sp.

**Head:** Front  $1.6\times$  as wide as eye, converging ventrally; parafrontalia a little wider than  $1/4$  width of front, divergent ventrally and  $2/5$  of that just above antenna. Ocellar triangle very small. Lunule slightly higher than length of front but narrow. Parafrontalia projecting above eye in profile, bearing 2 *ors* which is directed up- and slightly outwards and 2 incurved *ori* (3 on left side); *oh* in a sparse row; eye with sparse, minute hairs, height and width ratio as 27 : 18; *gena* about  $1/5$  eye height; *vi* distinctly longer than 4–5 *pm*. **Antennae** approximated at base; segment 3 small, minutely pilose; arista  $2.5\times$  as long as whole length of antenna, swollen on basal  $1/5$ , microscopically pubescent. **Thorax:** Mesonotum with 1+3 *dc*, 3. *dc* behind level of *sa*; 8 rows of *acr*, 4 rows of them ending at level of 4. *dc*; *ia* short; *ipa*  $1/3$  length of *opa*; humerus with 3 setulae plus *h*; mesopleura with 6 dorsally directed setulae. **Wing:** Costa reaching  $M_{1+2}$ , with sections 2–4 in proportion of 67 : 20 : 18; wing tip at termination of  $M_{1+2}$ ; r-m just slightly before middle of discal cell; m-m  $2/3$  length of penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  about  $6.6\times$  as long as penultimate; ultimate section of  $M_{3+4}$  more than  $2\times$  as long as penultimate (51 : 23). **Abdomen:** Tergites sparsely setigerous; tergite 6 as long as 5; sternite 5 is  $1.4\times$  as long as tergite 6, deeply incised on caudal  $2/3$ . **Terminalia:** Epandrium with 5–6 minute spines on posteroventral angle; surstylus small, lobate, bearing about 18 setae; processus longus short, slightly shorter than length of epandrium. Hypandrium less than  $1/2$  length of phallapodeme; sidepieces broadly united basally; praegonite covered with minute spinulae and with 4–5 short setulae. Distiphallus of normal form; ejaculatory apodeme spatulate,  $112\ \mu$  long,  $40\ \mu$  in greatest width. **Length:** Body 1.8 mm, wing 2.02.

**DISTRIBUTION:** SE New Guinea (Papua).

Holotype ♂ (BISHOP 3446), Mendi, 1660 m, S. Highlands, SE New Guinea, 13. X. 1958, J. L. Gressitt, at light trap. Female unknown.

This species is intermediate between *P. cornigera* de Meijere and *oryzivora* Spencer but quite different in the coloration of femora and size: in *cornigera*, fore and mid knees are yellow and wing length is 2.7 mm; in *oryzivora*, all knees are yellow and wing length is 1.6 mm.

**35. Phytobia (Dizygomyza) ochreata** Sasakawa, n. sp. Figs. 16b, 17.

**Male:** Head brown; dorsal  $2/3$  of frontalia and *gena* paler; ocellar triangle black; bases of *ors* and vertical angle darkened; lunule silver-grayish pruinose; antennal groove darkened dorsally; antenna and palpus brown. Thorax black, matt, densely dusted with gray; dorsal margin of mesopleura, mesopleural suture and base of wing yellowish white. Wing hyaline; veins pale brown, whitish basally; calypter white, with margin pale brown and fringe brown; halter pale yellow. Legs black; fore knee yellow, fore tibia brownish, all tarsi pale brownish yellow. Abdomen shiny black, anterior 3 tergites slightly pollinose; epandrium brown.

**Head:** Front  $2\times$  as wide as eye, slightly diverging ventrally; parafrontalia  $1/6$  width of front. Ocellar triangle with ventral tip not reaching to level of 1. *ors*. Lunule large, semicircular, slightly lower than length of front. In profile ventral part of parafrontalia projecting above eye; 2 *ors* (1. *ors* missing, but detectable by pit), 2. *ors* reclinate, 2 incurved *ori*; *oh* rather long, a few reclinate, others proclinate; eye sparsely with minute hairs, height and width ratio as 30 : 22; *gena*  $1/6$  eye height; *vi* stronger than 3 *pm*. **An-**

*tennae* widely separated at base; segment 3 extremely large, triangular, broadening apically, with long pile; arista missing. Palpus with 4 long setae at apex. *Thorax*: Mesonotum with 1+3 *dc*, 1. *dc* just before transverse suture, 1. and 2. *dc* about 1/2 length of 3. *dc*

