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THE *SOPHIRA* GROUP OF FRUIT FLY GENERA (DIPTERA: TEPHRITIDAE: ACANTHONEVRINI)[1,2]

By **D. Elmo Hardy**[3]

Abstract. This paper treats the genera of Acanthonevrini related to *Sophira*. The concepts of *Sophira* are redefined and clarified. All of the known taxa in this grouping of genera are described, keyed and figured. The genera which have previously been treated under a separate Tribe, Gastrozonini, have been combined under Acanthonevrini. Nine new species, 2 new genera and 1 new subgenus are described. The following are new synonyms: *Seraca* and *Colobostrella,* n. syns. of *Sophira*; *Colobostrella ruficauda* and *C. heinrichi,* n. syns. of *Sophira signifera*; *Spaniothrix,* n. syn. of *Sophira* (*Kambangania*); *Dacopsis dacina,* n. syn. of *D. signata.* The following are new combinations: *Sophira* (*Sophira*) *plagifera*; *S.* (*S.*) *signifera*; *S.* (*Kambangania*) *metatarsata*; *S.* (*K.*) *simillima*; *S.* (*K.*) *vittata*; *S.* (*Parasophira*) *biangulata*; *S.* (*P.*) *concinna*; *S.* (*Soosina*) *extranea*; *Dacopsis flava*; *D. holoxantha*; *D. mantissa*; *D. quadripunctata*; and *D. signata*.

This paper deals with a group of genera which show affinities with *Sophira* Walker. These genera are Trypetinae which have plumose aristae, ocellar bristles rudimentary or absent, the pteropleura devoid of fine, erect hairs, humeral bristles present, vein R_{4+5} setose over most of its length above and vein M_{1+2} bare, 1 large spur at apex of mid tibia, and scutellum usually bare above. Except for *Sophira* (*Parasophira*), n. subgen., *Tritaeniopteron* de Meijere and *Xenosophira,* n. gen., the group is characterized by lacking sternopleural bristles. These moderately large, chiefly yellow flies have brown to black vittae or spots on the mesonotum and the wings variously marked (FIG. 2, 3a, 4, 7, 9a, 14, 15a, 20a). If 6 scutellar bristles are present, the body and legs are entirely, or almost, yellow to rufous; the bristles and body vestiture are all yellow (except in species from the Philippines); and 2 inferior fronto-orbital bristles are situated close together on the lower portion of the front.

The original description of *Sophira* was vague and completely indecisive, and the concept of this genus in the literature has been confused since Malloch (1939a, 1939b) placed it in the group of genera characterized by having 6 scutellar bristles. The type-species of *Sophira, venusta* Walker, has only 4 scutellars and is congeneric with *Seraca* Walker, based upon *S. signifera* Walker. *Seraca* now becomes a new junior synonym of *Sophira*; here the latter name is used in a completely different sense than that of Malloch and is moved from typical Acanthonevrini into what has previously been called Gastrozonini; the major concept of "*Sophira*" since 1939 fits the genus *Dacopsis*

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3. Department of Entomology, University of Hawaii, Honolulu, Hawaii 96822, USA.

Hering. I am now convinced that 4 vs. 6 scutellar bristles is of no importance at the tribal level and the use of "Gastrozonini" should be discontinued; species referred to that name should be treated under Acanthonevrini. Though obviously of no phylogenetic importance, the 4 vs. 6 scutellars is a convenient grouping character. Therefore, I am dividing the Acanthonevrini into 2 groups as follows: 4 scutellars = Gastrozona grouping of genera; 6 scutellars = Acanthonevra grouping of genera.

The arrangement of the Tephritidae into higher categories has been based mostly upon the classification of the subfamilies and tribes set up by Hering (1947), and there has been much confusion and disagreement among specialists trying to apply this from a world standpoint. It is obvious that a number of the proposed rankings are not natural taxa. In dealing with the Oriental fauna, the tribal groupings "Acanthonevrini" and "Gastrozonini" have been especially bothersome. The only character which has been used for differentiating these is the presence of 4 scutellars for Gastrozonini and more than 4 (usually 6) for Acanthonevrini. In my monographs of the fruit flies of Thailand and bordering countries (1973) and of the Philippines (1974), I was convinced that I had a reliable supportive character of tribal importance: the presence of 3 spermathecae in the females of Acanthonevrini and of only 2 in Gastrozonini. *Copiolepis* Enderlein and *Sophira* Walker have 4 scutellars and 3 spermathecae so the character breaks down. Also, it is evident that *Trypeta manto* Osten Sacken, from the Philippines, and *Rioxa vinnula* Hardy, from Laos and Cambodia, best fit as aberrant *Rioxa,* in spite of the fact that these have only 4 scutellars.

The illustrations were prepared by Jack Grubb and Glen Shiraki, University of Hawaii.

Key to the *Sophira* group of genera

1. Four scutellar bristles, the secondaries absent or rudimentary, represented by fine, inconspicuous setae; head and body bristles black and only 1 strong inferior fronto-orbital bristle, except in *Xenosophira,* n. gen. 2
   Six well-developed scutellars; all bristles and vestiture yellow, except in species from the Philippines; 2 pairs of inferior fronto-orbitals situated close together on lower margin of front 4
2. Crossvein r-m oblique, appearing like a fork of vein R_{4+5}; cell 2nd M_2 strongly contorted and m crossvein divided into a straight, transverse section and a strongly concave section separated by a short distal appendix (Fig. 15a) ... Solomon Is ..... **Exallosophira, n. gen.**
   Not as above 3
3. One strong spine on costa at end of vein Sc; sternopleural bristles present; 2 pairs of dorsocentrals, the posterior pair situated near hind margin of mesonotum in line with basal scutellars; 3rd costal section short, about ½ as long as 2nd (Fig. 20a) ..... **Xenosophira, n. gen.**
   No costal spine; sternopleurals absent, except in *S. (Parasophira)*; only the normal pair of dorsocentrals; 3rd costal section subequal to 2nd (Fig. 3a) ..... **Sophira**
4. Sternopleural bristles absent, or rudimentary; subcostal cell equal to or longer than 2nd costal; wings not marked with oblique brown bands (Fig. 16, 17a, 19) ..... **Dacopsis**
   Sternopleurals strong; subcostal cell short, about ½ as long as 2nd costal; wings with 2 oblique brown bands through apical ½ (Ref. Hardy, 1958: 376, fig. 2c, d) ..... **Tritaeniopteron**

Genus **Sophira** Walker

Sophira Walker, 1856, J. Proc. Linn. Soc. London, Zool. **1**: 34. Type-species: *S. venusta* Walker.

Seraca Walker, 1860, J. Proc. Linn. Soc. London, Zool. **4**: 165. Type-species: *S. signifera* Walker, by original designation. **New synonymy.**

Colobostrella Hendel, 1914, Wien. Entomol. Ztg. **33**: 79; 1915, Ann. Hist.-Nat. Mus. Natl. Hung. **13**: 428 (description). Type-species: *C. ruficauda* Hendel, by original designation. Synonym of *signifera* Walker. **New synonymy.**

The concept of *Sophira* has been completely confused in the literature. This genus has been treated as an Acanthonevrini, but the type-species, *venusta,* is congeneric with *Seraca signifera.* This confusion dates to Malloch (1939a, 1939b) when he defined *Sophira* as having 6 scutellars. The error has been continued in the literature since that time.

Sophira, based upon *venusta* Walker, fits in the Gastrozona group of genera under Acanthonevrini by having only 4 distinct scutellar bristles, with the secondaries rudimentary or absent, represented by not more than small setae. It fits the grouping which has the 3rd antennal segment rounded; arista with moderately long dorsal and ventral hairs and with a close set row of short hairs along inner margin; ocellar bristles rudimentary or absent; mid tibia with 1 long apical spur; vein R_{4+5} setose above over most of its length and humeral bristles present. In the key it fits nearest to *Xenosophira,* n. gen. and differs by lacking a costal spine at end of subcosta; having only the normal pair of dorsocentral bristles and these situated distinctly behind the anterior supraalars; 2nd costal section about equal to 3rd; and sternopleural bristles absent or represented by only tiny setae, except in *Sophira* (*Parasophira*), n. subgen. It seems most closely allied to *Dacopsis* Hering (the concept of *Sophira* of Malloch and others), differing by having the secondary scutellars rudimentary or absent, not represented by more than a pair of small pale setae. Rather than having 6 well-developed scutellar bristles, the secondaries are ca ⅔–⅗ as long as apical bristles. Also, only 1 strong inferior fronto-orbital bristle is present, the lowers represented usually by fine pale hairs, rather than with 2 pairs of well-developed inferior fronto-orbitals situated on lower front just above level with lunule.

The front is gray pruinose as seen in indirect light; this is completely lost in direct light. The inferior fronto-orbitals are situated near the lower ⅓ of the front and are well spaced from the superior fronto-orbitals, often a fine hairlike seta, or rarely a small black hairlike bristle, present below the strong inferior fronto-orbital, in line with upper margin of lunule; 2 or 3 fine hairs may be present in line with and above the inferior fronto-orbitals. The lower seta represents a rudimentary secondary inferior fronto-orbital and is comparatively well developed in *S.* (*Kambangania*) *disjuncta,* n. sp. and *S. metatarsata* (de Meijere). Two pairs of superior fronto-orbitals are present, 1 strong bristle situated near middle of front plus 1 hairlike bristle at upper ¼

of front. The postocellar bristles are thin, hairlike, and usually about equal in size to the upper superior fronto-orbitals. The face is typically straight in profile, raised down the median portion with just a slight projection of the oral margin. This character apparently shows some variation and intergradation and in the subgenus *Kambangania* the face is concave in profile with just a slight raise in the upper median portion. The occiput is narrowed above, swollen on lower hind portion, at widest point about ½ eye width. Sternopleurals absent or rudimentary except in *Parasophira*. Dorsocentral bristles are posterior in position, typically situated just slightly in front of inner postalars, showing intergradation in the subgenera *Kambangania* and *Soosina*; in the latter they are situated about ¾ the distance between the inner postalars and anterior supraalars and, in 2 species of the former, they are situated almost halfway between these bristles. The scutellum is setose over the disc, except in *Soosina* and some species of *Kambangania*. Scutellum with 4 bristles but often with rudimentary secondaries is present; these are represented by setalike bristles which are approximately 2× longer than the setae over the disc. The middle tibia is with 1 long spur plus several small black spines. Presutural bristles are present except in *Kambangania*.

This genus intergrades with typical Acanthonevrini by having 3 spermathecae in the females.

I am placing 21 species and 1 subspecies under *Sophira*. All except 3 species are from Indonesia: *S.* (*Kambangania*) *vittata* (Hardy) from Thailand and Laos, *S.* (*Sophira*) *philippinensis* Hardy from the Philippines, and *S. phlox* Munro from India. In my Philippine monograph (Hardy 1974: 81), I placed *Trypeta manto* Osten Sacken as an aberrant *Sophira*. It runs here by having only 4 scutellars and fitting many of the other features of *Sophira*. However, because of the wing venation and markings (Hardy 1974: 81), I feel *T. manto* best fits as an aberrant *Rioxa* in a species complex with *R. vinnula* Hardy from Cambodia (Hardy 1973: 111). *R. manto* is differentiated by having the thorax all yellow, 2nd abdominal tergum all black except for the narrow yellow base, and apex of wing narrowly subhyaline.

Nothing is known of the biology or host associations of the *Sophira*. The species I have collected have been taken while displaying on the leaves of the undergrowth plants in dense forest.

Key to the known species of *Sophira* Walker

1. Face raised down median portion, or with only a slight concavity just above the epistomal margin, straight in profile; sternopleural bristles absent or rudimentary, represented by not more than a tiny seta; presuturals present; mesonotum with 2 brown to black vittae or with 4 large black spots 2
   Face distinctly concave in profile; either sternopleural bristles well developed or presuturals absent; mesonotum with 3 or 4 black vittae 17
2 (1). Anterior margin of wing dark brown from end Sc to or beyond apex of R_{2+3}, also with a broad longitudinal band of brown through upper portion of cell M_4, across apex of cell 1st M_2, over m crossvein to wing margin along lower ½ of cell R_5 (Fig. 4) ... *Sophira* (*Sophira*) *limbata* complex of species 3
   Wings differently marked, if with a costal band not with the brown band extending through cell R_5 and over m crossvein 7

3 (2). Costal band extending to or beyond vein M_{1+2} 4
Costal band interrupted, not continuous through apex of cell R_3 5
4 (3). Tibiae dark brown to black; hind portion of mesonotum polished black; a shining black stripe extends on each side of thorax from sternopleuron over mesopleuron onto mesonotum in front of suture, almost connecting with the submedian black vittae; cell 2nd M_2 entirely brown; cell R_1 largely brown ... Sumatra ..... **limbata**
Tibiae, hind portion of mesonotum and pleura reddish brown, the latter lacking shining black stripe; cell 2nd M_2 with a yellow spot in middle and R_1 largely yellow ... India ... . **phlox**
5 (3). Apex of R_3 and 2nd costal cells without brown fumosity 6
Apex of R_3 and 2nd costal cell largely brown ... Java ..... **insueta**
6 (5). Posterior ⅔ of each sternopleuron polished black and with the black marking continuous over lower pteropleuron, the hypopleuron, metapleuron and metanotum ... Philippines ..... **philippinensis**
Posterior ½–⅔ of sternopleuron, all of pteropleuron and front edge of each hypopleuron yellow ... Kalimantan ..... **limbata borneensis**
7 (2). Wings with an isolated dark brown mark on M_{1+2} between crossveins, otherwise subhyaline to yellowish except for the brown cell Sc ... Sumatra ..... **appendiculata**
Not as above 8
8 (7). Wings rather evenly yellow fumose with a dark brown spot at apex of cell R_5 and over m crossvein; thorax all yellow except for a pair of abbreviated, black vittae on mesonotum; abdomen all yellow except for pairs of small, round, black spots on terga 4 and 5 ... Sumatra ..... **flavicans**
Not as above 9
9 (8). Dorsocentral bristles situated just slightly in front of a line drawn between the inner postalars; scutellum densely short setose over disc; upper superior fronto-orbitals and postverticals rather small, hairlike ... *Sophira* (*Sophira*) 10
Dorsocentrals just behind a line drawn between the anterior supraalars; scutellum with only a few fine inconspicuous hairs on disc; upper superior fronto-orbitals and postverticals well developed about equal to outer verticals ... Java . *Sophira* (*Soosina*) ..... **extranea, n. comb.**
10 (9). Mesonotum with 2 brown to black longitudinal vittae 11
Mesonotum with 4 black spots or with 2 large black spots anteriorly behind humeri and 2 large black spots posteriorly between prescutellar and inner postalar bristles, the latter often continuous anteriorly as short vittae extending beyond supraalars 15
11 (10). Wings with 4 longitudinal brown streaks, 1 along costa and 1 along each of veins R_{4+5}, M_{1+2} and M_{3+4} (Hardy 1958: 376, fig. 2B) ... Singapore, Moluccas, Kalimantan ..... **venusta**
Wings not as above 12
12 (11). Wing extensively marked with dark brown (FIG. 3a, 5a, 7); no black border on hind margin of mesonotum and no black vertical band over pleura 13
Wing markings mostly yellow, with a large spot filling apex separated by a hyaline crossband from yellow marking basad of r-m (FIG. 2); hind margin of mesonotum broadly black and a black vertical band extends across sternopleuron, mesopleuron, front ½ of notopleuron onto each side of mesonotum in front of suture ... Sumatra, Borneo ..... **flavomaculata**
13 (12). At least abdominal terga 3 and 4 with broad brown to black bands across bases 14
Terga 1–4 yellow through median portions, black on sides; wing as in Fig. 6 ..... **signifera, n. comb.**
14 (13). Mesonotum with 2 black longitudinal vittae which are continuous over sides of scutellum and sides of metanotum onto sides of abdomen; a broad dark brown band over top margin of mesopleuron to wing base; all terga black on sides; the hyaline transverse band through wing between r-m and m crossveins extending to wing margin at lower apex of cell 2nd M_2 and with a large nearly straight-sided, subbasal hyaline wedge on hind portion, no sexual dimorphism in wings ... North Sulawesi ..... **kurahashii, n. sp.**
Two pale brown vittae on mesonotum, rather faint in ♂; scutellum and pleura all yellow in ♂ and faintly tinged with brown on sides of scutellum and on upper margin of meso-

pleuron in ♀; 1st 2 terga yellow with tinge of brown on sides; transverse hyaline band between r-m and m not extending to hind margin, margin of cell 2nd M_2 broadly brown; the subbasal hyaline mark in posterior portion of wing curved, wings showing sexual dimorphism as shown in FIG. 5a and 5b . . . Central Sulawesi ..... **linduensis, n. sp.**

