

## REVISION OF THE WORLD SPECIES OF EUPHUMOSIA (Diptera : Calliphoridae)<sup>1,2</sup>

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*Abstract:* The genus *Euphimosia* was proposed by Malloch (1926) for the reception of one species, *Calliphora papua* Guérin-Ménéville. Paramonov (1960) reviewed the genus and recognized seven species in it, all but one previously described and referred by their authors to other genera; later Paramonov (1961) added another described species and six new species and revised and enlarged his key to include these. In the present work we are recognizing 33 species, 19 of which are being described as new. Preliminary work on this project was done by James and the species designated by him as new are credited herein to Torgerson and James; the remaining species were essentially the discoveries of Torgerson and are credited to him alone.

The genus is very limited in its geographical range, being confined to New Guinea, adjacent islands, and northern Australia. Paramonov believes, probably correctly, that the Australian distribution represents a dispersion from the New Guinea area; certainly, it is in the latter area where the widespread speciation has taken place.

The biology of the group is almost wholly unknown. Paramonov, however, recorded the collection of flies from carrion traps, and several specimens examined by us were labelled as being taken from human excrement. We assume, therefore, that the breeding and feeding habits are typical of the scavenger members of the family.

At first sight, these flies might be mistaken for tachinids, as there are Tachinidae and Muscidae in the same geographical area that bear a close superficial resemblance to *Euphimosia*. The genus is a homogenous one; quantitative studies on the basis of over-all comparison indicate a close interrelationship, as well as a discrete distinctness from other genera, even such similar ones as *Phumosia*. Four sets of characters which aid in classification are: (1) the color of the anterior spiracle, which may be black (or very dark), yellow or white; (2) the color of the tegula and basicostal sclerite, which may be black or yellow; (3) the shape and proportions of the white or yellow markings of the mesonotum; and (4) abdominal coloration, including metallic semitransparent and whitish or yellowish areas. Male genitalia, which have never previously been examined for the group, provide some valuable

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means of differentiation; these are illustrated for many of the species.

Comparisons of species are often difficult because the patterns of the bright pollinose areas of the mesonotum frequently change with the angle of observation and the intensity of light. We have tried to point out these aspects of variability whenever they occur and to indicate under what conditions pertinent observations were made.

The terminology used is that of Townsend (1937) except in reference to the genital complex in which case the terminology of Hall (1948) is used. In designating abdominal segmentation, the apparent, not the morphological, number is used. All measurements in micrometer units (30=1 mm).

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#### Genus *Euphumosia* Malloch, 1926

*Neopollenia* Surcouf, 1919 (1914), *Nouv. Arch. Mus. Hist. Nat.* (5) 6: 45, 50; not Brauer.

*Euphumosia* Malloch, 1926, *Ann. Mag. Nat. Hist. ser. 9*, 17: 501; 1934, *Mem. Mus. Roy. Hist. Nat. Belg.*, 1935, hors ser. 4, 10: 11.

Head width considerably greater than height. Eyes bare in both sexes; in ♂ closely contiguous for a considerable distance above, width of frons never exceeding .02 head width, and facets much larger in front than along hind margin; in ♀, eyes broadly separated with a less distinct contrast in size of facets. Parafacials bare. Face without a central carina; numerous black setulae on lower margins of facialia which continue below vibrissae as a row of bristles along oral margin. Vibrissae long and decussate, set distinctly above epistoma, the latter, when viewed in profile, protruding distinctly forward from clypeus. Proclinate and reclinate fronto-orbitals present in ♀, absent in ♂. Genae generally about as broad as length of 3rd antennal segment with numerous pale yellow setulae along ventral margin, these setulae also covering lower surface of postgena and gulomentum. Third antennal segment generally 3× length of 1st and 2nd combined. Arista longer than rest of antennae with long hairs reaching to apex. Back of head slightly concave with a single row of short, stout, postoccipital setulae.

Mesonotum with 3 dark vittae which contrast with a lighter pollinose background; depending on angle of observation, the dark stripes as well as the lighter pollinose areas may appear like mesonotal ground color. Propleuron always with 1 strong bristle and sometimes also a weaker bristle present, with additional fine hairs. Pteropleuron with long hairs and no strong bristles; postalar wall also with fine hairs; parasquamal tuft absent. Supraspiracular convexity slightly pubescent, but not strongly pilose as in *Phumosia*. Both spiracles extremely large. Preacrostichal bristles 2; presutural dorsocentrals 2; preintraalars 2; presupraalars 1; posthumeral bristle absent; postacrostichals 3; postsutural dorsocentrals 3; postintraalars 2; postsupraalars 3; sternopleuron with 2 strong anterior and 1 strong posterior bristle. Hypopleural bristles yellow or black. Fore femur with 3 rows of strong bristles on dorsal, posterodorsal, and posteroventral surfaces; hind femur with 3-4 bristles

on posteroventral surface, a strong row on anteroventral surface, and numerous bristles and hairs on anterior and dorsal surfaces. Wing venation in general *Calliphora*-like. Third longitudinal vein ( $R_{4+5}$ ) with a number of setulae basally above at the node. Stem vein and squamae without setulae.