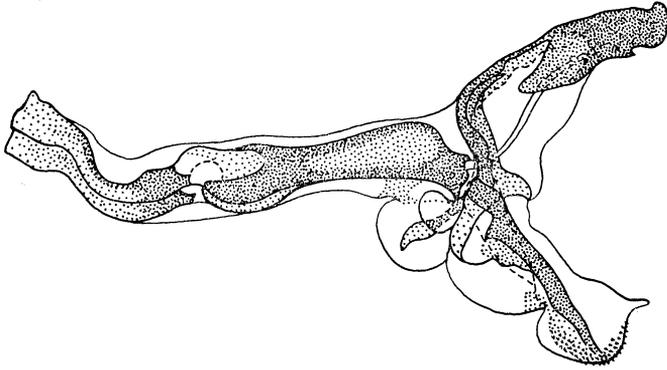


Fig. 17. Phallus of *Phytobia* (*Diz.*) *ochreata* Sasakawa, n. sp.

which located at level of *sa*; 6 rows of *acr*, 2 rows of them ending behind 4. *dc*; *ia* subequal to 2. *dc*; *ipa* 1/3 length of *opa*. *Wing*: Costa reaching  $M_{1+2}$ , with sections 2-4 in proportion of 60 : 23 : 15; r-m at middle of discal cell (15 : 16); m-m 3/4 length of penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  4.4 × as long as penultimate; ultimate section of  $M_{3+4}$  slightly longer than penultimate (35 : 30). *Ab-*

*domen*: Tergite 6 slightly longer than 5; sternite 5 as long as tergite 6, incised on caudal 1/3. *Terminalia*: Epandrium 1/3 length of tergite 6, with distinct apical process; cercus 1/3 as high as epandrium; processus longus of normal shape; surstylus triangular, bearing 8 spines and 9 setae. Hypandrium and phallus of normal form but ventral process of distiphallus distinctive, bearing numerous spinulae at end. Ejaculatory apodeme 128  $\mu$  long, 92  $\mu$  in greatest width. *Length*: Body 1.93 mm, wing 1.79.

**DISTRIBUTION**: SE New Guinea (Papua).

Holotype ♂ (BISHOP 3447), Oriomo Gov't. Sta., W. District, SE New Guinea (Papua), 26-28. X. 1960, J. L. Gressitt, in Malaise trap. Female unknown.

This new species is closely allied to *P. omissa* Spencer from Taiwan, but may be easily distinguished by the darker fringe on the calypter, paler tarsi, more matt mesonotum and the broader gena.

### 36. *Phytobia* (*Icteromyza*) *piliseta* (Becker)

*Agromyza piliseta* Beck., 1903, Mitt. Zool. Mus. Berl. 2: 190.

*Phytobia (Icteromyza) piliseta*: Spencer, 1962, Pacific Ins. 4: 659 (New Guinea).

NE NEW GUINEA: 15♂♂, 22♀♀, Lae, 10 m, 6. VII. 1957, D. E. Hardy; 1♂, Bubia Agric. Sta., 15 m, Lae, 6. VII. 1957, Hardy. NW NEW GUINEA: 2♂♂, Kampong Landbouw, 40 m, 30 km NE of air strip, Biak, 16. VII. 1957, Hardy.

**DISTRIBUTION**: S. Europe, Africa, Taiwan, New Guinea (NE, NW), Micronesia.

### 37. *Phytobia* (*Icteromyza*) *hardyi* Sasakawa, n. sp. Figs. 16c, 18.

*Male*: Head with front brown, frontalia somewhat tinged with yellow ventrally; parafrontalia darkened dorsad of 2. *ors* and yellowish ventrad of 2. *ori*; ocellar triangle and occiput black, the former with yellow ventral angle; lunule, face and gena yellow;

antennal segment 1 yellowish brown, segment 2 dark brown but paler distally, segment 3 brownish black, arista brown; palpus yellow, slightly brown-tinged. Thorax and abdomen very weakly shining black, densely gray-dusted; notopleura brown-tinged; mesopleural suture and base of wing yellow; distal process of epandrium and cercus pale brown. Wing hyaline; veins brown, yellowish basally; calypter whitish yellow, with margin and fringe brown; halter yellow. Legs black, all knees yellow.