15 (10). Face, sternopleura and legs all yellow 16

Face entirely opaque black; sternopleuron black except for yellow upper hind corner and hind margin; mid and hind femora dark brown to black and front tibiae and tarsi black . . . Sulawesi ..... **plagifera**

16 (15). Wing with a hyaline mark extending transversely across apex of cell 1st M_2, through cells R_5 and R_3 to vein R_{2+3}, not connected with a hyaline band extending back to costa in apex of cell 2nd M_2 (FIG. 1); black marks on hind portion of mesonotum extended anteriorly as short vittae almost to suture . . . S Sulawesi ..... **bistriga**

With the hyaline band from apex of 1st M_2 extending into lower portion of R_1 and continuous as a loop which runs across apical portions of R_3, R_5 and to costa in upper apex of 2nd M_2, also with a hyaline mark transversely through median portion of 2nd M_2 into lower portion of cell R_5; the black posterior spots pointed anteriorly with the point extending to about opposite the anterior supraalars . . . Central Sulawesi . . . **spectabilis, n. sp.**

17 (1). Sternopleurals present, about equal in size to humerals; presuturals present . . . *Sophira* (*Parasophira*), n. subgen. 18

Sternopleurals and presuturals absent . . . *Sophira* (*Kambangania*) 19

18 (17). Mesonotum with 4 longitudinal black vittae; abdomen with 4 complete longitudinal vittae . . . Kalimantan ..... **concinna**

Mesonotum with 3 black vittae; abdomen not with longitudinal vittae and with complete bands of black across terga 2 and 3; secondary scutellar bristles rather well developed (this is also keyed under *Diarrhegmoides* in Acanthonevrini) . . . Sumatra ..... **biangulata, n. comb.**

19 (17). Abdomen with broad black crossbands on bases of terga 2 and 3; wings all brown beyond m crossvein 20

Abdomen broadly black on sides, with a yellow longitudinal vitta down middle and no crossbands; wings with a large hyaline mark in cell 2nd M_2 and a hyaline spot at apex of cell R_5 21

20 (19). Mesonotum with only 2 complete black longitudinal vittae, the 2 lateral extend to just beyond suture then bend laterally and extend over the notopleuron, mesopleuron and sternopleuron . . . Kalimantan ..... **simillima, n. comb.**

Mesonotum with 4 complete black vittae, the 2 lateral joined anteriorly but not connected with the black mark over notopleuron (FIG. 9b) . . . Sumatra ..... **disjuncta, n. sp.**

21 (19). Scutellum black on sides; pleura all yellow except for a small brownish discoloration near upper margin of each mesopleuron; front femur of ♂ lacking ventral bristles and mid basitarsus of ♂ strangely modified, with a hooklike subbasal process (FIG. 10b) . . . Java ..... **metatarsata, n. comb.**

Scutellum all yellow; pleura prominently marked with black; front femur of ♂ densely black bristled ventrally; mid tibia not modified . . . Thailand and Laos ..... **vittata, n. comb.**

Sophira (Sophira) appendiculata Enderlein

Sophira appendiculata Enderlein, 1911, Zool. Jahrb. **31**: 434. Type-locality: Soekaranda, Sumatra. Type ♂ in National Institute of Zoology, Warsaw. I have studied the type.

This is apparently a typical *Sophira*. It is known only from the type male and there is some possibility it may intergrade with the subgenus *Kambangania*. Dr J. T. Nowakowski, Polish Institute of Zoology, has rechecked the type for me and reports that

it has only 4 scutellars, no sternopleurals, presuturals absent and face straight as seen in profile. The latter character fits typical *Sophira* and the lack of presuturals fits *Kambangania.* The presuturals may be broken off in this specimen. It is differentiated from all other *Sophira* by its wing markings.

Wings predominantly pale yellowish, hyaline in basal and posterior cells, with brown mark on vein M_{1+2} between r-m and m crossveins; also cell Sc tinged with brown. A distinct lobe developed at lower apex of cell M_4. Fourth, 5th and 6th costal sections approximately equal in length and r-m crossvein situated at apical 3/5 of cell 1st M_2 (Ref. Hardy 1958: 372, fig. A). Four scutellar bristles present. Mesonotum with black crossband over hind portion and with 2 black, longitudinal vittae which are narrowed posteriorly and end before reaching scutellum. Black vertical stripe extending over each pleuron onto mesonotum almost to vittae. Legs yellow, hind tibiae brownish. Abdomen yellow, with black crossbands on terga 2–4, these are curved on sides ending at hind corners of terga. Fifth tergum with small triangular black spot on each side near lateral margin.

Length: body and wings, 7.5 mm.

Distribution. Sumatra.

Sophira (Sophira) bistriga Walker, **resurrected from synonymy** FIG. 1

Sophira bistriga Walker, 1860, J. Proc. Linn. Soc. London, Zool. **4**: 160. Type-locality: Makasar (=Ujung Padang), Sulawesi. Type ♀ in British Museum (Natural History). I have studied the type.

This has been treated as a synonym of *plagifera* (Hardy 1959: 187) but I now feel that it is probably a distinct species. The wings of the 2 appear to be identical, but *bistriga* is differentiated by having the face, sternopleura and legs all yellow. It fits nearest to *spectabilis,* n. sp. and differs by having a hyaline mark extending transversely across apex of cell 1st M_2 through cells R_5 and R_3 to vein R_{2+3}, not connecting with a hyaline band extending back to the costa and apex of 2nd M_2 (FIG. 1), rather than having a continuous hyaline loop through the apical portion of wing as in FIG. 8a; the black marks on hind portion of mesonotum extend anteriorly as short vittae almost to the suture, rather than as short points to about opposite the anterior supraalars.

Both *bistriga* and *plagifera* have weak secondary scutellars often present. Otherwise fitting the description of *spectabilis.*

Length: body 8.5 mm; wings 7.6 mm.

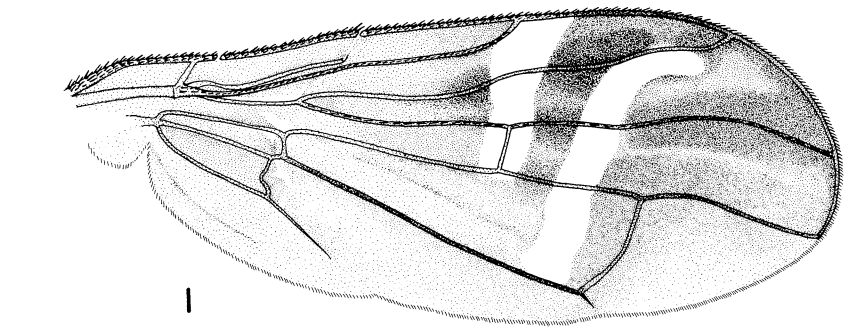
Distribution. South Sulawesi.

Sophira (Sophira) flavicans (Edwards)

Rioxa flavicans Edwards, 1919, J. Fed. Malay State Mus. **8**(3): 50. Type-locality: Sungei Kumbang, Korinchi, Sumatra. Type ♀ in the British Museum (Natural History). I have studied the type, which is in rather poor condition.

This species fits near *appendiculata* Enderlein but is differentiated by having the thorax all yellow except for a pair of short black vittae on the mesonotum extending from behind each humerus to just before the suture.

Abdomen all yellow except for pair of small, round, black spots on each of terga 4 and 5. Wings rather intensely yellow with dark brown spot at apex of cell R_5; brown mark over m crossvein, this coloring



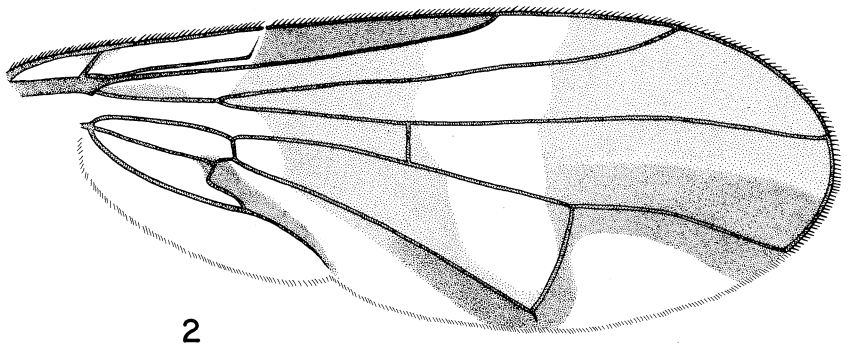


FIG. 1–2. **1.** *Sophira (Sophira) bistriga*: wing. **2.** *Sophira (Sophira) flavomaculata*: wing.

extending slightly into cell R_5 above crossvein; a faint brownish discoloration situated near apex of vein R_{2+3}, extending from costa to about middle of cell R_3 and a faint brownish streak extending along underside of vein M_{3+4} for about ½ its length. Cell Sc entirely yellow (Ref. Hardy 1958: 370, 372, fig. C). Length: body, 8.0 mm.

Distribution. Sumatra. Known only from the type.

Sophira (Sophira) flavomaculata (de Meijere), **new combination** FIG. 2

Colobostrella flavomaculata de Meijere, 1924, Tijdschr. Entomol. **67** (Suppl.): 35. Type-locality: Suban Ajam, Sumatra. Type ♀ in Zoological Museum, Amsterdam. I have studied the type.

This is a very distinctive species characterized by having the wing markings intensely yellow with only a slight tinge of brown bordering the last section of vein M_{1+2}, the underside of M_{3+4} and above Cu_1 + 1st A.

Wing markings consisting of large yellow mark filling apex separated from yellow marking over wing basad of r-m crossvein by a broad, transverse hyaline band (FIG. 2). Posterior border of mesonotum shining

black. The 2 black longitudinal vittae extend from near anterior margin of mesonotum between outer and inner scapulars and end just before black hind border; a shining black mark on each side of mesonotum in front of suture extending over anterior ½ of each notopleuron and continuing as a vertical vitta over mesopleuron and sternopleuron; this stripe arranged slightly diagonal to posterior, vertical black stripe continuous with black metanotum extending over metapleuron and hypopleuron. Abdomen yellow with an arcuate black band over bases of terga 2–4, these extending posteriorly near lateral margins to, or nearly to, hind margin of each tergum; terga 5 and 6 (♀) each with a black vitta on sides near lateral margins. Otherwise fitting characteristics of typical *Sophira*.

Length of body, excluding ovipositor: 7.5 mm.

Specimens examined. 1♀, BORNEO: Sabah, Forest Camp, 19 km N of Kalabakan, 60 m, 27.X.1962, K.J. Kuncheria (Bishop Museum).

Distribution. Sumatra and Borneo (Sabah).

Sophira (Sophira) insueta Hering

Sophira insueta Hering, 1952, Treubia **21**(2): 274. Type-locality: Mt Pangrango, West Java. Type ♀ in the Rijksmuseum van Naturlijke Historie, Leiden. I have studied the type.

This belongs in the *limbata* complex of species by having a broad, dark brown band extending obliquely from apex of cell Cu through upper ½ of cell M_4, over m cross-vein and over last section of vein M_{1+2} to wing apex in cell R_5; also with a brown costal band from near base of 2nd costal cell to apex of vein R_{2+3}. By having the costal band interrupted beyond tip of R_{2+3}, it fits nearest to *limbata borneensis* Hering and is differentiated by having 2nd costal section and apex of cell R_3 largely brown (Hardy 1958: 372, fig. E).

Thorax yellow, tinged with brown and with 2 widely separated black vittae on the mesonotum extending from front margin to suture, a brown spot on each side between presutural and notopleural bristles and another black mark on each side in the supraalar area. Pleura entirely yellow, lacking the vertical black band through middle of each pleuron. Otherwise fitting *limbata borneensis*.

Length: wing, 8.6 mm.

Distribution. Java.

There may be some question concerning the placement of this species, since Hering said that the secondary scutellars are present but small, about ⅓ as long as the basal bristles.

Sophira (Sophira) kurahashii Hardy, **new species** FIG. 3a–b

This species fits the characteristics of typical *Sophira* except that the scutellum has rudimentary secondary bristles, represented by a tiny preapical bristle on each side which is about 4× stronger than the setae on the disc of the scutellum. By the presence of 2 vittae on the mesonotum, crossbands on the abdomen terga, and the wing markings, it fits closest to *linduensis*, n. sp., from Sulawesi; the 2 are obviously very closely related. The new species is differentiated by exhibiting no sexual dimorphism in wing or body markings; both sexes with dark brown to black markings on the thorax, continuous over sides of first 2 abdominal terga; a brown spot present on upper

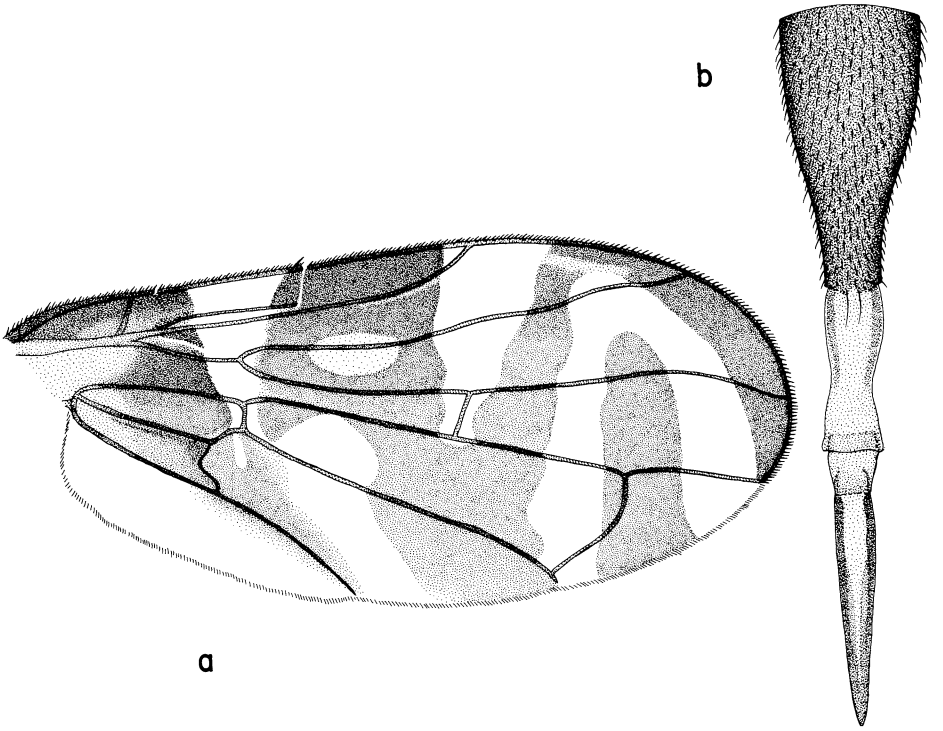


FIG. 3. *Sophira (Sophira) kurahashii*: a, wing; b, ♀ ovipositor.

portion of each notopleuron; the transverse hyaline band across wing between r-m and m crossveins extending to wing margin in lower apical portion of cell 2nd M_2; and the subbasal hyaline streak through posterior portion of wing almost straight-sided as in FIG. 3a.

♂. Mostly clear yellow species. *Head.* Typical in shape for *Sophira,* just slightly higher than long from side view and with face nearly straight in profile, median portion raised on upper ⅔ with a very slight concavity on lower portion just before epistoma. Strong superior fronto-orbital bristles situated at middle of front ¾ as long and strong as the inner verticals. Outer verticals comparatively weak, about 2× the size of postverticals. Upper superior fronto-orbital represented by a very weak bristle, slightly smaller than postverticals. Inferior fronto-orbitals incurved and approximately $^4/_5$ as long as s.f.o. A few short, inconspicuous setae situated in line with i.f.o. both above and below but not representative of bristles. Arista with long dorsal and ventral rays extending almost to base and inner margin with a row of conspicuous, erect hairs. *Thorax.* With a dark brown to black vitta on each side in line with dorsocentral bristle, extending full length of mesonotum and over sides of scutellum; metanotum and first 2 terga of abdomen. Upper ½ of each metapleuron dark brown, this stripe extending from spiracle to wing base. Pleura with 1 mesopleural and 1 pteropleural bristle. Halteres entirely yellow. Mesonotum and scutellum densely covered with short black setae. Scapular bristles strong, of approximately equal size, about equal in size to inferior fronto-orbitals. Dorsocentral bristles situated just slightly in front of a line between inner postalars. Four scutellar bristles, of equal length. *Legs.* Rather slender. Front femur with about 6 posteroventral bristles evenly spaced over full length, 5–6 posterodorsal bristles extending from near base to apical ⅓ and with 2 short, dorsal bristles at apical ⅓. Anterior surface of middle femur with dense, erect setae over basal ⅔.