Margin of abdominal tergites 3 and 4 with a row of strong bristles. Sternites with numerous bristles.

Male genitalia similar to those of several species of *Tricyclea*. Inner forceps quite large, divaricate apically with great variation basally throughout genus; outer forceps slender, considerably smaller than inner forceps, usually clubbed distally, and usually obscured from dorsal view by inner forceps. Aedeagus generally quite broad with 2 characteristic heavily-sclerotized lateral guards. Intromittent organ appearing membranous or slightly to moderately sclerotized throughout all or part of both basal and apical areas; from a lateral view the apical portion appears to have a half-twist which is characteristic throughout the genus; heavily sclerotized areas of aedeagus usually glossy black; genitalia with many dark bristles and setulae, especially on inner forceps.

Type-species: *Calliphora papua* Guérin-Ménéville, by original designation.

#### KEY TO KNOWN SPECIES OF EUPHUMOSIA

1. Femora yellowish or reddish yellow ..... 2
- Femora brown, black, or metallic green or blue ..... 15
- 2 (1). Species predominantly yellow brown in ground color; at least thorax wholly yellowish brown in ground color and lacking bright yellow pollen ..... 3
- Species predominantly black or metallic green, blue, or purple in ground color, or at least with dark mesonotal vittae distinctly black; bright yellow pollen at least on thorax ..... 5
- 3 (2). Mesonotum when viewed from behind with 3 subshining vittae, apparently lacking in pollen, which enclose 2 pollinose vittae (when viewed from in front the apparently pollinose and subshining areas are reversed) ..... 4
- Mesonotal pattern of pollinose and non-pollinose vittae obscure, whether viewed from in front or behind..... **evittata**
- 4 (3). The 3 subshining vittae, as viewed from behind, isolated, not confluent ... **reversa**
- The 3 subshining vittae, as viewed from behind, broadly confluent posteriorly in the form of a cross band ..... **maai**
- 5 (2). Tegula and basicosta black..... 6
- At least basicosta clear yellow ..... 9
- 6 (5). Fourth tergite with yellowish or golden pollinose fascia on anterior margin..... 7
- Fourth tergite metallic green, without a pollinose fascia ..... **obscura**
- 7 (6). Black stripes of mesonotum broad and broadly confluent behind; isolated submedian golden stripes much narrower than black stripe between them; at least mesopleuron largely blackish or brownish; 1st abdominal tergum largely blackish..... **annulata**
- Black stripes of mesonotum narrower if confluent behind; submedian golden stripes broader than dark stripe between them; pleura wholly yellow; 1st abdominal tergum with only limited black areas dorsolaterally..... 8
- 8 (7). Black mesonotal stripes confluent posteriorly, consequently isolating submedian