*Head*: Front wider than long, about  $2\times$  as wide as eye, slightly diverging ventrally; parafrontalia  $1/6-1/5$  width of front, distinctly broadening ventrad. Ocellar triangle ventrally reaching or just beyond level of 2. *ors*, with about 6 setulae plus long *oc*. Lunule semicircular, slightly higher than  $1/2$  length of front. Fronto-orbitals 4; *ors* directed upwards, *ori* inwards; *oh* in a row. In profile parafrontalia distinctly projecting above eye; eye with sparse hairs, height and width ratio as 34 : 24; gena  $1/7$  eye height; *vi* distinctly longer than 3-4 *pm*. *Antennae* separated at base; segment 3 as long as wide, with minute pile; arista  $2\times$  as long as whole length of antenna, swollen on basal  $1/5$ , with long pubescence. Palpus with 3 setae apically. *Thorax*: Mesonotum with 1+3 *dc*, 1. *dc* situated before level of *prs*, 3. *dc* before level of *sa* (sometimes an additional seta just behind 1. *dc* on either side); 4 rows of *acr*, 2 rows of them ending midway between 3. and 4. *dc*; *ia* subequal in length to 2. *dc*; *ipa* about  $1/2$  length of *opa*; humerus with 4-6 setulae plus *h*; mesopleura with 4-5 dorsally directed setulae; sternopleura with 3 setulae before *sp*. *Wing*: Costa reaching to  $M_{1+2}$  which ends at wing tip, with sections 2-4 in proportion of 88 : 35 : 20; r-m at or slightly before middle of discal cell; ultimate section of  $M_{1+2}$  4.5-5 $\times$  as long as penultimate; ultimate section of  $M_{3+4}$  1.25-1.4 $\times$  as long as penultimate. *Abdomen*: Tergites covered with slender setae; tergite 6 as long as 5; sternite 5 slightly

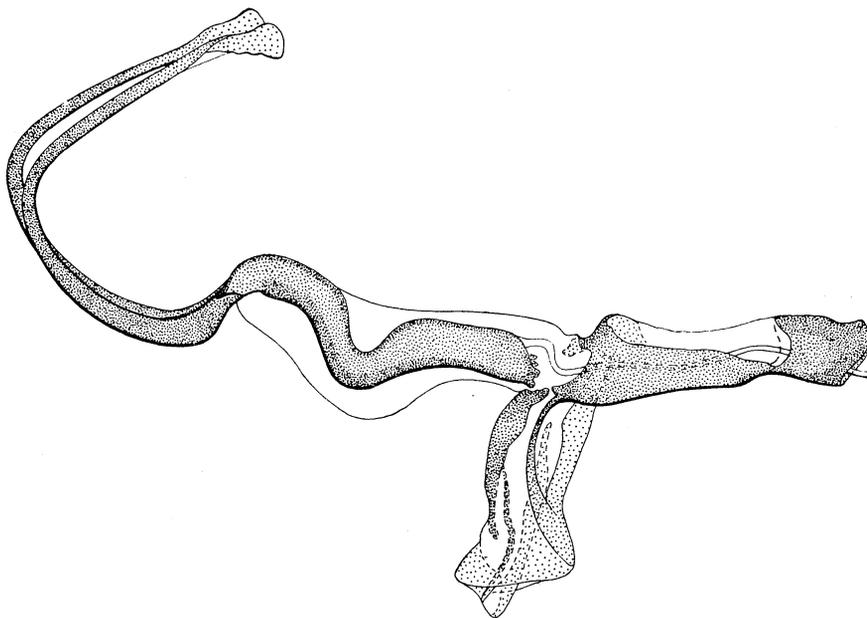


Fig. 18. Phallus of *Phytobia (Ict.) hardyi* Sasakawa, n. sp.

longer than tergite 6, incised on caudal 1/3. *Terminalia*: Epandrium 3/4 as long as tergite 6, bearing 3-4 teeth and 5 setae at inner posteroventral corner; apical process short; surstylus small, bearing 14-15 setae; cercus and processus longus normal. Hypandrium and distiphallus typical of this subgenus, paraphallus less than 1/2 length of sidepiece of hypandrium and endophallus nearly 4× as long as paraphallus. Ejaculatory apodeme 133 μ long, 67 μ in greatest width. *Length*: Body 1.8-1.92 mm, wing 2.04-2.28.