Mid tibia with a row of posterodorsal spines extending over apical ⅔ and apex of middle tibia with 1 strong spur, plus about 7 short spines. *Wings.* With prominent dark brown markings as in FIG. 3a. Subbasal hyaline wedge from costal margin, in 2nd costal cell, extending to m-cu crossvein and 2nd hyaline wedge, from costal margin in cell R_1, extending to vein M_{1+2}, enclosing r-m crossvein. Subbasal hyaline mark in posterior portion of wing extending to vein M_{1+2}, nearly straight-sided; preapical hyaline mark as in FIG. 3a. Vein R_{2+3} very slightly curved and r-m crossvein situated at about middle of cell 1st M_2. The m crossvein gently convex in median portion. Lobe of cubital cell about equal in length to vertical portion of vein Cu. *Abdomen.* First 2 terga broadly shining black on sides except for extreme apical margins of 2, yellow through median portion and over hind margin of 2. Third and 4th terga broadly black on sides with continuous band of black over posterior margins and with posteromedian portions yellow. Fifth tergum entirely polished black. Sterna and entire venter yellow. Genitalia mostly black with tips of surstyli yellow.

Length: body 8.25 mm; wings 8.75 mm.

♀. Fitting description of ♂ except for sexual characters. Basal segment of ovipositor entirely black, about equal in length to terga 3–5. Piercer rather short, about ⅔–¾ as long as base, and evenly tapered to apex, with 2 strong and 2 short preapical setae (FIG. 3b). Three small, nearly round spermathecae present.

Holotype ♂, allotype ♀ and 2♀, 5♂ paratypes, INDONESIA: N Sulawesi: Noongan, 50 km S of Menado, 1200 m, 2–10.XII.1973, H. Kurahashi & H. Shima.

Holotype, allotype and 2 paratypes returned to Dr Kurahashi, National Institute of Health, Tokyo, Japan. Two paratypes deposited in the Bishop Museum, 1 in the U.S. National Museum and 2 in the University of Hawaii collection.

It is a pleasure to name this species after Dr Hiromu Kurahashi, who has made such outstanding contributions to our knowledge of the Calliphoridae of Japan and the Oriental Region.

Sophira (Sophira) limbata Enderlein

Sophira limbata Enderlein, 1911, Zool. Jahrb. **31**: 435. Type-locality: Soekaranda, Sumatra. Type ♀ in National Institute of Zoology, Warsaw. I have studied the type.

Species of the *limbata* complex are characterized by having a brown band extending diagonally over wing from base of cell M_4 to apex of cell R_5 and by having a brown costal band. The *limbata* complex may fit intermediate between typical *Sophira* and *Dacopsis*; in *limbata,* small secondary scutellars are present, about ¼ as long as other scutellars. According to the original description of *insueta* Hering, the secondary scutellars are about ⅓ as long as the basal scutellars. The secondaries are rudimentary, hairlike, in *philippinensis*; this character has not been checked for *phlox* Munro from India or *limbata borneensis* Hering from Kalimantan.

S. limbata fits close to *phlox* and is differentiated by having the tibiae dark brown to black; the hind portion of mesonotum polished black; a shining black vertical band extending from sternopleuron over mesopleuron, onto mesonotum in front of suture, almost connecting with the submedian black vittae; and cell 2nd M_2 entirely brown and R_1 largely brown. The costal band is continuous as a narrow band of brown through apex of cell R_5. This seems to be the only feature which separates the typical *limbata* from the subspecies *borneensis.*

For a more detailed description refer to the original and to Hardy (1958: 371, fig. 1F).

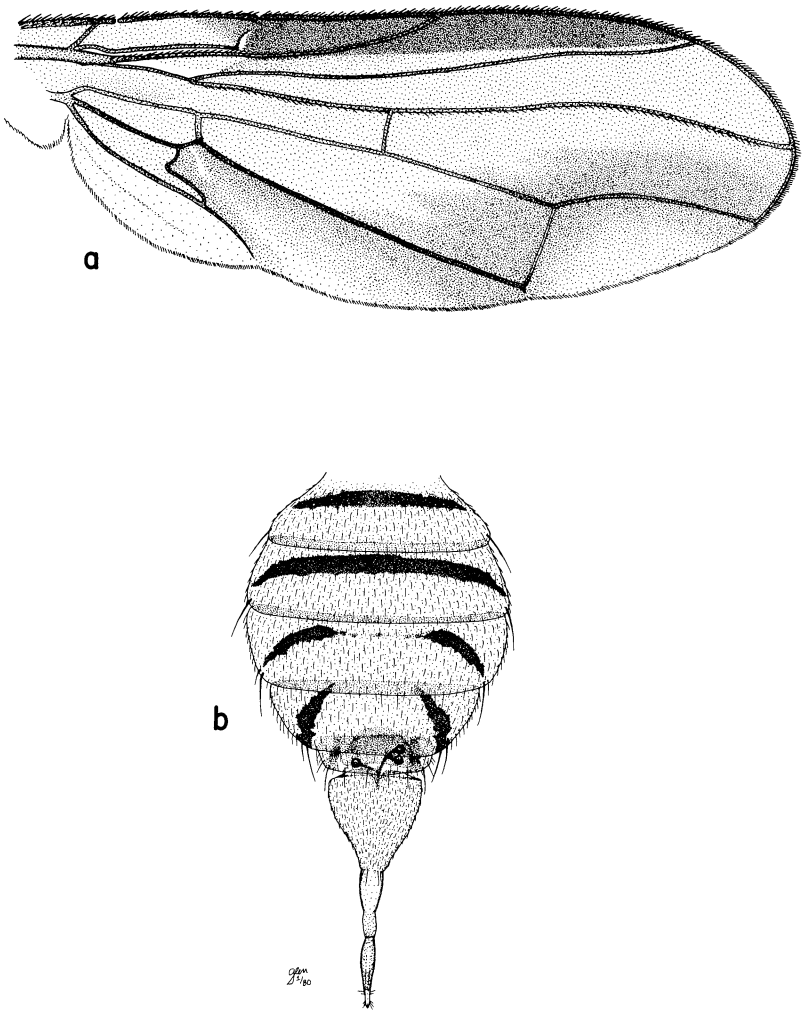


FIG. 4. *Sophira (Sophira) limbata borneensis*: a, wing; b, ♀ abdomen.

Length: body ca 7.0 mm; wings 7.75–8.25 mm.

Distribution. Sumatra.

This has been recorded from Kalimantan but the record probably pertains to the subspecies *borneensis*.

Sophira limbata borneensis Hering FIG. 4a–b

Sophira limbata borneensis Hering, 1952, Treubia **21**(2): 273. Type-locality: Balikpapan, Kalimantan. Type ♀ in Natural History Museum, Leiden. I have studied the type.

Hering differentiated this from typical *limbata* by its having the costal band broken, not continuing through apex of cell R_3, and by cell 2nd M_2 being more lightly fumose,

not so dark in color. Too few specimens have been seen to assess the validity of this character; this may be a variation or an aberration. For details of the wing markings, markings on abdomen and the female ovipositor refer to FIG. 4a–b.

Specimens examined. Specimens from BORNEO: Sarawak: ft of Mt Dulit, junction of Tinjar and Lejok rivers; and from the following localities in Sabah: Tawau, Quoin Hill, Forest Camp, and Forest Camp 19 km N of Kalabakan.

Distribution. Borneo (Sabah, Sarawak).

Sophira (Sophira) linduensis Hardy, **new species** FIG. 5a–c

This subspecies is closely related to *kurahashii,* n. sp. and differentiated by the paler markings on the body, the different markings in the wings (FIG. 3a, 5a, 5b) and the sexual dimorphism, which is shown in the markings of the body and wings.

Male with 2 vittae on mesonotum very faint, scarcely discernible, and notopleuron, pleura and scutellum entirely yellow. In ♀ mesonotal vittae pale brown and a faint tinge of brown present on upper mesopleuron and on sides of scutellum. First 2 terga of abdomen yellow, tinged lightly with brown on sides in both sexes. In the wing posterior margin from about middle of cell M_4 to upper portion of cell 2nd M_2 is broadly brown in both sexes and 2 subapical hyaline bands across wing are joined in ♀ (FIG. 5b) and disconnected in ♂ (FIG. 5a); subbasal hyaline mark in posterior portion of wing broadly C-shaped in ♀. Otherwise fitting the description of *kurahashii,* n. sp.

Length: body 8.5 mm; wings 9 mm.

Holotype ♂, INDONESIA: Central Sulawesi: Sadaunta, 65 km SE of Palu, Trail to Lindu Val, 650 m, VIII.1975, D.E. & A.T. Hardy (BISHOP 11,599). Allotype ♀, (Central Sulawesi: Lindu Val, 960 m, VIII.1975, D.E. & A.T. Hardy. Paratypes, 2♀, 1♂, same data as holotype and allotype. These specimens were collected on the undergrowth plants in dense forest.

Holotype and allotype in Bishop Museum (BISHOP), paratypes in the U.S. National Museum and the University of Hawaii collections.

Sophira (Sophira) philippinensis Hardy

Sophira philippinensis Hardy, 1974, Pac. Insects Monogr. **32**: 84. Type-locality: Minubanan, Mindanao. Type ♀ in Bishop Museum.

Fitting in the *limbata* complex of species and differentiated by the characters given in the key above. For descriptive details and figures refer to the original.

Distribution. Philippines (Mindanao).

Sophira (Sophira) phlox Munro

Sophira phlox Munro, 1935, Rec. Indian Mus. **37**(1): 25. Type-locality: Tura, Garo Hills, Assam, India. Type ♀ in Indian Museum, Calcutta. I have seen the type.

Fitting near *S. limbata* Enderlein and differentiated by the characters given in the key above. For a description and wing figure refer to the original.

Distribution. Assam.

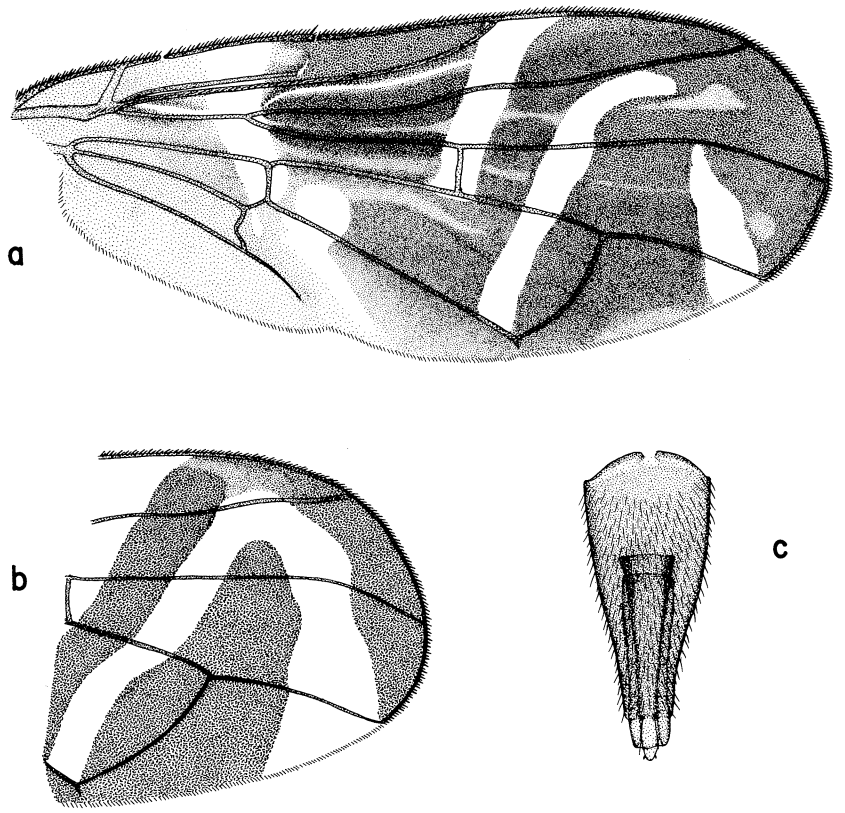


FIG. 5. *Sophira* (*Sophira*) *linduensis*: a, wing of ♂; b, apical portion of ♀ wing; c, ♀ ovipositor.

Sophira (Sophira) plagifera (Walker), **new combination** FIG. 6

Enicoptera? plagifera Walker, 1860, J. Proc. Linn. Soc. London, Zool. **4**: 156. Type-locality: Makasar (=Ujung Padang), Sulawesi. Type ♀ in British Museum (Natural History). I have studied the type.

Colobostrella ruficauda Hendel, 1915, Ann. Hist.-Nat. Mus. Natl. Hung. **13**: 429. Type-locality: Patunuang, S Sulawesi. Type ♂ in the Natural History Museum, Vienna. I have studied the type.

The synonymy of *ruficauda* was confused in a paper on the Walker types of fruit flies (Hardy 1959), and *ruficauda* was erroneously cited as a synonym of *signifera* (Hardy 1977: 98). The synonymy is with *plagifera* (Walker) (Ref. Hardy 1959: 187).

S. plagifera fits in a complex of species characterized by having a large black spot covering the area behind each humerus and another pair of black spots on the posterior portion of mesonotum, with the latter continuous as short vittae on each side, extending at least to the anterior supraalar bristles. It is differentiated by having the

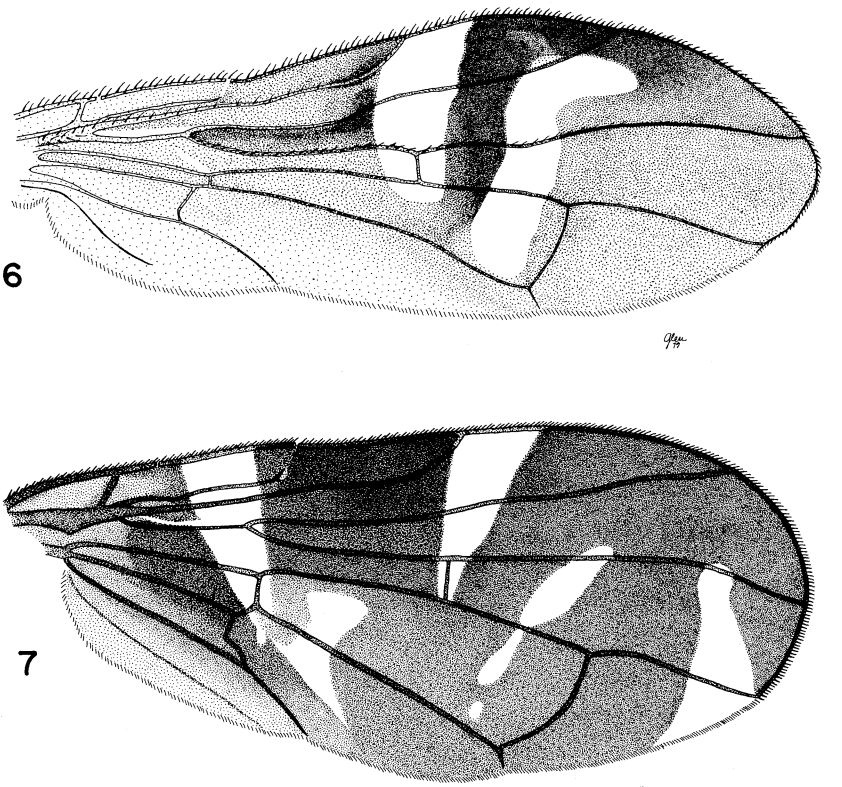


FIG. 6–7. **6**. *Sophira* (*Sophira*) *plagifera*: wing; drawn from photograph of type ♂. **7**. *Sophira* (*Sophira*) *signifera*: wing.

face entirely opaque black, sternopleuron black except for yellow upper hind corner and hind margin, mid and hind femora dark brown to black, and front tibiae and tarsi black. The wing markings are as in FIG. 6, very similar to those of *S. bistriga* Walker.

Length: body 9.2 mm, wings 8.5 mm.

Distribution. S Sulawesi.

Sophira (Sophira) signifera (Walker), **new combination** FIG. 7

Seraca signifera Walker, 1860, J. Proc. Linn. Soc. London, Zool. **4**: 165. Type-locality: "Celebes" [Sulawesi]. Type ♂ in British Museum (Natural History). I have studied the type.

Colobostrella heinrichi Hering, 1942, Mitt. Zool. Mus. Berlin **25**(2): 275. Type-locality: Ile-Ile, Sulawesi. Type ♀ in Zoological Museum, Berlin.