- golden pollinose ones; scutellum dull black..... **discolor**  
 Black mesonotal stripes not confluent and consequently isolated by golden  
 pollinose area; scutellum metallic purple.....**illucens**
- 9 (5). Abdomen uniformly blue violet.....**intermedia**  
 Abdomen blue violet at most only at apex.....10
- 10 (9). The 3 stripes of mesonotum light brown, of same size and form, straight, parallel  
 sided and parallel to one another, isolated from one another (Aru Islands) .....  
 ..... **eristaloides**  
 The 3 stripes of mesonotum black or brown and connected behind by a black  
 or brown cross band of comparable width..... 11
- 11 (10). Legs entirely fulvous or tawny yellow, at most certain tarsal segments darkened... 12  
 Tarsi and hind tibia brown to black, but hind tibia distinctly darker than femora...13
- 12 (11). Abdomen semi-pellucid, fulvous yellow basally, becoming metallic greenish  
 blue on 3rd and 4th tergites, the former less distinctly so basally, and with-  
 out white pollinose bands; wings yellowish hyaline, the color a little more  
 intense costally ..... **leopoldi**  
 Abdomen almost uniformly opaque brownish to brownish black without any  
 metallic coloration, dusted in a microtesselated pattern which causes small  
 subshining spots to appear first on one side and then on the other, of in-  
 dividual abdominal setulae, depending on light incidence; wings distinctly  
 brown clouded along costa and major longitudinal veins..... **microtesselata**
- 13 (11). Posterior 1/2 of 2nd, and all of 3rd and 4th tergites, dull blackish with tes-  
 selated pattern of yellow pollen; wing distinctly infuscated along costa and  
 major longitudinal veins, especially near middle of wing where effect of a  
 poorly defined transverse band is produced..... **tesselata**  
 Third and 4th tergites dark, somewhat metallic with yellow bands which may  
 or may not be overlaid with golden pollen; wings at most lightly infuscated... 14
- 14 (13). First abdominal segment except for a spot on each side of tergum and basal  
 1/2 to 1/3 of 2nd pellucid yellow, 3rd and 4th segments with yellow bands  
 situated slightly apically from anterior margin and overlaid with yellow  
 pollen.....**papua**  
 First abdominal segment, except for a narrow stripe which broadens laterally  
 and basal 1/3 to 1/2 of 2nd pellucid yellow; 3rd and 4th segments with  
 yellowish bands situated exactly on anterior margin, not overlaid with yellow  
 pollen..... **nitens**
- 15 (1). Submedian white or yellow pollinose stripes on mesonotum not or barely con-  
 tinued beyond suture; anterior spiracle brownish to almost black haired..... 16  
 Submedian white or yellow pollinose stripes continued for considerable dis-  
 tance beyond suture ..... 18
- 16 (15). Alar as well as thoracic squamae dark..... **spiraculata**  
 Alar squamae white, contrasting very distinctly in color with thoracic squamae...17
- 17 (16). Entire humerus, mesopleuron in large part, notopleuron, and sides of meso-  
 notum from humerus to suture bright yellow in ground color; pollen of  
 mesonotum and mesopleuron golden, contrasting distinctly with whitish  
 pollen of sternopleuron; traces of submedian stripes visible beyond the  
 suture ..... **crosskeyi**

- Humerus, mesopleuron, and mesonotum from humerus to suture not contrasting in ground color with rest of thorax, though there is usually considerable yellow on and around humeri; pollen of sternopleura whitish, not markedly contrasting with that of posterior part of mesopleuron, though the latter may be somewhat yellowish; submedian stripes ending abruptly at suture.  
..... **variegata**
- 18 (15). Mesonotum (except for 4 white stripes), scutellum and abdomen blue-green, *Lucilia*-like ..... 19  
Mesonotum never metallic green, or at most on prescutellar band showing through pollen ..... 20
- 19 (18). Abdomen uniformly metallic green..... **metallica**  
Abdomen metallic blue green, but with yellow fascia or markings ..... **nigrifacies**
- 20 (18). Black vittae of mesonotum connected posteriorly by a transverse area of same color, thus completely isolating submedian white to golden pollinose vittae...21  
Black vittae of mesonotum isolated from one another by submedian vittae and posterior pale color (see description of *phantasma*)..... 28
- 21 (20). Second tergite with semitransparent fascia involving ground color, sometimes with a white pollinose covering..... 23  
Fascia of 2nd tergite not semitransparent and not involving ground color ..... 22
- 22 (21). Second tergite metallic blue green, if pollinose then only very slightly, but not as a distinct fascia ..... 26  
Second tergite metallic violet or blue green in ground color, but with distinct white or whitish-yellow pollinose fascia ..... 27
- 23 (21). Tegula and basicosta both black..... 24  
Basicosta clear yellow, contrasting with black tegula; hairs on anterior part of genae partly to mostly black ..... **paramonovi**
- 24 (23). Larger species, usually 14-15 mm in length, but sometimes as small as 10 mm; transverse pale pollinose area in front of scutellum golden, prominent, completely concealing ground color, and reaching almost or quite as far forward as 2nd transverse row of prescutellar bristles ..... **magna**  
Smaller species 9-10 mm in length, transverse pollinose area in front of scutellum whitish to pale yellowish, largely disappearing when viewed from in front, not completely concealing ground color when viewed from behind and reaching no farther forward than 1st row of prescutellar bristles ..... 25
- 25 (24). Genae black haired with a prominent brown pollinose spot; area underlying thin prescutellar band of pale pollen presumably colored as disc of mesonotum ..... **abbreviata** ♂  
Genae yellowish haired except above, without a distinct brown pollinose spot; area underlying thin prescutellar band of pale pollen with a distinct greenish tinge, contrasting with mesonotum and scutellum..... .. **subalba**
- 26 (22). Stripes on mesonotum yellow; antennae black (Amboina Island)..... **bivittata**  
Stripes on mesonotum whitish; antennae brownish ..... **similis**
- 27 (22). Second tergite with white pollinose fascia; genae with prominent brown pollinose spot; anterior spiracle brown haired; prescutellar area of mesonotum distinctly metallic green..... .. **abbreviata** ♀  
Second tergite with whitish-yellow pollinose fascia; genae without distinct