*Female*: Similar to ♂, but frontalia and parafrontalia darker; gena narrower, 1/8 eye height; ovipositor sheath shiny black, longer than tergite 6, pubescent on anterior 1/2 and densely setigerous distally. *Length*: Body and wing 2.04 mm.

**DISTRIBUTION**: NW New Guinea.

Holotype ♂ (BISHOP 3448), allotopotype ♀ and paratopotypes 9♂♂, Sacrameba Vill., 1850 m, W of Lake Anggi Giji, Vogelkop, NW New Guinea, 1. VIII. 1957, D. E. Hardy.

This species closely resembles *P. floresensis* Spencer but is immediately recognizable by the brown fringe on the calypter, yellowish brown antennal segment 1 and the larger size.

**38. *Phytobia* (*Praspedomyza*) *prostrata* Sasakawa, n. sp. Fig. 16d.**

*Female*: Head with frontalia reddish brown, paler ventrally; parafrontalia entirely dark brown; ocellar triangle and occiput blackish; lunule and parafacialia yellow; face, gena and peristome pale brown; antenna yellow, segment 3 darkened apically, arista brown; palpus brownish yellow. Thorax with mesonotum strongly shining, black but pleura blackish brown, mesopleural suture whitish. Wing hyaline; veins pale brown, whitish basally; calypter grayish, with margin and fringe brown; halter yellow. Legs dark brown, tarsi paler. Abdomen shiny black, pollinose on anterior 4 tergites.

*Head*: Front 1.3× as wide as eye, parallel-sided; parafrontalia a little wider than 1/5 width of front. Ocellar triangle reaching level of 1. *ors*; *oc* very short. Lunule lower than semicircular, 1/4 as high as length of front. Fronto-orbitals 4; 1. *ors* directed upwards, 2. *ors* up- and inwards, 2. *ori* inwards, accompanying a setulae just ventrad of 2. *ori*; *oh* only 1 below 2. *ori*. In profile parafrontalia slightly projecting above eye; eye bare, height and width ratio as 27 : 19; gena narrow, 1/10 eye height; *vi* differentiated from 4-5 *pm*. *Antennae* approximated at base; segment 3 distinctly shorter than broad, minutely pilose; arista 2.5× as long as whole length of antenna, swollen on basal 1/5, rather distinctly pubescent. *Thorax*: Mesonotum with 1+3 *dc*, 1. *dc* at level of *prs* and 3. *dc* at that of *sa*; only 6 *acr* in 2 rows between 1. and 2. *dc*; *ipa* 1/2 length of *opa*; humerus with 2-3 setulae plus *h*; mesopleura without setula below dorsal margin. *Wing*: Costa reaching  $M_{1+2}$ , with sections 2-4 in proportion of 62 : 22 : 15; wing tip distinctly near termination of  $M_{1+2}$ ; r-m slightly before middle of discal cell; m-m 1/2 length of penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  4.25× as long as penultimate; ultimate section of  $M_{3+4}$  slightly longer than penultimate (32 : 27). *Abdomen*: Tergites sparsely setigerous; ovipositor sheath as long as tergite 6, pubescent on dorsal 4/5. *Length*: Body and wing 1.8 mm.

**DISTRIBUTION**: SE New Guinea (Papua).

Holotype ♀ (BISHOP 3449), Bisianumu, 150 m, NE of Port Moresby, SE New Guinea (Papua), 19. VI. 1957, D. E. Hardy. Male unknown.

This species resembles *P. frontella* (Malloch) from Taiwan, but is readily distinguish-

ishable by the yellow antenna and entirely brown parafrontalia.

39. *Phytobia* (*Trilobomyza*) *lobata* Sasakawa, n. sp. Figs. 16e, 19.

*Male*: Head including antenna and palpus yellow, but frontalia orangish and brown-tinged on dorsolateral 1/2; parafrontalia, ocellar triangle and arista brown; occiput and postgena brownish black. Thorax brownish black; mesonotum shining, slightly pruinose; pleura paler; mesopleural suture whitish. Wing hyaline, a little fuscous; veins pale brown, whitish basally; calypter brownish white, with margin and fringe brown; halter orangish yellow. Legs dark brown, but coxae and trochanters yellow and only brownish on proximal parts of mid and hind coxae. Abdomen dark brown, densely dusted excepting on posterior 2 tergites; cercus yellow.