I have studied the type. **New synonymy.**

I find no differences in the types cited above. In *heinrichi,* Hering describes a bow-shaped (loop) band between r-m and m crossveins, curving down to the margin in

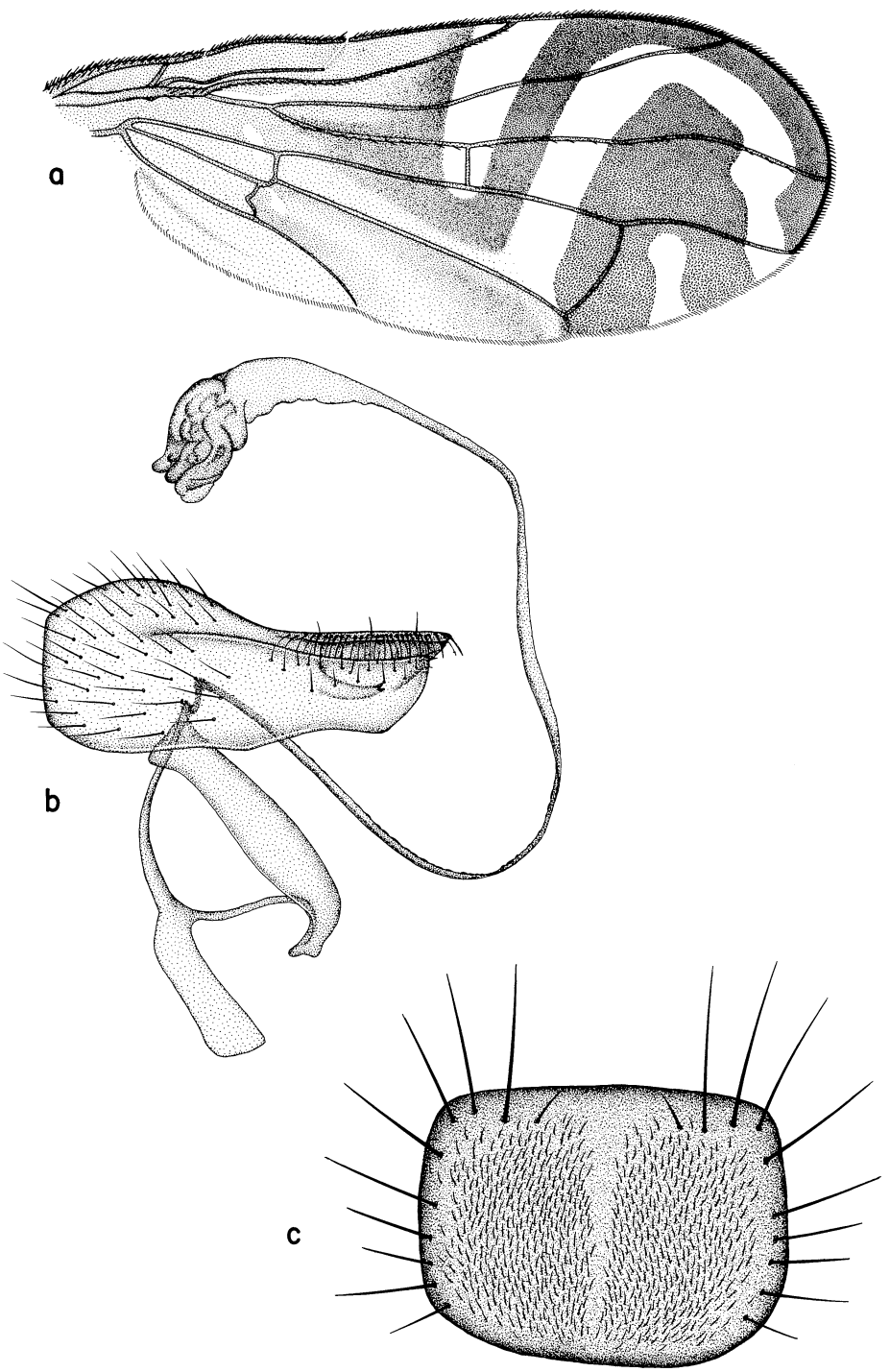


FIG. 8. *Sophira* (*Sophira*) *spectabilis*: a, wing; b, ♂ genitalia, lateral; c, 5th sternum of ♂.

apex of cell 2nd M_2. He also shows this complete loop in his figure (loc. cit. fig. 2). I have photographed the type, and the wing marking is the same as that of *signifera*. The hyaline marks extend transversely through the apex of cell 2nd M_2 from margin to or slightly beyond vein R_{4+5} near apex of cell R_5, and a streak extends obliquely through apical portion of cell 1st M_2 before m crossvein through middle portion of cell R_5 and about halfway through cell R_3 (FIG. 7). The specimen Hering figured had these 2 marks joined in cell R_3, forming a loop. This is probably a variation.

This is the type of the genus *Seraca* Walker and fits the characteristics of typical *Sophira* given above under the generic discussion.

Species differentiated by having thorax mostly rufous or reddish brown with 2 submedian black vittae extending entire length of mesonotum, in line with dorsocentral bristles; also, notopleura dark brown to black, and pleura entirely rufous except for brown dorsal margins of mesopleuron. Wing markings distinctive as in FIG. 7; a large hyaline wedge extending from costa through median portion of wing over r-m crossvein, another wedge extending from apex of cell 2nd M_2 through subapical portion of cell R_5, and another isolated long hyaline streak extending transversely across cell R_5 into cell 1st M_2 just basad of m crossvein, which may be partially divided into 2 spots. One pair of strong superior fronto-orbital bristles located near middle of front and a tiny rudimentary pair of s.f.o. is situated above these. One pair of inferior fronto-orbitals present near lower ⅓ of front. Face nearly straight in profile but from direct frontal view median upper ¾ raised into a broad keel. A slight depression extends transversely across lower ¼ of face and portion extending below this to epistoma is flat. From a lateral view occiput rather strongly narrowed above and inflated on lower portion; at its broadest point about ½ as wide as eye. Dorsocentral bristles situated just slightly in front of a line drawn between inner postalars. Abdomen largely subshining black on sides of terga and yellow to rufous down median portions of terga 1–4; 5th tergum all black. Sterna entirely yellow to rufous. Genitalia black. Base of ♀ ovipositor shining black, rather elongate, equal in length to terga 2–5.

Length: wing 8.75–9.0 mm.

Distribution. Known only from Sulawesi.

Sophira (Sophira) spectabilis Hardy, **new species** FIG. 8a–c

This species fits in the *plagifera* complex by having 4 prominent black marks on the mesonotum and by the general details of the wing markings. It fits near *bistriga* Walker and is differentiated by having the hyaline band from apex of cell 1st M_2 extending into lower portion of cell R_1 and continuous as a loop running across upper portions of cells R_3, R_5 and to costa in upper apex of 2nd M_2; by having a hyaline mark extending transversely through median portion of cell 2nd M_2 into lower portion of cell R_5 (FIG. 8a); and by having the black posterior spots on the mesonotum pointed anteriorly with the points extending to about opposite the anterior supraalars, rather than having short vittae developed from the marks extending almost to the suture.

♂. *Head.* Entirely pale yellow except for dark compound eyes and black ocellar triangle. Fitting characteristics of *Sophira,* with 1 prominent inferior fronto-orbital bristle situated at lower ¼ of front, 1 large superior fronto-orbital at middle and a small s.f.o. at upper ¼, the latter about equal in size to postvertical bristles. Inner verticals strong, about ⅓ longer than lower s.f.o.; outer verticals small, scarcely 2× larger than postverticals. Face raised down median portion, vertical as seen in profile with a slight protuberance just above epistoma. Swollen portion of occiput about ½ eye width. No genal bristles developed and no bristles or prominent setae developed on genal margin. Aristae long haired on both dorsal and ventral margins

and inner margin with abundant, moderately long hair. *Thorax.* Yellow except for large black spots on mesonotum behind humeri and on posterior margin between prescutellar and inner postalar bristles; also with an elongate black mark on anterior portion of mesopleuron just behind spiracle and another elongate black mark extending transversely over hind portion of mesopleuron in line with bristle. Also a vertical black streak extending over metanotum. Scutellum with rudimentary secondary bristles, approximately 2× larger than setae scattered over disc. Mesonotum densely black setose. Dorsocentrals situated just slightly in front of a line drawn between postalars. All scapular bristles well developed, of equal size, approximately equal to humerals. Sternopleural bristle lacking. *Legs.* Entirely yellow except for a tinge of brown on apical tarsomeres. Front femur with 4–5 posteroventral bristles just before apex. Middle femur with numerous erect setae over anterior surface and middle tibia with 1 strong apical spur plus 4 or 5 short spines. *Wings.* As in FIG. 8a. Basal portion predominantly yellow-brown, apical ½ with conspicuous hyaline and dark brown markings. Vein R_{2+3} gently curved and 4th section of costa, between tips of R_1 and R_{2+3}, slightly shorter than 5th, between R_{2+3} and R_{4+5}. Crossvein r-m situated near apical $^3/_5$ of cell 1st M_2 and vein M gently concave. Cell Cu with a short, pointed apical lobe. *Abdomen.* Entirely yellow to rufous except for a streak of dark brown on sides of 1st tergum. Fifth sternum of ♂ about ⅓ wider than long, straight on hind margin, with moderately strong, dark brown to black bristles on posterolateral and lateral margins and with median portion covered by 2 dense patches of dark setae which are separated by a narrow bare line down middle (FIG. 8c). Surstyli slender, elongate, 2× longer than epandrium and with a fringe of incurved hairs along dorsal margin. Other details of genitalia as shown in FIG. 8b.

Length: body 8.5 mm; wings 8.0 mm.

♀. Unknown.

Holotype ♂ (BISHOP 11,600), 5♂ paratypes, INDONESIA: Central Sulawesi: Sadaunta, 65 km SE of Palu, 650 m, VIII.1975, on undergrowth plant in dense forest, D.E. & A.T. Hardy.

Holotype and 1 paratype in Bishop Museum, other paratypes in collections of U.S. National Museum, British Museum and University of Hawaii.

Sophira (Sophira) venusta Walker

Sophira venusta Walker, 1856, J. Proc. Linn. Soc. London, Zool. **1**: 35. Type-locality: Singapore. Type ♀ in British Museum (Natural History). I have studied the type.

This is the type of the genus *Sophira* and is differentiated from all known species by the unusual wing markings: a longitudinal brown streak along each of veins R_{4+5}, M_{1+2} and M_{3+4}, in addition to a brown costal band extending from apex of vein Sc to beyond apex of R_{2+3} (Ref. Hardy 1959: 376, fig. 2B). The wing is otherwise rather intensely yellow.

A mostly yellow species with hind margin of mesonotum broadly black, 2 black vittae on mesonotum extending from outer scapular bristles to a level with anterior supraalars. A narrow, vertical black band extending over each pleuron through median portions of sternopleuron and mesopleuron, continuing onto dorsum between humerus and notopleural callus, onto mesonotum in front of suture almost connecting with mesonotal vittae. Also with a dark brown to blackish mark extending over hind margins of hypopleuron and metapleuron and over metanotum. Abdomen clear yellow except for a narrow black band on base of 2nd tergum; a black basal band on 3rd tergum, which is broadly moon-shaped, curved posteriorly on lateral margins; terga 4 and 5 with an oblique, curved black mark on each side; and 6th tergum (♀) with a pale brown streak on each side. All body bristles black. Ocellar bristles rudimentary, represented by small setae. Only 1 strong inferior fronto-orbital, plus 2 or 3 small pale setae in line with it above and below. Two strong superior fronto-orbitals. Face raised in median portion, straight in profile and with prominent antennal grooves extending ⅔–¾ length of face. Four strong scutellars, secondaries represented by a pair of small, inconspicuous, yellow setae which are about 2× longer than other setae on mesonotum. Sternopleural bristles absent, represented by a tiny yellow seta. Dorsocentral bristles situated

just in front of inner postalars. Legs yellow except for brown front tibiae and a tinge of brown on other tibiae. Mid tibia with 1 long apical spur, extending $^2/_5$ length of basitarsus.

Length: body, excluding ovipositor, 8.0 mm.

Distribution. Singapore; Moluccas; Borneo (Kalimantan).

Subgenus **Kambangania** de Meijere

Kambangania de Meijere, 1914, Tijdschr. Entomol. **57**: 196. Type-species: *metatarsata* de Meijere, by monotypy.

Spaniothrix Hardy, 1973, Pac. Insects Monogr. **31**: 206. Type-species: *vittata* Hardy. **New synonymy.**

Spaniothrix fits the characters of *Kambangania* and the type-species fits nearest to *metatarsata.*

This subgenus is differentiated by lacking presutural bristles, in combination with having the face concave in middle as seen in profile.

Three species from Indonesia, *disjuncta,* n. sp., *metatarsata* (de Meijere) and *simillima* (Hering) fit here, as does *vittata* (Hardy) from Thailand and Laos. These are differentiated by the characters given in the key above.

Sophira (Kambangania) disjuncta Hardy, **new species** FIG. 9a–b

This species fits nearest to *simillima* (Hering) but differs by having 4 complete black vittae on the mesonotum, with the 2 lateral vittae joined anteriorly but not connected with the black mark over the notopleuron and the sides of the thorax (FIG. 9b).

♀. Fitting the characteristics of other *Sophira* in most details. *Head.* With rather well-developed secondary inferior fronto-orbitals. Prominent, thin, hairlike setae near lower margin of front in line with lunule are better developed in this species than any other *Sophira* that I have seen. These dark in color and about equal in length to outer vertical bristles. Strong pair of i.f.o.'s equal in length to lower superior fronto-orbital, and upper s.f.o. rudimentary, about equal in size to postvertical bristles, or hairs. A strong black genal bristle present. Margin of gena with short, inconspicuous, brownish yellow setae. *Head.* Pale yellow with a reddish-brown mark extending down middle of front from ocellar triangle to lunule, with a thin brown line along each side of oral margin and sides of epistoma dark brown. Front gray pruinose in indirect light. *Thorax.* Pale yellow except for black markings. Four vittae on mesonotum as in FIG. 9b, joined on posterior margin and 2 lateral vittae joined on anterior margin between scapular bristles. Entire notopleuron black with a continuous black mark extending over middle of mesopleuron, curving along posterior margin of sternopleuron connecting with black mark which extends onto hypopleuron and to metanotum. *Legs.* Mostly yellow, hind tibiae brown, other tibiae with very faint tinge of brown. *Wings.* Marked as in FIG. 9a, apical portion beyond level with m crossvein brown, and with a brown V-shaped mark extending from apex of cell M_4 across cell 1st M_2, through middle of wing to vein R_1 over r-m crossvein and another branch extending obliquely toward wing base to base of M_{1+2}. Vein R_{2+3} moderately curved and 4th costal section about equal in length to 5th. *Abdomen.* First tergum entirely yellow, 2nd tergum broadly black on basal margin and sides with a large yellow mark across apical ½ of sclerite. Third tergum broadly black on basal margin and on sides, black of sides continuing to apex of abdomen over terga 4–6, leaving a broad yellow vitta extending down middle (FIG. 9b). Ovipositor entirely yellow, base about equal in length to terga 4–6.

Length: body 10.0 mm; wings 9.5 mm.

♂. Unknown.

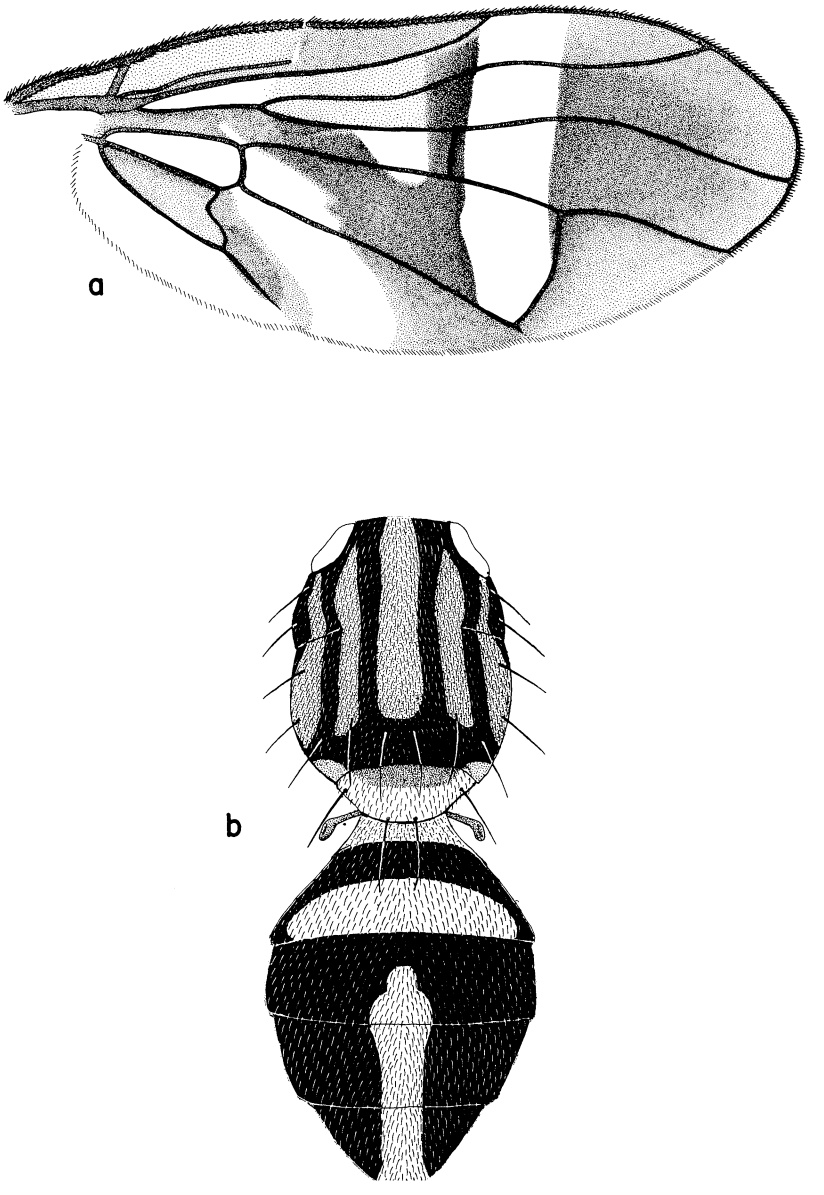


FIG. 9. *Sophira* (*Kambangania*) *disjuncta*: a, wing; b, thorax and abdomen, dorsal view.