- brown pollinose spot; anterior spiracle whitish yellow; prescutellar area of mesonotum yellow pollinose..... **cuprina**
- 28 (20). Median black vittae barely extending beyond suture, distinctly shorter than lateral ones ..... **elegans**  
 Median black vittae reaching distinctly beyond suture, about as long as lateral ones ..... 29
- 29 (28). Black vittae reaching only to 1st postsutural dorsocentral and acrostichals; scutellum dull black; abdomen with purplish coloration; anterior spiracle almost black haired; genae without dark spot ..... **lieftincki**  
 Black vittae of mesonotum reaching 2nd (row of) postsutural acrostichals and dorsocentrals; scutellum and parts of abdomen violet or blue green..... 30
- 30 (29). Fascia of 2nd tergite yellowish, semitransparent, covered with white pollen; 4th tergite with white pollen only on anterior margin.....31  
 Fascia of 2nd tergite not semitransparent, but densely white pollinose; 4th tergite completely covered with white pollen..... **femorata**
- 31 (30). Mesopleura and sternopleura yellow pollinose, or mesopleura yellow pollinose in distinct contrast with the white pollen of sternopleura..... 32  
 Mesopleura and sternopleura with a dense white pollen contrasting with yellow pollen of mesonotum ..... **albula**
- 32 (31). Black mesonotal vittae isolated by submedian yellow vittae; gena with large brownish spot; prescutellar area with an extensive bluish-green or blue ground color showing through thin yellow pollen ..... **setigera**  
 Black mesonotal vittae connected by a grayish-yellow phantasma<sup>4</sup>; gena without brownish spot; prescutellar area with dense golden pollen concealing ground color..... 33
- 33 (32). Anterior spiracle brown haired; sternopleura with white pollinose covering; 4th tergite metallic in ground color with a band of white or yellowish pollen on anterior margin ..... **phantasma**  
 Anterior spiracle yellow haired; sternopleuron golden on upper 3rd with greenish coloration partially masking pollen on lower 2/3; 4th tergite tawny in ground color with dense golden pollen covering entire tergite which varies with angle of light..... **flavida**

**Euphmosia evittata** Torgerson and James, new species

♂. Head yellow in ground color with pale yellow and golden pollen; parafacials and parafrontals yellow, covered with a pale yellow or golden pollinosity; interfrontalia orange brown; occiput with black or sometimes with brownish-black upper portion posterior to hind margin of eye, central portion covered with a white pollen (sometimes almost all); cerebrale pale yellowish. Frontal bristles usually 7-9. Face a paler yellow with whitish pollen. Ocellars strong, postocellars weak, but distinguishable from the postoccipital fringe. Vibrissae set low, but above oral margin and separated by a distance slightly greater than that of each from eye margin. Genae about as broad as length of 3rd antennal segment, covered with a pale yellow pollen, hairs of anterior part short, blackish, posteriorly they

4. The term "phantasma" refers to the "phantom-like" cross band which connects the vittae, but is only visible at a certain angle and light intensity.