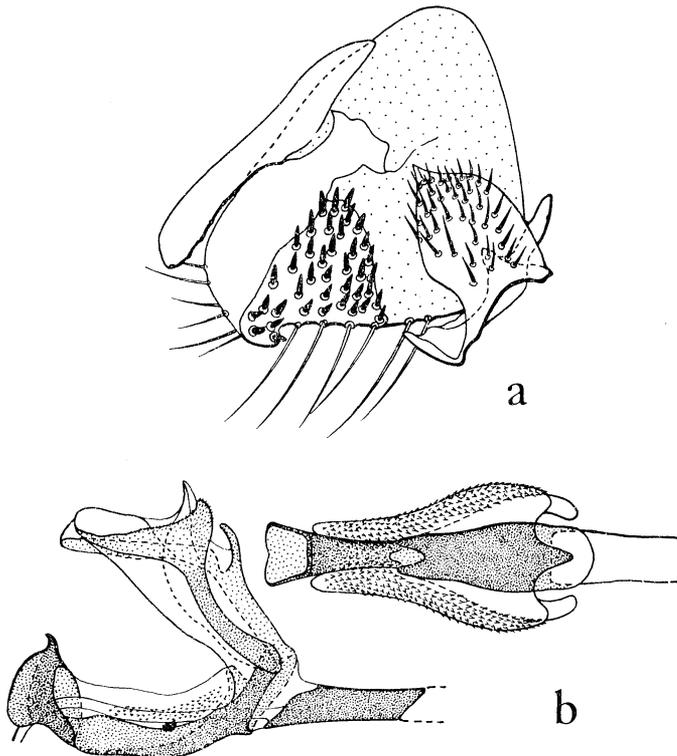


Fig. 19. ♂ terminalia of *Phytobia* (*Tril.*) *lobata* Sasakawa, n. sp. a, epandrium and surstylus, inner view; b, phallus, lateral and endophallus, dorsal views.

*Head*: Front distinctly wider than length, about 2× as wide as eye, almost parallel-sided; parafrontalia 1/6 width of front. Ocellar triangle small. Lunule semicircular, about 1/3 as high as length of front. Parafrontalia with 1 *ors* on left side and 2 on right, and 1 fore- and slightly inwardly directed *ori*; *oh* lacking. In profile parafrontalia slightly

projecting above eye; eye bare, height and width ratio as 27 : 20, gena 1/6 eye height; *vi* longer than 4 *pm*. *Antennae* approximated at base; segment 3 distinctly shorter than broad, with long pile; arista nearly 3× as long as whole length of antenna, swollen on basal 1/6, distinctly pubescent. *Thorax*: Mesonotum with 1+3 *dc*, 1. *dc* before level of *prs* which is 1/2 length of 1. *dc*, 3. *dc* before *sa*; *acr* and *ia* entirely absent; *ipa* about 1/2 length of *opa*; humerus with 4 setulae plus *h*. *Wing*: Costa reaching  $M_{1+2}$ , with sections 2-4 in proportion of 46 : 26 : 18; wing tip distinctly near termination of  $M_{1+2}$ ; r-m just slightly before middle of discal cell; m-m 2/3 length of penultimate section of  $M_{1+2}$ ; ultimate section of  $M_{1+2}$  about 5× as long as penultimate; ultimate section of  $M_{3+4}$  equal to penultimate. *Abdomen*: Tergites sparsely setigerous; tergite 6 as long as 5; sternite 5 slightly longer than tergite 6, incised on caudal 1/5. *Terminalia*: Epandrium triangular in lateral view, bearing 37-42 heavy spines on posteroventral well-sclerotized part; surstylus pentagonal, with about 40 strong setae; cercus only slightly lower than height of epandrium. Hypandrium 5/8 length of phallapodeme, sidepiece narrow. Epiphallus bilobate distally and curved ventrally. Distiphallus as long as hypandrium; para- and hypophallus short, subequal to ventral process; endophallus almost 2× as long as paraphallus, surrounded by spinose membrane laterally. Ejaculatory apodeme 120  $\mu$  long and wide, duct broad, 16  $\mu$  in diameter. *Length*: Body 1.72 mm, wing 1.65.

DISTRIBUTION: SE New Guinea (Papua).