Holotype ♀, INDONESIA: Sumatra: Ketambe, Mt Leuser Reserve, Aceh, 300 m, 1.V.1977, D.E. & A.T. Hardy (BISHOP 11,601).

Type in Bishop Museum.

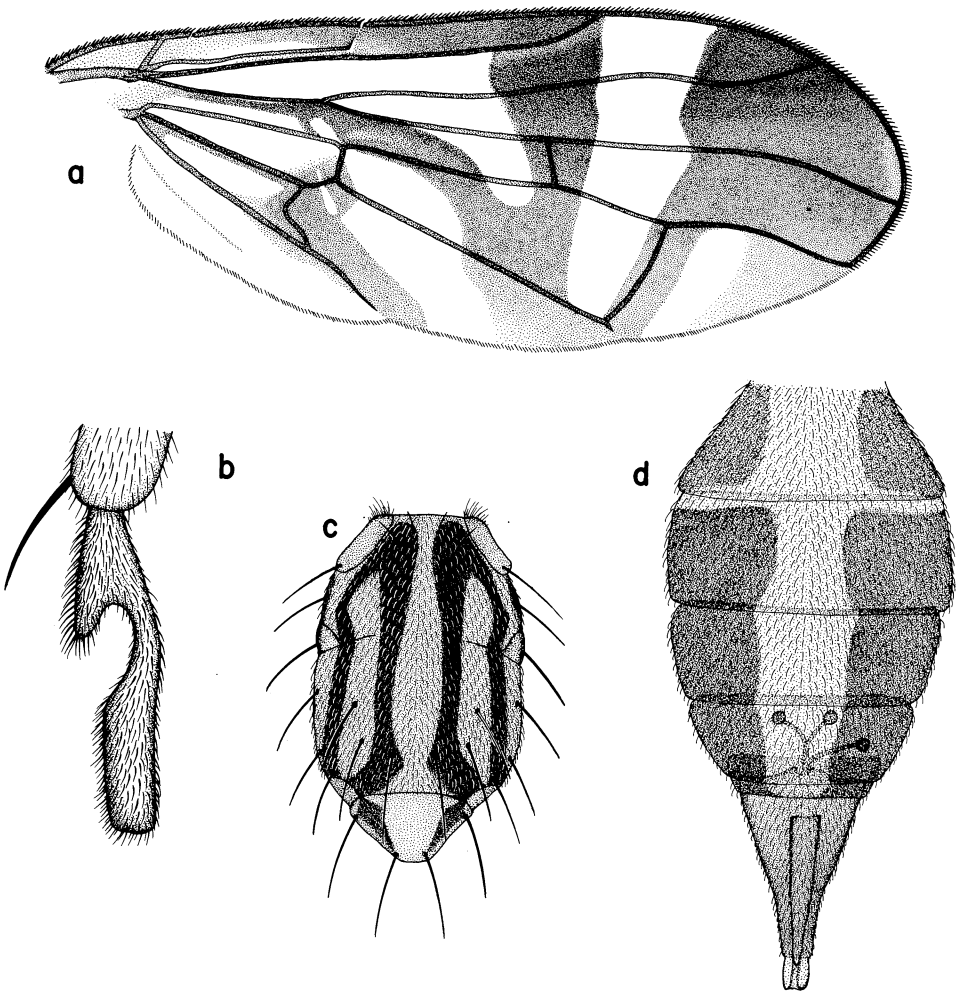


FIG. 10. *Sophira* (*Kambangania*) *metatarsata*: a, wing; b, middle basitarsus of ♂; c, thorax, dorsal; d, ♀ abdomen, dorsal.

Sophira (Kambangania) metatarsata (de Meijere), **new combination** FIG. 10a–d

Kambangania metatarsata de Meijere, 1914, Tijdschr. Entomol. **57**: 197. Type-locality: Nusa Kambangan, Java. Type ♂ in Zoological Museum, Amsterdam. I have studied the type.

This species is readily differentiated from others which I have included in *Kambangania* by having the sides of the scutellum black, the abdomen with the sides entirely black and a broad yellow median vitta extending the entire length.

Wings with large hyaline mark in cell 2nd M_2 (FIG. 10a) and middle basitarsus of ♂ strangely modified, with a subbasal, hooklike process (FIG. 10b). Secondary inferior fronto-orbital bristles, near lower margin

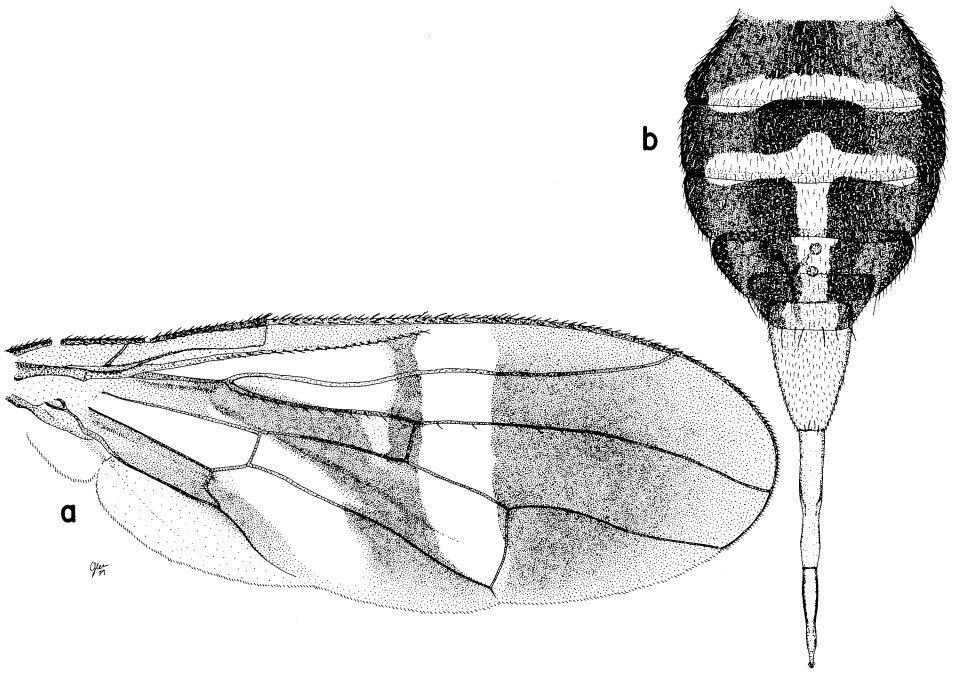


FIG. 11. *Sophira (Kambangania) simillima*: a, wing; b, ♀ abdomen, dorsal.

of front, present as in *disjuncta,* but these are thin, more hairlike rather than so definitely bristlelike, and upper superior fronto-orbital bristles comparatively well developed, equal in size to outer verticals. Median portion of front dark brown to black, almost entire length, or to about a level with larger i.f.o. Genal bristle strong and black, palpi slender, almost straight-sided, at least 6× longer than wide. Four longitudinal black vittae on mesonotum rather narrow, each pair joined anteriorly between inner and outer scapular bristles and narrowly separated posteriorly; also the submedian vittae narrowly separated anteriorly by slightly less than width between inner scapulars and more broadly separated posteriorly by width between prescutellar bristles. Dorsocentral bristles slightly more forward in position than in other species of this group, situated about halfway between postalars and supraalar bristles. Submedian pair of vittae continuous with black margins of scutellum (FIG. 10c). A long black streak covers entire notopleuron and a dark brown to black mark extends through upper portion of each mesopleuron, pleura otherwise clear yellow. Metanotum with a black vertical stripe down each side, which is continuous with broad black band extending down each side of abdomen for entire length (FIG. 10d). *Legs.* Entirely yellow except for a faint tinge of brown on hind tarsi. Middle basitarsus as in FIG. 10b, with an unusual hook-shaped subbasal process. Front femora lacking posteroventral bristles. Wings with markings as in FIG. 10a, characterized by presence of a rather large hyaline mark in cell 2nd M_2, also apex of cell R_5 subhyaline. Lobe of cubital cell longer than in most species of this group, equal or slightly longer than vertical section of vein Cu. Genitalia not dissected for study; 5th sternum with row of about 6 rather strong spines on each side of hind margin. Female ovipositor as in FIG. 10d.

Length: body 8.5–9.75 mm; wings 8.0–9.25 mm.

Distribution. West Java.

Sophira (Kambangania) simillima (Hering), **new combination** FIG. 11a–b

Colobostrella simillima Hering, 1952, Treubia **21**(2): 272. Type-locality: Balikpapan, E Kalimantan. Type in the Natural History Museum, Leiden. I have studied the type.

This species fits nearest to *disjuncta,* n. sp. from Sumatra, but differs by having only 2 complete black longitudinal vittae on mesonotum, with the 2 lateral vittae extending just slightly beyond suture, then bending laterally, connecting with the black marking over the notopleuron and onto the pleura.

Prominent setae below inferior fronto-orbitals on lower part of front smaller than in other species of subgenus, slightly smaller than postverticals, and upper superior fronto-orbitals comparatively small, about equal to postverticals. Genal bristle well developed, equal in size to inferior fronto-orbitals. Palpi convex ventrally, rather broad, about 3× longer than wide. In type black vertical mark on mesopleuron does not extend to black mark on sternopleuron; this is apparently a sexual character. Black markings discontinuous in ♂ and in the ♀ lateral vittae on mesonotum extend beyond suture, bend laterally over front portion of notopleuron, and continue over median portion of mesopleuron, continuing through middle of sternopleuron, connecting with broad black band across hind portion of pleuron from metanotum, forming a large black V on pleuron. Legs yellow, tinged with brown on tibiae. Wings as in FIG. 11a, with apical portion beyond m crossvein entirely brown. Abdomen with broad black markings over bases and lateral margins of terga 2 and 3, yellow on apico-median portions of these terga and with terga 4–6 dark brown to black except for a narrow yellow median vitta (FIG. 11b). Male genitalia not studied. Female ovipositor entirely yellow, basal segment about equal in length to terga 4 + 5 and ovipositor as in FIG. 11b.

Length: body 7.5–8.0 mm.

Distribution. Borneo (Kalimantan, Sarawak, Sabah).

Sophira (Kambangania) vittata (Hardy), **new combination**

Spaniothrix vittata Hardy, 1973, Pac. Insects Monogr. **31**: 206. Type-locality: Doi Suthep, Thailand. Type ♂ in Bishop Museum.

This species fits closest to *metatarsata* but has prominent black markings on the pleura, scutellum all yellow, front femur of male densely short bristled ventrally and mid basitarsus not modified; also the abdominal and wing markings show some differences. Refer to the original for description and figures.

Distribution. Laos and Thailand.

Parasophira, new subgenus

Parasophira differs from typical *Sophira* by having sternopleural bristles and having the face concave in profile. It fits in the grouping which has 4 black vittae down the mesonotum and the posterior border of the mesonotum black. It closely resembles species of the subgenus *Kambangania* but differs by having both sternopleurals and presutural bristles present.

Type of subgenus: *concinna* Walker.

Sophira (Parasophira) biangulata (de Meijere), **new combination** FIG. 12

Colobostrella biangulata de Meijere, 1924, Tijdschr. Entomol. **67** (Suppl.): 34. Type-locality: Gunung Talamau, Sumatra. Type ♀ in the Zoological Museum, Amsterdam. I have studied the type.

Distribution. Known only from Sumatra.

This species apparently occupies a borderline position between "Gastrozonini" and Acanthonevrini and clearly demonstrates the artificiality of separating groups of gen-

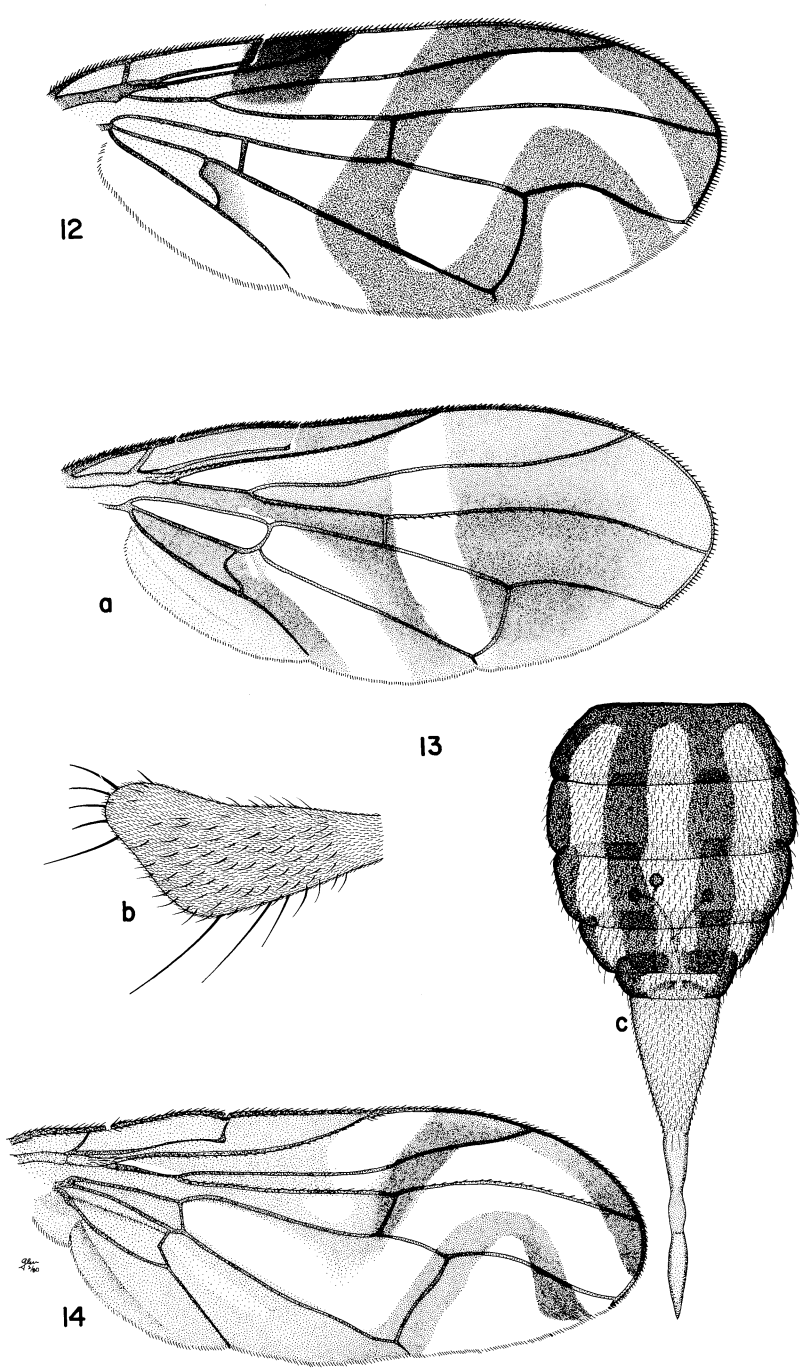


FIG. 12–14. **12**. *Sophira* (*Parasophira*) *biangulata*: wing. **13**. *Sophira* (*Parasophira*) *concinna*: a, wing; b, palpus; c, ♀ abdomen, dorsal. **14**. *Sophira* (*Soosina*) *extranea*: wing.

era as tribes based upon the presence of 4 vs 6 scutellar bristles. The secondary scutellars are distinctly developed in *biangulata,* about ⅖ as long as the apical pair of bristles. In my forthcoming monograph, I have keyed this species under the Gastrozona grouping of genera and also under the Acanthonevra grouping. In the latter it would run to *Diarrhegmoides* Malloch and from the wing markings would resemble some of the species in this genus. It would differ by having vein R_{4+5} straight or nearly so and the secondary scutellars less developed. The male genitalia or female ovipositors have not been compared.