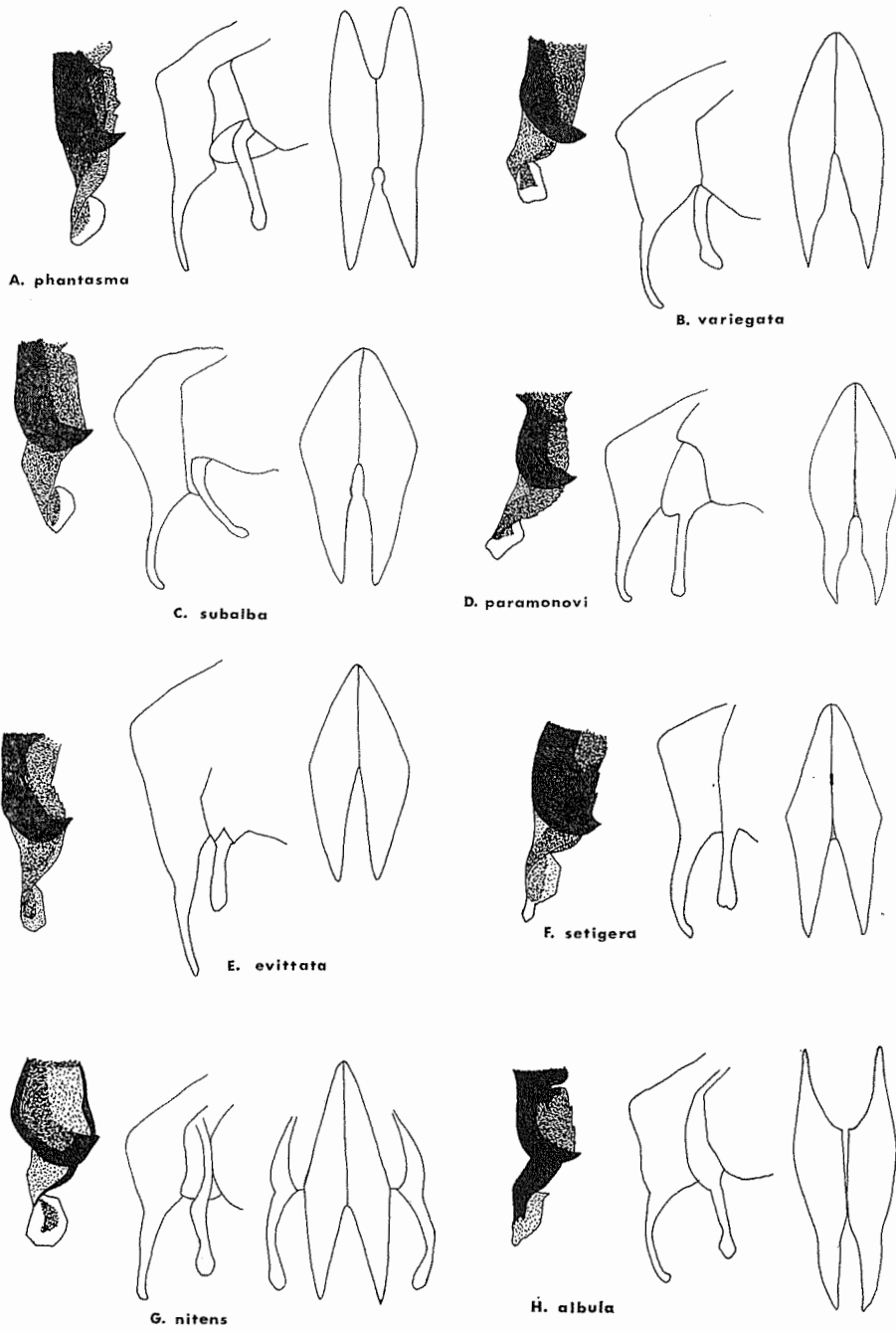


Fig. 1. *Euphumosia*, genital complex of male (bristles and setulae omitted). A, *phantasma*; B, *variegata*; C, *subalba*; D, *paramonovi*; E, *evittata*; F, *setigera*; G, *nitens*; H, *albula*.

are longer and yellow. Bristles along side mouth cavity black. Head measurements: head width, 116; frons width, 2; parafacials at narrowest, 7; between vibrissae, 28; vibrissae to eye 23; vibrissae to prelabrum, 11. Antennae variable, usually 1st and 2nd segments yellow, 3rd segment brown, sometimes entire antennae may be yellow. Palpi yellow, very slender, longer than antennae. Proboscis yellow, sometimes brownish yellow.

Thorax largely yellowish in ground color; pleura yellow with a pale yellowish-white pollinosity, humeri and mesonotum with dense pale yellowish pollen partially covering a yellowish-brown ground color. Pollinose and nonpollinose mesonotal vittae obscured whether viewed from in front or behind. Scutellum yellow, also covered with some pale yellowish pollen. Hairs on mesonotum dark, those on pleura longer and yellowish, except those on mesopleura which are dark. Hypopleural bristles yellow. Preachrostichal row with one weak to very weak anterior bristle in front of the usual strong one. Upper and lower squamae both yellow. Halteres slender, yellow. Epaulet, basicostal sclerite, and subcostal sclerite yellow. Wings lightly infuscated. Stem vein bare. Legs including coxae yellow, tarsi somewhat darkened apically.