Holotype ♂ (BISHOP 3450), between Kokoda and Pitoki, 450 m, SE New Guinea, 24. III. 1956, J. L. Gressitt. Female unknown.

This is a distinctive species, immediately recognizable by the distinctly pubescent arista, densely spinose epandrium and endophallus of ♂ terminalia and the absence of the acrostichals.

#### Genus *Liriomyza* Mik

##### 40. *Liriomyza compositella* Spencer

*Agromyza pusilla* Meigen: Malloch, 1914, Ann. Mus. Nat. Hung. **12**: 314.

*Liriomyza compositella* Spencer, 1961, Trans. R. Ent. Soc. Lond. **113**: 87.

DISTRIBUTION: Taiwan, India, Ceylon, NW New Guinea (new record).

NW NEW GUINEA: 1 ♀, Strand, Biak I., 24. VI. 1959, T. C. Maa.

The characters of this species and the biological notes were described in detail by Spencer.

#### Genus *Phytagromyza* Hendel

##### 41. *Phytagromyza kraussi* Sasakawa, n. sp. Fig. 20.

*Male*: Head brown, including antenna and palpus; ocellar triangle and occiput blackish; lateral part of frontalia darker; lunule yellow, silvery pruinose; antennal segment 1 yellow. Thorax dark brown, weakly shining, gray-dusted; humerus and notopleura distinctly paler; mesopleural suture yellowish. Wing hyaline; veins pale brown, yellowish basally; calypter whitish, with margin and fringe dark brown; halter yellow. Legs dark brown; all tarsi yellowish brown. Abdomen subshiny brownish-black.

*Head*: Front slightly wider than eye (22 : 16), distinctly converging ventrally; parafrofrontalia 1/6 width of front. Ocellar triangle almost reaching level of 1. *ors*. Lunule semicircular, about 1/5 as high as length of front. Parafrontalia not projecting above eye in profile, bearing 2 *ors* and 3 *ori* (only detectable by their pits except for incurved 3. *ori*); *oh* in rather dense row, few setulae mingled into row of *or*; eye bare, height and width ratio as 40 : 25; gena linear on anterior 1/2, about 1/16 eye height; *vi* differentiated from 3 *pm*. *Antennae* approximated at base; segment 3 small, slightly shorter than broad, with pile as long as arista thickness; arista 2.5× as long as whole length of antenna, swollen on basal 1/6, microscopically pubescent. *Thorax*: Mesonotum with 0+3 *dc*, 2. *dc* behind level of *sa*; 6 rows of *acr*; *prsc* 1/3 length of 3. *dc*; *ipa* 1/3 length of *opa*; mesopleura with 2 dorsally directed setulae; sternopleura with 2 short setae before *sp*. *Wing*: Costa slightly extending beyond termination of  $R_{4+5}$ , with sections 2-3 and distance between  $R_{4+5}$  and  $M_{1+2}$  in proportion of 60 : 25 : 18; r-m distinctly beyond middle of discal cell; ultimate section of  $M_{3+4}$  about 3.3× as long as penultimate. *Leg*: Mid tibia with 2 posterodorsal bristles. *Abdomen*: Tergite 6 as long as 5; sternite 5 longer than tergite 6, deeply incised on caudal 1/2. *Terminalia*: Epandrium about 1/2 as long as tergite 6; surstylus suborbicular, bearing 15 spinulae and many setulae dorsally and 22 setae ventrally; processus longus with 2 pairs of setae. Hypandrium with sidepiece very narrow; prae-gonite with 1 seta and 5 sensillae. Hypo- and paraphallus extremely broad, ventral process small, endophallus spinulate on distal 1/2 of lateral band. Ejaculatory apodeme small, 80  $\mu$  long, 85  $\mu$  in greatest width. *Length*: Body 1.99 mm, wing 1.79.

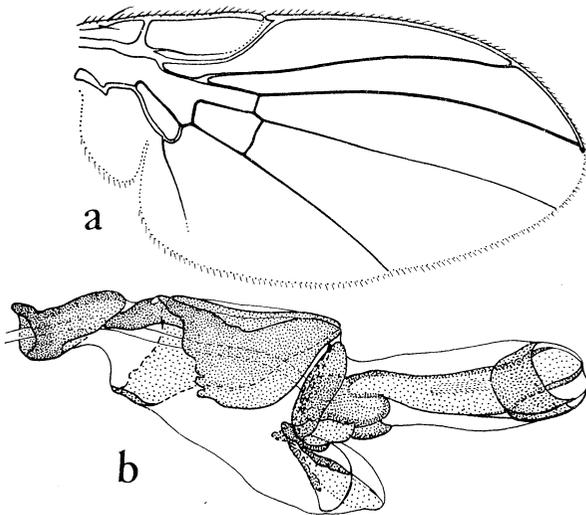


Fig. 20. *Phytagromyza kraussi* Sasakawa, n. sp. a, wing; b, phallus, lateral view.