This species fits in the subgenus *Parasophira* by having sternopleural and presutural bristles and the face concave in profile. It differs from *concinna* Walker by having only 3 black longitudinal vittae on the mesonotum, the abdomen not vittate and with complete black bands across terga 2 and 3 and the wings with 2 arches of brown in apical ½ (FIG. 12).

Head yellow except for two black vittae over upper occiput. Only one strong inferior fronto-orbital bristle plus 2 prominent and several small hairs in the i.f.o. line. Pleura and legs all yellow to rufous. Abdominal terga black on sides, yellow medianly except for complete black bands on 2 and 3. Wings as in FIG. 12.

Distribution. Known only from Sumatra.

Sophira (Parasophira) concinna Walker FIG. 13a–c

Sophira concinna Walker, 1856, J. Proc. Linn. Soc. London, Zool. **1**: 132. Type-locality: Borneo. Type ♂ in British Museum (Natural History). I have studied the type.

This species apparently fits in the same grouping with *biangulata* (de Meijere) because of the presence of sternopleural and presutural bristles and the concave face. The 2 species are strikingly different, and *concinna* is differentiated by having 4 complete longitudinal black vittae on both the mesonotum and abdomen and by the very different wing markings (FIG. 12, 13a).

Strong inferior fronto-orbital bristles about equal in length to the lower superior fronto-orbitals and several fine, rather elongate, setae present in line with the i.f.o., 1 below and 2 or 3 above; lower fine hairs situated in line with lunule and are almost as long as upper s.f.o. Upper median portion of face is gently raised but median part, as seen in profile, broadly concave. Median portion of front with a longitudinal discoloration of reddish brown extending from lunule to ocellar triangle and, as seen in indirect light, front densely gray pruinose; this is completely obscured in direct light. Epistoma tinged with brown especially on sides. Palpi broadly convex on ventral margins, straight on dorsal margins (FIG. 13b). Mesonotum with 4 black longitudinal vittae, the 2 submedian vittae complete, the 2 lateral extend just beyond suture, then bend laterally over front portion of notopleuron, extending as a broad black line over middle of mesopleuron and connecting on sternopleuron with a broad black marking extending from metanotum over metapleuron and hypopleuron to sternopleuron; also a narrow streak of dark brown to black extends vertically across middle of pteropleuron. Wings as in FIG. 13a, with apical portion beyond m crossvein completely dark brown and with a broad hyaline band extending across wing between r-m and m crossveins. Abdomen with 4 complete, longitudinal, black vittae extending from base of 2nd tergum to apex of 5th. Female ovipositor as in FIG. 13c. Male genitalia not dissected for study.

Length of ♀, excluding ovipositor, ranging from 7.5–10.0 mm and averaging 9.0 mm.

Only 2 males have been reported to date, the type (labeled only Borneo) and the one from Balikpapan, E Kalimantan, mentioned by Hering (1952: 271). I have seen this specimen in the Museum Zoologicum Bogoriense, Bogor, Java.

Specimens examined. Series of specimens in Bishop Museum: BORNEO: Sabah, 18 km N of Kalabakan.

Distribution. Borneo (Kalimantan, Sabah).

Subgenus **Soosina** Hering, **new status**

Soosina Hering, 1941, Ann. Hist.-Nat. Mus. Natl. Hung. **34**: 68. Type-species, *Anastrepha extranea* de Meijere.

I had previously treated this as a synonym of *Seraca* Walker (Hardy 1959: 197) but now feel that it should be treated as a subgenus. It fits very close to *Sophira* (*Sophira*) but differs by having the dorsocentral bristles anterior in position, situated just slightly behind the anterior supraalars, and the scutellum bare or with but a few fine, pale, barely perceptible hairs over disc.

This is a monotypic subgenus and intergrades with *Kambangania.*

Sophira (Soosina) extranea (de Meijere), **new combination** FIG. 14

Anastrepha extranea de Meijere, 1914, Tijdschr. Entomol. **57**: 193. Type-locality: Gunung Ungaran, Java. Type ♀ in Zoological Museum, Amsterdam. I have studied the type.

Face raised in middle portion, straight in profile. Only 1 strong inferior fronto-orbital, as in typical *Sophira,* but with 2 thin, erect setae below and 2 above in line with i.f.o. Both pairs of superior fronto-orbitals well developed, uppers ¾ as long as lowers; in this regard it differs from other *Sophira.* Outer vertical and postvertical bristles well developed, almost equal in size to upper s.f.o. Head entirely yellow, except for eyes and brown ocellar triangle; also a thin streak of brown on each side of upper occiput. Genal bristle well developed. Thorax entirely pale yellow except for a large, shining black spot just above each humerus, which extends out as a thin brown vitta almost to the dorsocentral bristles in 1 specimen at hand, and evanesces just beyond suture in another specimen. Hind portion of mesonotum with a large, shining black spot on each side bounded by inner postalar, prescutellar and dorsocentral bristles and with a small, brown, median spot on hind margin. Metanotum with a large, black mark extending over each side and a small black spot present at upper wing base. (Latter of 2 specimens atypical, probably teneral.) Legs entirely yellow, front femur with 6 or 7 posteroventral bristles along apical ½. Wings characteristically marked as in FIG. 14, with basal ½ mostly yellow, tinged faintly with brown and apical portion mostly hyaline with a yellow-brown band along basal portion of vein M_{1+2}, bending at a right angle at r-m crossvein, extending over r-m to wing margin in cell R_1, along wing margin into lower apical portion of cell R_5; another brownish yellow band along underside of vein M_{1+2} to wing apex, bending transversely along m crossvein, making a loop in middle of cell R_5, curving downward to wing margin in apical portion of cell 2nd M_2 (FIG. 14). First 2 abdominal terga entirely yellow, terga 3–6 with a black vitta down each side, broadly yellow in middle and yellow on extreme lateral margins. Male genitalia have not been studied. Female ovipositor yellow, basal portion just slightly longer than terga 5 plus 6.

Length: body 6.0 mm; wing 7.0 mm.

Specimens examined. 1 from Sempol (Idjen), E Java, 2000 m, II.1934, Handschin; 1 labeled "Java, Muller."

Distribution. Java.

Exallosophira Hardy, **new genus**

Exallosophira belongs in the *Sophira* group of genera by lacking sternopleural bristles, and by having rudimentary ocellars and only 4 scutellar bristles. It shows relationship with *Sophira* and would fit nearest to *S.* (*Kambangania*) by lacking the presutural bristles, but the face is straight in profile, not concave.

This genus is differentiated from other known Tephritidae by its unusual wing venation: crossvein r-m oblique, appearing like a fork of vein R_{4+5}, so that at first examination it would appear that vein R_5 is present; m crossvein divided into 2 sections, a straight transverse section (this may represent vein M_2) and a strongly concave section, these are separated by a short distal appendix; cell 2nd M_2 strongly contorted and cell Cu drawn into an elongate slender lobe (FIG. 15a). Only 1 inferior fronto-orbital and 1 superior fronto-orbital bristle present.

Type of genus: *elegans,* n. sp.

The name comes from the greek exallos = quite different, combined with sophira.

Exallosophira elegans Hardy, **new species** FIG. 15a–b

This species is readily differentiated by its unusual wing venation and its wing markings (FIG. 15a).

An almost entirely yellow species with all head and body bristles black.

♀. *Head.* About ½ higher than long, compound eyes oblong, with hind margin oblique so that the upper margin of occiput is extremely narrow, scarcely visible from lateral view, and lower occiput comparatively broad, equal in width to ⅔ the eye width. Front gradually sloping and antennae situated at about upper ⅔ of head height. Front with short, inconspicuous, scattered pale setae over median portion. Face straight in profile, raised down median portion with upper median portion sharply narrowed into a prominent keel, antennal furrows well developed, extending length of face. Lower median ½ of face with a small groove extending down middle as seen in direct frontal view. Antennae comparatively short, 3rd segment scarcely over ½ longer than wide and extending approximately $^2/_5$ length of face. Arista with long dorsal and ventral rays and with a prominent row of hairs along inner margins. Only 1 inferior fronto-orbital and 1 superior fronto-orbital; these both strong bristles, distinctly stronger than outer verticals and equal in length to ⅔–¾ inner verticals. Head entirely yellow except for dark brown U-shaped mark extending from vertex behind ocellar triangle on each side of front to superior fronto-orbital bristles. Frontal triangle black. Clypeus short, rather inconspicuous, equal in width to less than ½ width of gena. *Thorax.* Entirely yellow, except for a tiny black spot just behind each wing base. With normal complement of bristles except for the absence of sternopleurals and presuturals. Mesonotum rather thickly covered with short dark brown to blackish setae and scutellum bare except for pale microscopic pile. The 4 scutellar bristles well developed, secondary scutellars represented by a pair of small pale setae. Dorsocentral bristles situated on a line drawn about ⅓ distance from inner postalars to supraalar bristles. *Legs.* Yellow, except for dark brown to blackish front and middle tibiae and tarsi and a tinge of brown on hind tibiae and tarsi. Middle tibia with 1 strong, black apical spur, plus a row of short, apical setae. *Wings.* In addition to the details noted above, costal breaks barely detectable, only faintly indicated; also, apical portion of subcosta oblique, not bent at such a sharp right angle as in most Tephritidae. Second and 3rd costal sections approximately equal in length. Fourth, between apices of R_1 and R_{2+3}, about ½ as long as 3rd. Vein R_{2+3} distinctly bowed upward in median portion, also vein M_{1+2} with a distinct upward bend on basal ¼. With a dark brown to blackish costal band extending from near apex of cell R_1 into upper apical portion of cell 2nd M_2, followed by a white preapical transverse band extending obliquely from costa through cells R_1, R_3, R_5 and 2nd M_2 to wing margin. This is followed by a large dark brown apical spot occupying a large area of wing as in FIG. 15a, followed by a short, transverse hyaline band extending from upward bow in

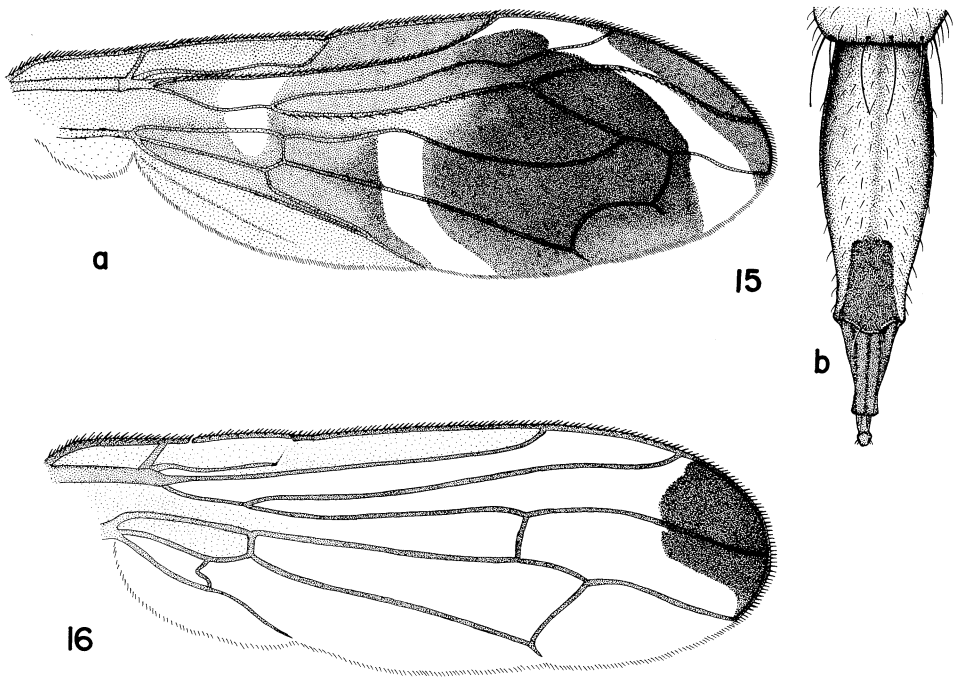


FIG. 15–16. **15.** *Exallosophira elegans*: a, wing; b, ♀ ovipositor, in situ. **16.** *Dacopsis apicalis*: wing.

vein M_{1+2} across cells 1st M_1 and M_4 to wing margin. Basal ⅔ of wing predominantly intense yellow with a tinge of brown, except for a hyaline spot extending through cells R_1, R_5 and into upper portion of cell M at a level just basad of the forking of radial sector. *Abdomen.* Entirely yellow, 6th tergum about ⅔ as long as 5th. Basal segments of ovipositor elongate, almost equal in length to terga 3–6. Piercer blunt at apex as in FIG. 15b.

Length of body, excluding ovipositor, 7.5 mm.

♂. Unknown.

Holotype ♀, SE SOLOMON IS: Santa Ysabel: Tatamba, 6.IX.1964, 0–50 m, malaise trap, R. Straatman (BISHOP 11,602).

Type in Bishop Museum.

Genus **Dacopsis** Hering

Dacopsis Hering, 1944, Siruna Seva **5**: 2. Type-species: *dacina* Hering = synonym of *signata* (Walker).

Sophira of Malloch, 1939, Proc. Linn. Soc. N.S. Wales **64**: 430, and other authors, not of Walker, 1856.

As pointed out under the discussion of *Sophira,* the concept of this genus has been confused in the literature. Many of the species previously referred to *Sophira* belong

to *Dacopsis* and are characterized by having 6 strong scutellar bristles; sternopleurals and ocellar bristles absent or rudimentary, not represented by more than small setae; 2 inferior fronto-orbital bristles situated close together near lower margin of front; face concave as seen in lateral view; dorsocentral bristles situated just anterior to a line drawn between the inner postalars and presutural bristles present; and the mid tibia with only 1 long apical spur. The body and legs are all yellow to rufous, except for an occasional tinge of brown on the abdomen and in all the known Indonesian species the head, body bristles and vestiture are all yellow. The position of the r-m crossvein, length of vein R_1, and the wing markings are extremely variable in this genus (FIG. 16, 17a, 19).

Nine species are placed under this combination; all except 3 of these occur in Indonesia. *D. quadripunctata* (Malloch) is known only from the Solomon Is and *D. caeca* (Bezzi) and *D. medioflava* (Hardy) are from the Philippines. The last 2 differ from other *Dacopsis* by having the head and body bristles black.

KEY TO KNOWN SPECIES OF *Dacopsis* FROM INDONESIA, NEW GUINEA, BISMARCK ARCHIPELAGO AND SOLOMON IS

1. Crossvein r-m situated at or beyond basal ⅓ of cell 1st M_2; 4th costal section, between apices of veins R_1 and R_{2+3}, 2× or more longer than r-m; wings not with a dark brown median mark 2
   Crossvein r-m near base of 1st M_2, separated from it by less than the length of r-m; vein R_1 elongate, ending well beyond level of m crossvein and 4th costal section short, about equal in length to r-m; wings with a prominent dark brown mark in middle (FIG. 19) . . . Papua New Guinea . . . . . **picturata, n. sp.**
2. Wings variously marked but not hyaline except for a large apical brown mark 3
   Wings hyaline except for a large brown spot filling apices of cells R_3 and R_5; crossvein r-m near apex of cell 1st M_2 (FIG. 16) . . . New Britain . . . . . **apicalis, n. sp.**
3. Thorax entirely yellow to rufous 4
   Mesonotum with 2 dark brown longitudinal vittae . . . Sumatra . . . . . **mantissa, n. comb.**
4. Crossvein r-m situated well beyond the middle of 1st M_2 5
   Crossvein r-m situated at basal ⅓ of 1st M_2 (FIG. 17) . . . New Guinea . . . . . **flava, n. comb.**
5. Abdomen with at least 2 spots on the 5th tergum; wings at least slightly yellowish fumose 6
   Abdomen entirely yellow; wings hyaline (FIG. 18a) . . . . Bismarck Archipelago and New Guinea . . . . . **holoxantha, n. comb.**
6. Wings chiefly yellow fumose, intensely so at base and on anterior portion; cell Sc all yellow; posterior portion of wing broadly gray-brown fumose (Hardy 1958: 372, fig. 2, A); ♀ with 2 spots on 6th tergum; ovipositor base equal to the combined lengths of segments 4 and 5 . . . Solomon Is . . . . . **quadripunctata, n. comb.**
   Wings subhyaline, slightly yellowish; posterior portion of wing nearly hyaline; apex of cell Sc brown; 6th tergum of ♀ entirely yellow; ovipositor base equal to segment 5 plus visible portion of 6 . . . N Sulawesi and Philippines . . . . . **signata**

Dacopsis apicalis Hardy, **new species** FIG. 16

D. apicalis differs from other known *Dacopsis* by having the wings mostly hyaline except for a large dark brown spot filling the apex (FIG. 16); also, the r-m crossvein is situated near the apex of cell 1st M_2.