Abdomen variable, yellowish in ground color becoming more or less darkened on apical segments and covered with a grayish-yellow pollen, the extent of which seems to vary from specimen to specimen. Usually 1st tergite yellow, semitransparent with grayish-yellow pollen dorsolaterally. Second also covered with this pollen. Third and 4th tergites completely masked by grayish pollinosity. First and 2nd abdominal sternites yellow with grayish pollen on posterior margin, remaining sternites completely pollinose. Second tergite with weak marginal bristles, but distinguishable from those on disc. Genitalia as in fig. 1E. Length 9-10 mm.

♀. Slightly larger than ♂, 10-11 mm. Frons at vertex 29, and at antennal base, 34. Two proclinate and 1 reclinate fronto-orbital bristles and outer vertical is equal in strength to inner vertical. Dense grayish-yellow pollen not as prevalent as in ♂. Abdomen dull subshining brownish yellow with small areas of yellow pollen on dorsal and dorsolateral surfaces of all tergites. Sometimes pale yellowish pollen on 4th tergite. Grayish-yellow pollen of sternites less extensive.

Holotype ♂ (BISHOP 7144), NW New Guinea, Swart Val., Karubaka, 1300 m, 7.IX.1963, J. L. Gressitt; allotype ♀ (BISHOP), same data but 1400-1600 m, 8.IX.1963. Paratypes: NE New Guinea: 5♂♂, 19♀♀, Wau, Morobe Distr., 1200 m, 4-7.I, 5.II, 10.III.1963, 1-4, 7-10. X.1962, 20-23.XII.1962, 1-4, 7-10, 11-18, 15-25.X, 1-20, 22, 23-25.XI, 1-3, 21-31.XII.1961, light trap, J. Sedlacek (BISHOP); 1♂, Finisterre Range, Saidor, Matoko, 29.VIII, 5.IX.1958, W. W. Brandt (BISHOP); 1♀, Eliptamin Val., 1200-1350 m, 16-31.VII.1959, W. W. Brandt (BISHOP); 1♂, Kassam, 1350 m, 38 km E of Kainantu, 7.IX.1959, T. C. Maa (BISHOP). W. New Guinea: 1♂, Fak-Fak, 1945, A. E. Pratt (BMNH); 5♂♂, 2♀♀, Wailibit, Batanta, 9, 13, 14, 18.VI.1949, Sten Bergman (R.M.S.); 14♂♂, 15♂♂, Bivach, 6, 8, 18-20.VIII, X.1949 (R.M.S.).

This species closely resembles several species of *Phumosia* as it does not have the bright yellow pollinose covering nor the characteristic mesonotal striping found in other members of the group. However, the absence of the long hairs on the suprascapular convexity will readily separate it from any *Phumosia* species.



***Euphumosia reversa* Torgerson and James, new species**

♂. Head yellow with yellow pollen; interfrontalia orange brown. Occiput brownish black on upper part, with thin whitish pollen; cerebrale yellow. Frontals 8, with several weak hairs; ocellars strong and postocellars weak. Inner verticals strong, outer verticals absent. Vibrissae situated above oral margin and separated by a distance greater than that of each from eye margin. Genae in profile quite broad, covered with pale yellow pollen, black hairs on anterior part, abundant dense yellow hairs on posterior region. Head measurements: head width, 130; frons width, 1; of parafacials at narrowest, 6; between vibrissae, 29; vibrissae to eye margin, 23; vibrissae to prelabrum, 10. Antennae quite long, 1st and 2nd segments yellow, 3rd light brown. Palpi yellow, slender, with black hairs. Proboscis yellow.

Thorax mostly yellow in ground color with golden pollinosity. Mesonotum brownish yellow, pleura and humeri brilliant golden yellow. Mesonotum when viewed from behind with 3 subshining vittae, isolated, not confluent behind, extending beyond suture to a level half-way between 2nd and 3rd postacrostichals and dorsocentrals. When viewed from in front color of vittae reversed with only 2 dark subshining median vittae. Scutellum dull brown. Hairs on mesonotum short and black, those on pleura longer and yellowish except for those on upper mesopleuron and humeri which are black. Acrostichals 2 : 3 with 1st presutural bristle being weaker than others; presutural dorsocentral with a very weak, but distinct bristle located between 2 strong bristles giving a 3 : 3 arrangement; postsupraalar with 3 strong and 1 very weak bristle. Both upper and lower squamae yellow. Halteres yellow. Epaulet, basicostal sclerite, and subcostal sclerite yellow. Wings lightly infuscated. Coxa, femur, and tibia yellow; tarsi more brownish yellow particularly apically.