*DISTRIBUTION*: SE New Guinea (Papua).  
 Holotype ♂ (BISHOP 3451), Port Moresby, SE New Guinea, IX. 1949, N. L. H. Krauss. Female unknown.

This is the only species of *Phytagromyza* in the Papuan Subregion. It is characteristic in the wing venation.

#### Genus *Pseudonapomyza* Hendel

#### 42. *Pseudonapomyza spicata* (Malloch)

*Phytomyza spicata* Mall., 1914, Ann. Mus. Nat. Hung. 12: 334.

**DISTRIBUTION:** Taiwan, Micronesia, Fiji, Samoa, Hawaii, New Britain (new record), Australia.

**NEW BRITAIN:** 1♂, Vunabakan, 180 m, 10 km E of Keravat, 16–20. XI. 1959, T. C. Maa.

The New Britain specimen has less shiny mesonotum and abdomen, wing length 1.38 mm, and ♂ terminalia slightly different from the typical form, having 22–23 minute setulae on the surstylus, and longer endophallus.

**43. *Pseudonapomyza cingulata* Sasakawa, n. sp. Fig. 21.**

**Male:** Head, antenna and palpus brown, ocellar triangle and occiput darker, parafrontalia and gena paler; dorsal 1/2 of frontalia yellowish brown; anterior angle of ocellar triangle, ventral part of parafrontalia just below 2. *ori* and anterior margin of postgena yellowish. Thorax black, very weakly shining, densely gray-dusted; scutellum and humerus brown, notopleura pale brown. Wing hyaline; veins pale brown; calypter gray, with margin and fringe brown; halter yellow. Legs brownish black. Abdomen subshiny brownish-black, slightly gray-dusted on anterior 4 tergites; epandrium brown.

**Head:** Front about 1.5× as wide as eye, distinctly converging ventrally; parafrontalia 1/5 width of front. Ocellar triangle extending level of 1. *ors*; *oc* shorter than 2. *ori*. Lunule small, about 1/4 as high as length of front. Parafrontalia not projecting above eye in profile, bearing 1 *ors* and 3 *ori*, 3. *ori* very short; *oh* in a sparse row; eye almost bare, height and width ratio as 25 : 16; gena about 1/8 eye height; *vi* longer than 4 *pm*. **Antennae** approximated at base; segment 3 with only slight angle at upper corner, microscopically pilose; arista 2.5× as long as whole length of antenna, swollen on basal 1/5, with microscopic pubescence. **Thorax:** Mesonotum with 0+3 *dc*, 2. *dc* slightly before level of *sa*; 6 irregular rows of *acr*, 4 rows of them extending just before 3. *dc*. **Wing:** Costa with sections 2–3 and distance between  $R_{4+5}$  and  $M_{1+2}$  in proportion of 40 : 19 : 30. **Abdomen:** Tergite 6 as long as 5; sternite 5 is 1.5× as long as tergite 6, incised on caudal 1/2. **Terminalia:** Epandrium 1/3 as long as length of tergite 6; surstylus with 23–25 short but stout setae on caudal part and numerous setulae on cephalal; processus longus slightly longer than epandrium. Hypandrium normal; praegonite with a seta and 2

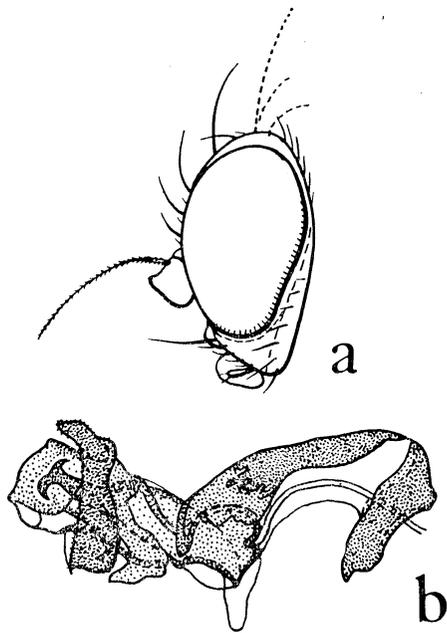


Fig. 21. *Pseudonapomyza cingulata* Sasakawa, n. sp. a, head in profile; b, phallus, lateral view.