♂. Like typical *Dacopsis* in most respects, with body and vestiture entirely yellow except for a pair of small, black spots on lower margin of face. *Head.* Slightly longer than high with front horizontal and compound eyes oblong, directed horizontally. Face concave in median portion with a dark brown to black spot on each side just above epistomal margin. Clypeus well developed but not as large as in *picturata,* about equal in length to ⅔ face measured on median portion. The 2 inferior fronto-orbital bristles well developed, almost equal in length to superior fronto-orbitals, situated close together just slightly above upper margin of lunule. Ocellar bristles rudimentary, represented by a pair of small pale setae. Front entirely bare. Lower occiput and hind portion of gena densely covered with long, pale cilia. Thorax, abdomen and legs entirely yellow, possessing no apparent distinctive features. Bristling of thorax typical of *Sophira.* Male genitalia not dissected for study. *Wings.* Elongate and slender, about 3½× longer than wide and predominantly hyaline with a yellowish tinge in basal portion and a large dark brown spot filling most of apices of cells R_3 and R_5 (Fig. 16). Vein R_1 extending to a level opposite lower end of m crossvein and 3rd costal section, between apices of vein Sc and R_1, is nearly ⅔ longer than 4th, between apices of R_1 and R_{2+3}. Crossvein r-m situated near apex of cell 1st M_2, distance from r-m to m about equal to the length of former. Lobe of cubital cell about ½ longer than straight, vertical, basal part of vein Cu.

Length: body 7.7 mm; wings 8.3 mm.

♀. Unknown.

Holotype ♂, PNG: BISMARCK ARCH: NEW BRITAIN: Gazelle Penin, Warongoi Val, 100 m, 24.V.1956, J.L. Gressitt (Bishop 11,603). 1 paratype, NEW BRITAIN: Keravat, 30 m, 2.IV.1956, J.L. Gressitt. Type returned to Bishop Museum; paratype in University of Hawaii collection.

Dacopsis flava (Edwards), **new combination** Fig. 17a–b

Rioxa flava Edwards, 1915, Trans. Zool. Soc. London **20**: 421. Type-locality: Mimika Riv, Irian Jaya. Type ♀ in British Museum (Natural History). I have studied the type.

This species has been previously treated under *Sophira* (Malloch 1939a: 430, Hering 1953: 521, Hardy 1958: 369).

This species is related to *quadripunctata* (Malloch) and to *signata* (Walker) but is differentiated by having the r-m crossvein situated near basal ⅓ of cell 1st M_2, rather than well beyond middle, as well as by differences in the wing and body markings.

Entirely pale yellow to rufous except for a pair of black spots on 5th abdominal tergum. Secondary scutellars strong, ⅔–¾ as long as other bristles. Wing mostly subhyaline, tinged with yellow through costal cells, cell Cu and basal portion of R. Third costal section (cell Sc) more intensely yellow, tinged with brown in apical portion and rather elongate, ⅔ longer than 4th costal section with vein R_1 ending opposite m crossvein. A narrow band of brown extends around wing apex from just before tip of vein R_{2+3} to just slightly beyond tip of M_{1+2} (Fig. 17a). Female ovipositor and spermatheca as in Fig. 17b.

For a detailed description refer to Malloch (1939a: 430) and Hardy (1958: 369).

Length of body, excluding ♀ ovipositor, 7.0–8.0 mm.

Specimens examined. PNG: NEW GUINEA (SE): Laloki, 1910, F. Muir; Brown Riv, rain forest, 5.XI.1960, J.L. Gressitt; NEW GUINEA (NE): Morobe Distr, Kilolo Crk, 7 km W of Wau, 780 m, 5–25.VIII.1967, R. Straatman & P. Coleman.

Distribution. New Guinea (PNG, Irian).

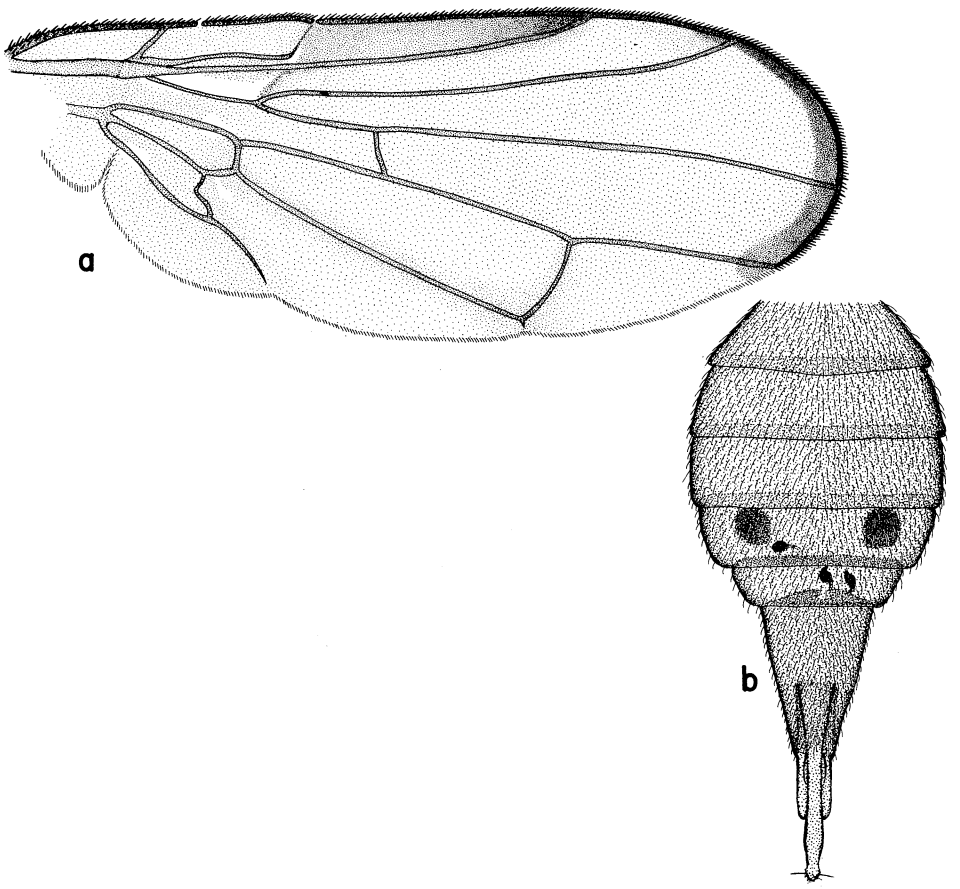


FIG. 17. *Dacopsis flava*: a, wing; b, ♀ abdomen, dorsal.

Dacopsis holoxantha (Hering), **new combination** FIG. 18a–b

Sophira holoxantha Hering, 1941, Siruna Seva **3**: 21. Type-locality: Ralum, Bismarck Archipelago. Type ♀ in Zoologisches Museum, Humboldt Universität, Berlin. I have studied the type.

This is an all yellow species, except for a black spot on each side of the face; it is related to *signata* (Walker) and differs by lacking the pair of black spots on the 5th tergum; also, the brown costal band is much darker and extends through most of cell Sc, ending in the upper apex of cell 2nd M_2 (FIG. 18a). Female ovipositor and spermathecae as in FIG. 18b.

For more descriptive details refer to original and to Hardy (1958: 370).

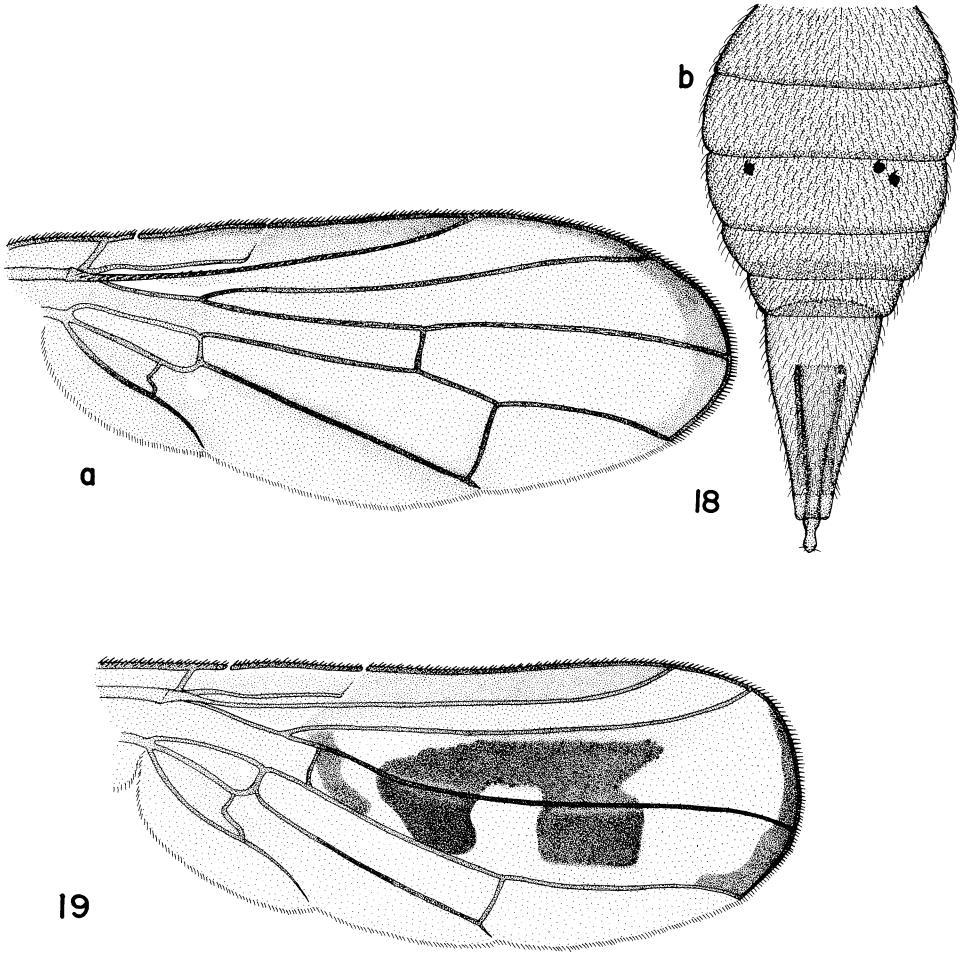


FIG. 18–19. **18**. *Dacopsis holoxantha*: a, wing; b, ♀ abdomen, dorsal. **19**. *Dacopsis picturata*: wing.

Length: body, 7.0 mm.

Specimens examined. PNG: BISMARCK ARCH.: NEW BRITAIN: Gazelle Penin., Warongai Val, 100 m, 24.V.1956, J.L. Gressitt; Keravat, 30 m, 2.IV.1956, Gressitt; Vudal, SW of Keravat, 13.XII.1959, T.C. Maa; NEW IRELAND: Ridge above "Camp Bishop," 15 km up Kait Riv, 250–750 m, 13.VII.1956, light trap, Gressitt. PNG: NEW GUINEA (NE): Huon Penin., Pindiu, 860 m, 22.IV.1963, J. Sedlacek; Wau, 1250 m, 4.V.1965, Sedlacek.

Distribution. New Britain, New Ireland, New Guinea (PNG).

Dacopsis mantissa (Hering), **new combination**

Sophira mantissa Hering, 1952, Treubia **21**(2): 275. Type-locality: Riouw Res. Inderagiri, Pangkalan Kasai, E Sumatra. Type ♀ in Rijksmuseum van Naturlijke Historie, Leiden. I have studied the type.

The wing is like that of *holoxantha* (Hering) (FIG. 18a) except that vein Cu_1 + 1st A is hyaline, not marked with brown. It is differentiated from other known *Dacopsis* by having a pair of dark brown longitudinal vittae on mesonotum, a dark spot behind each wing base, and 2 black spots on metanotum. Also, the abdomen has a pair of black spots on each of terga 4 and 5.

For more descriptive details refer to original and to Hardy (1958: 374).

Distribution. Known only from E Sumatra.

Dacopsis picturata Hardy, **new species** FIG. 19

This picturesque species seems to best fit as an aberrant *Dacopsis*. It seems evident that the position of the r-m crossvein and the length of vein R_1 are not of generic importance and are intergrading characters useful at the species complex, or the species, level. This species was represented in the British Museum (Natural History) collection by 3 specimens, which F. A. Perkins had indicated as a new genus and species but which he did not get around to describing.

The species is readily differentiated from all other known *Dacopsis* by having the r-m crossvein situated near the base of cell 1st M_2, separated from the base of the cell by less than the length of the r-m crossvein; by having vein R_1 elongate, ending well beyond level of m crossvein and 4th costal section short, about equal in length to the r-m crossvein; and by the prominent dark brown markings in the middle of the wing, as in FIG. 19.

♂. Fitting typical *Dacopsis* in most respects, having body and legs all yellow except for a pair of dark brown to black spots on 5th tergum and with all bristles and vestiture of head and body yellow. *Head.* Compound eyes oblong, slightly higher than long and head approximately as high as long with front sloping. Face gently concave in middle as seen in direct lateral view. Third antennal segment reaching to lower ⅔ of face. The 2 inferior fronto-orbital bristles situated close together on lower portion of front just slightly above level of upper margin of lunule. The 2 superior fronto-orbitals situated on upper $^2/_5$ of front. Ocellar bristles rudimentary, represented by small pale setae. Mentum well developed, in median portions almost equal in length to middle part of face. Palpi rather short and broad, less than 2× longer than wide, broadly convex ventrally and rather densely covered with short pale setae. Lower occiput and hind part of gena densely long ciliated. *Thorax.* As in other *Dacopsis,* with secondary scutellars about ⅔ as long as apical pair and scutellum entirely devoid of setae. Prescutellar bristles well developed and dorsocentral bristles situated about halfway between inner postalar and supraalar bristles. *Legs.* Typical of *Dacopsis,* with 1 long spur on middle tibia and femora with rather dense fine pale pile ventrally. *Wings.* Mostly subhyaline, tinged faintly with yellow and with a strong yellow tinge along costal margin from 2nd costal cell through all of subcostal; with a narrow dark brown mark along costa in apices of cells R_3 and R_5; with a large dark brown inverted, U-shaped mark in middle of cell R_3, overflowing into cell R_5 and with a narrow oblique streak of brown extending across bases of cells R_3 and R_5. Elongate vein R_1 greatly narrows 4th costal section and oblique r-m crossvein situated nearly at base of cell 1st M_2 (FIG. 19). Lobe of cubical cell about equal in length to vertical basal portion of vein Cu_1. *Abdomen.* Entirely yellow to rufous except for oblong black spots at base of 5th tergum. Genitalia not dissected for study.

Length: body 8.0 mm; wings 8.4 mm.
♀. Unknown.

Holotype ♂, PNG: NEW GUINEA (SE): Kokoda, 1200 ft (366 m), IX–X.1943, L.E. Cheesman. Paratypes: PNG: NEW GUINEA (SE): 2♂, same data as type; 2♂, Brown Riv, 5 m, X–XI.1960, rain forest, J.L. Gressitt; 2♂, Aroa Riv, Doa Estate and Aroana Estate, 4.X, 2.XII.1963, D.K. McAlpine. NEW GUINEA (NE): 1♂, Busu Riv, E of Lae, 100 m, 15.IX.1955, Gressitt. Also, 1 teneral specimen lacking any coloring in the wing but apparently belonging to this species, from SE New Guinea, Lae area, 6–20 m, 22.VII.1959, with the label "*Donax canniiformis*" J.L. Gressitt. The latter is not being designated as a paratype.

Type and 1 paratype in British Museum (Natural History), other paratypes in the collections of the Bishop Museum, Australian Museum, Sydney, and the University of Hawaii.

Dacopsis quadripunctata (Malloch), **new combination**

Sophira quadripunctata Malloch, 1939, Ann. Mag. Nat. Hist. ser. 11, **4**: 255. Type-locality: Lunga, Guadalcanal, Solomon Is. Type ♀ in British Museum (Natural History).

This species fits near *signata* (Walker) but differs by having the wings chiefly yellow fumose, intensely so at base and on anterior portion; posterior portion of wing broadly gray-brown fumose; 6th tergum with a pair of black spots and ♀ ovipositor base rather slender, equal in length to terga 4 + 5.

Length of body, excluding ovipositor: 8.0 mm.

For a more detailed description, refer to original and to Hardy (1958: 274).

Distribution. Known only from the Solomon Is.

Dacopsis signata (Walker), **new combination**

Seraca signata Walker, 1860, J. Proc. Linn. Soc. London, Zool. **4**: 165. Type-locality: Makasar, Celebes (Ujung Pandang, Sulawesi). Type ♀ in British Museum (Natural History).