Abdomen dull brownish yellow. First tergite yellow, semitransparent. Second tergite dark brown dorsally and yellowish, semitransparent lateroventrally; a bright yellow transverse area situated dorsomedially on anterior margin. Third and 4th tergites dull, or slightly subshining black with a brownish yellow dust on dorsal surface; color areas not clear-cut, but the brown of 2nd tergite grading into black of 3rd. Sternites dark except for first 2 and anterior 1/2 of 3rd which are yellow. All hairs and bristles black. Genitalia as in fig. 3D; aedeagus with distinct heavily sclerotized lateral guards; inner forceps quite broad, distinctly separated apically; outer forceps small, slender, slightly clubbed distally; hairs and bristles black to brown. Length 10-12 mm.

♀. Very similar to ♂. Frons gradually widening from vertex downward. Two proclinate and 1 reclinate frontoorbitals and inner and outer verticals of equal strength.

Holotype ♂ (BISHOP 7145), SW New Guinea, Vogelkop, Bomberi, 700-900 m, 10.VI.1959, J. L. Gressitt; allotype ♀ (BISHOP), NE New Guinea, Wau, Morobe Distr., 1200 m, 10.III.1963, light trap, J. Sedlacek. Paratypes: 1 ♀, same data as allotype; 1 ♀, SW New Guinea, Fak-Fak, A. E. Pratt (BMNH).

***Euphumosia maai* Torgerson and James, new species**

♂. Head yellow in ground color, yellow pollinose; interfrontalia orangish brown; occiput yellowish brown above, with yellow pollinosity. Frontals 6-8 with some weak frontal hairs; ocellars weak, postocellars about 1/2 as long as ocellars; inner verticals strong. Vibrissae set low, separated by a distance greater than that from each to eye margin. Genae broad, covered with whitish pollen posteriorly on ventral area, blackish

hairs on anterior part, posterior part with long yellowish hairs. Head measurements: head width, 132; frons width, 2; of parafacials at narrowest, 6; between vibrissae, 31; vibrissae to eye, 24; vibrissae to prelabrum, 5. Antennae yellow, 3rd segment much longer and broader than in *reversa*. Palpi yellow, slender, with short black bristles. Proboscis yellow.

Thorax yellow in ground color; pleura golden with a pale yellow pollinose covering. Mesonotum with 3 broad golden brown vittae, parallel sided, the 2 lateral ones slightly broader than median; these are joined behind by a broader transverse fascia of the same color which extends posteriorly to 3rd row of postsutural acrostichals and dorsocentrals; vittae separated by 2 submedian vittae formed by pale yellow pollen are narrower and extend beyond suture almost to 2nd row of postsutural dorsocentrals and acrostichals; sides and prescutellar border of mesonotum likewise pale yellow pollinose. Scutellum of same color as dark mesonotal vittae. Hairs on mesonotum short and dark, those on pleura longer and pale yellow except for those on upper mesopleura which are blackish. Presutural acrostichals with 1 weak anterior bristle. Upper and lower squamae both yellow. Halteres slender, yellow, with a somewhat darkened knob. Epaulet, basicostal and subcostal sclerite yellow. Wings lightly infuscated. Stem vein bare. Legs including coxa golden yellow, tarsi more brownish.

Abdomen variable. First tergite and anterior 1/2-2/3 of 2nd light brownish yellow, semitransparent, except for a blackish dorsomedian vitta or wedge which runs at least length of 2nd tergite and broadens posteriorly; sometimes all of 2nd tergite, except for this wedge, and anterior dorsolateral part of 3rd tergite may be transparent. Third tergite dull brownish orange to black, 4th tergite black; 3rd and 4th tergites with grayish silver pollen. The pollen may present a somewhat mottled effect under certain lights. First abdominal sternite yellow, 2-5, blackish brown. Genitalia as in fig. 2B; inner forceps quite narrow, almost pointed apically and becoming very broad with rounded basal angles and a small basal notch, outer forceps becoming gradually clubbed apically; intromittent organ lightly sclerotized and rounded apically; hairs and bristles brownish black. Length 10-12 mm.

♀. Slightly larger than ♂. Width of frons at vertex, 32, and at antennal base, 40. Interfrontalia brown. Third antennal segment brownish. Abdomen usually darker. Usually only 1st abdominal tergite yellow, semitransparent; 2nd, 3rd, and 4th tergites like apical ones of ♂. A moderately strong marginal row of bristles on 2nd tergite, but weaker than those on the 3rd and 4th.