sensillae. Phallopodeme extremely broadened at posterior apex; endophallus slightly longer than para- and hypophallus, with spinose band laterally and a pair of T-shaped processes at distal part. Ejaculatory apodeme 120  $\mu$  long, 88  $\mu$  in greatest width. **Length:** Body

1.44 mm, wing 1.60.

DISTRIBUTION: NE New Guinea.

Holotype ♂ (BISHOP 3452), Mt. Hagen area, 1650 m, NE New Guinea, 26. VI. 1957, D. E. Hardy. Female unknown.

This species is immediately distinguishable from *P. spicata* and allies by the dark fringe on the calypter. The ♂ terminalia of this species show a close similarity with *trilobata* Sasakawa, from the Philippines, but the endophallus is characteristic as described above. Also it differs from *nigralis* Spencer, from Africa, in coloration and wing venation.

---

## RECENT LITERATURE ON PACIFIC INSECTS

### COLEOPTERA

- Atkins, M. D. 1963. The Cupedidae of the world. *Canad. Ent.* **95** (2): 140-62, 20 figs.
- Balfour-Browne, J. & M. Satô. 1962. On the Japanese species of the genus *Hydrochus* Leach (Coleoptera, Hydrochidae). *Niponius* **1** (19): 1-5, 6 figs.
- Ball, G. E. 1963. Descriptions of eleven new species of the beetle subgenus *Cryobius* (*Pterostichus*, Col. Carabidae) from Alaska and northwestern Canada. *Opusc. Ent.* **28** (1-2): 1-26, 23 figs.
- Boyle, W. W. 1963. *Dacne picta* Crotch in Hawaii, with notes on morphology and mode of entry from Japan (Coleoptera: Erotylidae). *Proc. Haw. Ent. Soc.* 1962 **18** (2): 235-36, 1 fig.
- Breuning, Stefan von. 1962. Neue Lamiiden aus den Beständen der Zoologischen Staatssammlung in München (Col. Ceramb.). *Mitt. Münch. Ent. Ges.* **52**: 108-10.
- Britton, E. B. 1963. A new species of *Lepidiota* (Coleoptera: Melolonthinae) affecting sugar cane in Queensland. *Jour. Ent. Soc. Queensl.* **2**: 4-5, 8 figs.
- Chemsak, J. A. 1963. Taxonomy and bionomics of the genus *Tetraopes* (Cerambycidae: Coleoptera). *Univ. Calif. Publ., Ent.* **30** (1): 1-90, 9 pls., 17 figs.
- 1963. Some new North American Callidiini with notes on the synonymy of *Pronocera* Motschulsky and *Gonocallus* LeConte (Coleoptera: Cerambycidae). *Pan-Pac. Ent.* **39** (1): 37-41.
- Chûjô, M. 1962. Description of a new Chrysomelid-beetle from Japan. *Niponius* **1** (18): 1-3.
- Chûjô, Michitaka. 1963. Cicindelid, Scarabaeid and Tenebrionid beetles (Coleoptera) from the Yaeyama Group collected by the Kyushu University Expedition. *Rep. Committee on Foreign Scientific Research, Kyushu Univ.* **1**: 91-94.
- Damoiseau, R. 1962. Les Brentidae de Nouvelle-Calédonie de la collection Fauvel. *Bull. Ann. Soc. R. Ent. Belg.* **98**: 283-311, 9 figs.
- Darlington, P. J., Jr. 1963. Australian carabid beetles. XII. More *Tachys*. *Psyche* **70** (1): 22-33, 2 figs.
- 1963. Australian carabid beetles. XIII. Further notes on Agonini, and a genus of Licinini new to Australia. *Breviora* **183**: 1-10, 10 figs.
- Descarpentries, A & A. Villiers. 1963. Catalogue raisonné des Buprestidae d'Indochine. IV. *Aphanisticini*. *Rev. Franç. Ent.* **30** (3): 153-63, 17 figs.