Dacopsis dacina Hering, 1944, Siruna Seva **5**: 3. Type-locality: Amboina. Type ♀ in Naturhistorischen Museum, Wien. I have studied the type. **New synonymy.**

D. signata is related to *quadripunctata* (Malloch) and differentiated by having the 6th tergum of female all yellow, lacking black spots; the wings subhyaline, slightly yellowish, with the posterior portion nearly hyaline and the apical portion of cell Sc brownish fumose. Also the ovipositor base is comparatively short, about equal in length to the 5th tergum plus the visible portion of 6th.

For more descriptive details refer to Hardy (1958: 375, 1959: 196).

Distribution. Sulawesi, Ambon I and Philippines (Mindanao).

Genus **Tritaeniopteron** de Meijere

Tritaeniopteron de Meijere, 1914, Tijdschr. Entomol. **57**: 209. Type-species: *eburneum* de Meijere.

These are pale-colored flies which look very much like *Sophira.* The genus was previously treated as a synonym (Hendel 1915: 441, Shiraki 1933: 320). I resurrected it (Hardy 1958: 377) based upon the presence of strong sternopleural bristles; the short subcostal cell, scarcely over ½ as long as 2nd costal cell; and the presence of oblique brown bands through apex of wing and a transverse band at level with base of vein M_{3+4}.

Six species have been placed in this genus: *eburneum* de Meijere from Java; *elachispilotum* Hardy and *tetraspilotum* Hardy from Thailand; *excellens* (Hendel) from Taiwan; *flavifacies* Hardy from the Philippines; and *punctatipleurum* (Senior-White) from Sri Lanka. I have treated these in the following publications: Hardy 1958: 377–80, 1973: 114–17, and 1974: 92–93.

Tritaeniopteron eburneum de Meijere

Tritaeniopteron eburneum de Meijere, 1914, Tijdschr. Entomol. **57**: 209. Type-locality: Tandjong Priok, Java.

This species is differentiated by having a prominent black mark on the lower median portion of face and abdominal terga 3–5 with complete black basal bands.

Thorax yellow with a black spot behind each humerus which connects with a vertical black stripe which extends over mesopleuron and sternopleuron. Also an almost complete circle of black present on posterior ½ of mesonotum; the arms of this mark extending longitudinally to just behind suture and curved inward at this point toward mid line. Wings subhyaline, yellowish basally and with 2 brown bands extending obliquely through apical ½ of wing: 1 from lower apex of cell R_3, filling all of apex of R_5, extending across m crossvein almost to wing margin in cell M_4 and 1 from apical portion of cell R_1 through middle of R_3, across r-m crossvein into upper ½ of cell 1st M_2. Also with a narrow brown band extending transversely from end of vein Sc to lobe of cell Cu. Subcostal cell subhyaline. Wing as in Hardy 1958: 376, Fig. 2c.

Length: body, 5.5 mm; wings, 6.0 mm.

Distribution. Java.

Xenosophira Hardy, **new genus**

This genus fits near *Sophira* but differs by having a strong spine on the costa at the end of subcosta; 2 pairs of dorsocentral bristles, the posterior pair situated near hind margin of mesonotum directly in line with basal scutellars and the anterior pair in line with anterior supraalars; scutellum flat and bare, devoid of setae; sternopleural bristles present; 3rd costal section, between apices of Sc and R_1, very short, about ½ as long as 2nd section, and upper superior fronto-orbitals and postverticals strong, about equal in size to outer vertical bristles. The genus also shows close relationship to *Gastrozona* Bezzi; the wing markings are very similar to those of some *Gastrozona.* It is differentiated by the rudimentary ocellar bristles; by the presence of the extra dorsocentral bristles; by the scutellum being flat and bare rather than very slightly rounded dorsally and covered with fine setae; by the strong costal spine at the end of the subcosta, rather than a short spine; by having the last section of vein R_{4+5} gently convex, rather than nearly straight; and by the lobe of cell Cu gradually attenuated to a sharp point, rather than being almost straight-sided along the basal portion (FIG. 20a, 21b). The genus is further characterized as follows.

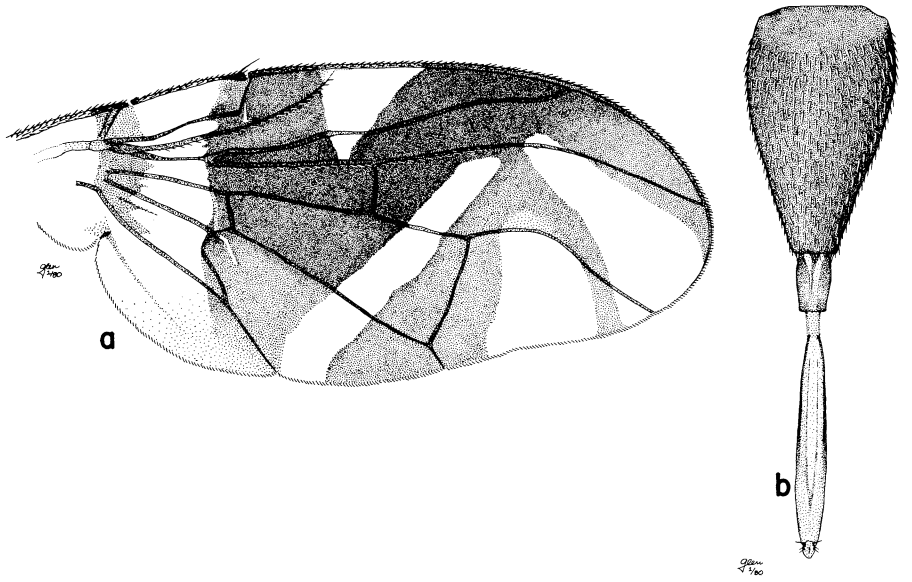


FIG. 20. *Xenosophira invibrissata*: a, wing; b, ♀ ovipositor.

Head shaped as in *Sophira,* face gently concave medianly as seen in lateral view, only the upper median portion raised. Aristae moderately long plumose. Postvertical and genal bristles yellow to rufous. Thorax with full complement of bristles, with 4 scutellars and no trace of secondary scutellars. Mesonotum shining dark brown to black, covered with gray pollinosity and with a rather broad, yellow-white band down each side of mesonotum and another yellow-white band down middle. Front femur with about 4 posteroventral bristles on apical ½ and with scattered erect bristlelike setae over posterodorsal surface. Middle femur with a row of short, erect, bristlelike anterior setae extending about ⅔ the length of segment. Middle tibia with 1 strong, plus 4 or 5 short black apical spines and with a series of about 5 evenly spaced, stout, brownish red, posterodorsal spines scattered over segment. Hind femur with 2 or 3 preapical, dorsal, short bristles. Hind tibia with 1 erect anteroventral bristle beyond middle and with a row of 4–6 short, erect anterodorsal bristles over median portion. Wings with basal portion hyaline, to a level almost to end of 2nd costal cell, except for a brown vertical streak at level just beyond humeral crossvein; with remainder of wing brown, except for a hyaline wedge from costa, starting at tip of R_1, extending to vein R_{4+5}; a large hyaline wedge from upper apex of cell 2nd M_2 and lower apical portion of cell R_5 extending just over vein R_{4+5} into lower portion of cell R_3; another oblique wedge from lower apical portion of cell M_4 through cell 1st M_2 and cell R_5 but not reaching vein R_{4+5}; also a large hyaline wedge from apex of cell 2nd M_2 into lower portion of cell R_5 (FIG. 20a). Third costal section, between apices of Sc and R_1 very short, about ½ as long as 2nd costal section. Vein R_{2+3} very gently curved and vein R_{4+5} setose almost to its apex on upper side. The r-m crossvein is situated near apical ⅗–⅔ of cell 1st M_2 and the lobe of cell Cu is rather elongate, gently attenuated to a sharp point at apex and with the lobe approximately 3× longer than vertical section of vein Cu. Abdomen shining black with narrow yellow crossbands on terga.

Type of genus: *invibrissata,* n. sp.

The name is from the Greek xenos = stranger or guest, combined with sophira. It is feminine.

Xenosophira invibrissata Hardy, **new species** FIG. 20a–b

This species fits near *vibrissata,* n. sp. but differs by having only fine, short, inconspicuous, pale setae along the genal margin, lacking distinct vibrissae; the inverted

brown, V-shaped, mark in posterior portion of wing connected with the broad, brown marking over the middle of wing (FIG. 20a); the median yellow vitta of the mesonotum broad for most of its length, equal to the distance between the prescutellar bristles; and the scutellum entirely yellow, except for a very slight discoloration of brown at the extreme base of each side.

♀. *Head.* Predominantly pale yellow with a broad discoloration of brown extending through median portion of front, and with a dark brown to black mark on lower sides of face and upper genal margins. A secondary inferior fronto-orbital represented by a small, black, hairlike bristle located at level of upper margin of lunule, very similar to that found in *Sophira* (*Kambangania*). Third antennal segment about 2× longer than wide, extending ⅔ length of face. *Thorax.* Yellow with 2 broad, dark brown vittae extending from anterior to posterior margins between prescutellar and inner postalar bristles. Also a thin line of brown extending along extreme lateral margin of mesonotum from near outer postalar bristles to anterior notopleural, this marking crossing over and covering the top margin of each mesopleuron, over the spiracle onto upper margin of propleuron. Upper margin of pleuron broadly white, wing base to front margin and lower portion of pteropleuron and sternopleuron yellow, tinged with brown, hind portion of pleuron brown. Propleuron with a rather dense patch of yellow setae. Metanotum shining dark brown to blackish. Halteres yellow. *Legs.* Entirely yellow except for a tinge of brown on apical tarsomeres. Fitting characters described under genus above. *Wings.* As noted above and as in FIG. 20a. *Abdomen.* First tergum entirely yellow, tinged with brown; 2nd narrowly dark brown to black along base, pale yellow apically and 3–5 dark shining black except for narrow yellow apices. Sixth tergum very short, completely hidden by 5th. Ovipositor base large, broad, equal in width to apical portion of abdomen and in length to terga 2–5. Piercer as in FIG. 20b.

Length: body, excluding ovipositor, 6.0 mm; wings, 6.7 mm.

♂. Fitting description of ♀, except face entirely yellow and pleura predominantly pale colored, tinged only faintly with brown on lower portions and distinctly brown only on hypo- and metapleura. First 2 abdominal terga entirely shining dark brown to black except for a narrow yellow apex of 2nd; 3rd and 4th black except for broad yellow apices; and 5th tergum entirely black. Genitalia not dissected for study. Surstyli elongate, apparently very similar to those of *Sophira*.

Length: as in ♀.

Holotype ♀, PNG: NEW GUINEA (NE): Kassam Pass, 1550 m, 14–20.XI.1967, malaise trap, P. Colman (BISHOP 11,604). Allotype ♂, NEW GUINEA (NE): Arau, 40 km E of Kainantu, 1400 m, 16.X.1959, T.C. Maa (BISHOP). Paratypes: 3♂,7♀, PNG: NEW GUINEA (NE): Morobe Distr, Wau, 1200–1300 m, V–X.1961–1971, R.W. Crosskey, J. Sedlacek, Y. Hirashima; Morobe Distr, Arabuka-Moime, 19–2100 m, V.1968, J. & M. Sedlacek; Mobitei, Torricelli Mts, 750 m, III.1955, W.W. Brandt; Bulolo, Mt Susu, 30.III.1979, H. Roberts.

Type, allotype and some paratypes returned to the Bishop Museum. Other paratypes in the collections of the British Museum (Natural History); U.S. National Museum; Forest Research Station, Bulolo, Papua New Guinea; and the University of Hawaii.

Xenosophira vibrissata Hardy, **new species** FIG. 21a–b

This species is readily differentiated from *invibrissata* by the presence of a row of strong black bristles along the genal margin (FIG. 21a); by having 2 strong inferior fronto-orbital bristles; by the very narrow median vitta down mesonotum, the black base to scutellum and the differences in wing markings as shown in FIG. 20a and 21b.

♂. Row of black vibrissae extending along the entire genal margin almost to genal bristle. Lower inferior fronto-orbital bristles about ⅔ as long as upper pair. Occiput with a large brown spot on each side

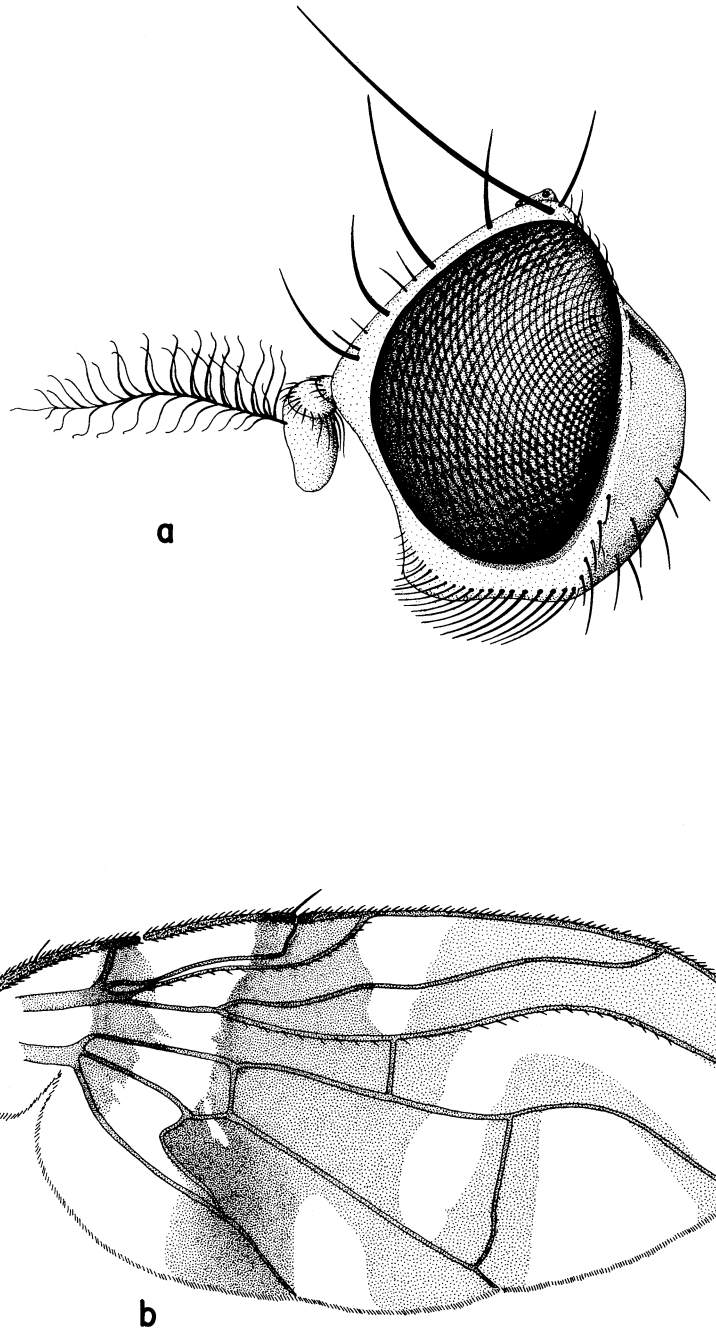


FIG. 21. *Xenosophira vibrissata*: a, head, lateral; b, wing.

near upper margin. Median yellow-white vitta on mesonotum comparatively broad on anterior margin, extending beyond bases of inner scapular bristles on each side but narrowing sharply before suture and extending as a thin yellow-white line to about level with posterior dorsocentral bristles. Hind border of mesonotum entirely dark brown to black, this color extending onto anteromedian portion of scutellum, almost as far as basal scutellars. Each propleuron with 1 or 2 short, black, bristlelike hairs in addition to the fine yellow hairs. Wing markings yellow with a faint tinge of brown; the inverted V-shaped mark in posteroapical portion extends from margin in upper apex of cell 2nd M_2 into median portion of cell R_5, curving downward to margin again, across m crossvein and joining with yellow marking which extends through middle of wing in apex of cell M_4 but not joined on upper portion (FIG. 21b). Also a hyaline mark extends through median portion of cell M_4 from margin almost to vein M_{3+4}. First 2 terga largely yellow, tinged with brown except for broad yellow apical margin of 2nd, remainder of abdomen shining black except for narrow bands of yellow across terga 3 and 4. Genitalia not dissected for study. Otherwise fitting description of *invibrissata*.

Length: body, ♂ 5.8–6.0 mm; wings, 7.3 mm.

♀. Unknown.

Holotype ♂ (BISHOP 11,605) and 1♂ paratype, PNG: NEW GUINEA (NE): Huon Penin., Salawaket Range, Tuwep, 1350 m, IX.1956, E.J. Ford, Jr.

Type returned to the Bishop Museum. Paratype in the University of Hawaii collection.

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