Holotype ♂ (BISHOP 7146), NW New Guinea, Ifar, 400-500 m, 22.VI.1959, ex human excrement, T. C. Maa; allotype ♀ (BISHOP), NE New Guinea, Wau, Morobe Distr., 1200 m, 22.XI.1961, J. & J. H. Sedlacek; paratopotype ♂ (BISHOP), same data as holotype but 23.VI.1959. Paratypes: NE New Guinea: 1 ♀, Tsenga, 1200 m, Upper Jimmi Val., 15.VII.1955, J. L. Gressitt (BISHOP); 1 ♀, Finisterre Range, Saidor, Matoko, 28.VIII-5.IX.1958, W. W. Brandt (BISHOP); 2 ♀♀, Torricelli Mts., Mokai Vill., 750 m, 16-31.XII.1958, 1-23.I.1959, Brandt (BISHOP). NW New Guinea: 1 ♀, Waris, S of Hollandia, 450-500 m, 8-15.VIII.1959, Maa (BISHOP); 2 ♂♂, 4 ♂♂, Bivach, 8 & 9.VIII.1949, X.1949, Sten Bergman (RMS).

Unlike *evittata* in which the vittae are absent, in *maai* and *reversa* the vittae are present, but are represented by nonpollinose subshining areas of the mesonotum and are not darkened as in other species, but usually remain the same color as the mesonotum. In *reversa* the vittae are isolated and not confluent; this easily separates it from *maai* in which a broad cross band connects the vittae posteriorly.

***Euphumosia obscura* Paramonov**

*Euphumosia obscura* Paramonov, 1960, Nova Guinea, Zool. 1: 7. Thoracic pattern as in fig. 6A.

SPECIMENS EXAMINED: Holotype ♀ (CSIRO), Papua, Orokolo, X.1923, G. H. Murray; 1 ♀, Papua, Mekoe District, VIII.1962, R. Pullen (CSIRO)+

Paramonov, in his original description stated that the 4th tergite was entirely black, but upon examination of the type specimen and the other available specimen, we find it to be a dark metallic green except for a very dark band on the posterior margin which is visible only at certain angles.

***Euphumosia annulata* Torgerson, new species**

♂. Head light brown in ground color; parafacials and parafrontals with fine whitish-yellow pollen, but in certain light parafrontals appearing tawny-gray; genae with sparse whitish-yellow pollen, becoming brownish and with more of ground color evident near vibrissae; face and facialia dusted with very fine, shiny, whitish pollen; interfrontalia dark brown; frontal bristles 7-8; ocellars strong, postocellars weak, inner verticals strong, outer verticals absent; cerebrale and dorsal areas of occiput black, occipital orbits with whitish yellow pollen becoming almost white at lower margin of eye. Vibrissae set above oral margin and separated by a distance greater than that of each from eye margin. Head measurements: head width, 113; frons width, 1; of parafacials at narrowest, 6; between vibrissae, 23; vibrissae to eye margin, 20; vibrissae to prelabrum, 11. First and 2nd antennal segments brown, 3rd yellow basally becoming brownish apically. Palpi tawny. Proboscis dark brown.

Thorax dark brown to almost black in ground color, except for humeri and immediate areas which are tawny; mesopleuron dark brown in ground color with a yellowish pollen on upper posterior 3/4, pollen of anterior 1/4 of sclerite becoming very fine and exposing ground color; pteropleuron with yellowish pollen which partially covers brownish ground color; hypopleuron and pteropleuron with very fine yellowish pollen almost appearing as a pubescence which only partially masks ground color. Mesonotum with 3 black vittae, much broader than the 2 submedian yellow vittae which are isolated by a transverse band the same color as the dark vittae and extending posteriorly to a point almost reaching 3rd row of postsutural acrostichals and dorsocentrals (fig. 5A), when viewed from the front the black areas are covered with a coppery pollen. Extreme lateral area of mesonotum and area posterior to transverse black vittae with dense covering of bright yellow pollen completely masking ground color. Scutellum metallic black with blue reflections, but when viewed from an angle covered with violet-brown pollen. Acrostichals 2:2 with anterior bristle in both preacrostichal and postacrostichal row much weaker than posterior bristle; sometimes posterior presutural intraalar very weak or absent. Squamae yellowish. Epaulet, basicostal sclerite, and subcostal sclerite brown. Wings rather heavily infuscated along costal margin and major longitudinal veins, otherwise moderately brown throughout. Femur yellowish to reddish brown, tibia and tarsi black.

First abdominal tergite largely black with slight reddish-brown semitransparent area on anterior margin. Second, 3rd, and 4th tergites each with a tawny-brown semitransparent fascia on anterior margin which is completely covered by a yellow pollinose band, the

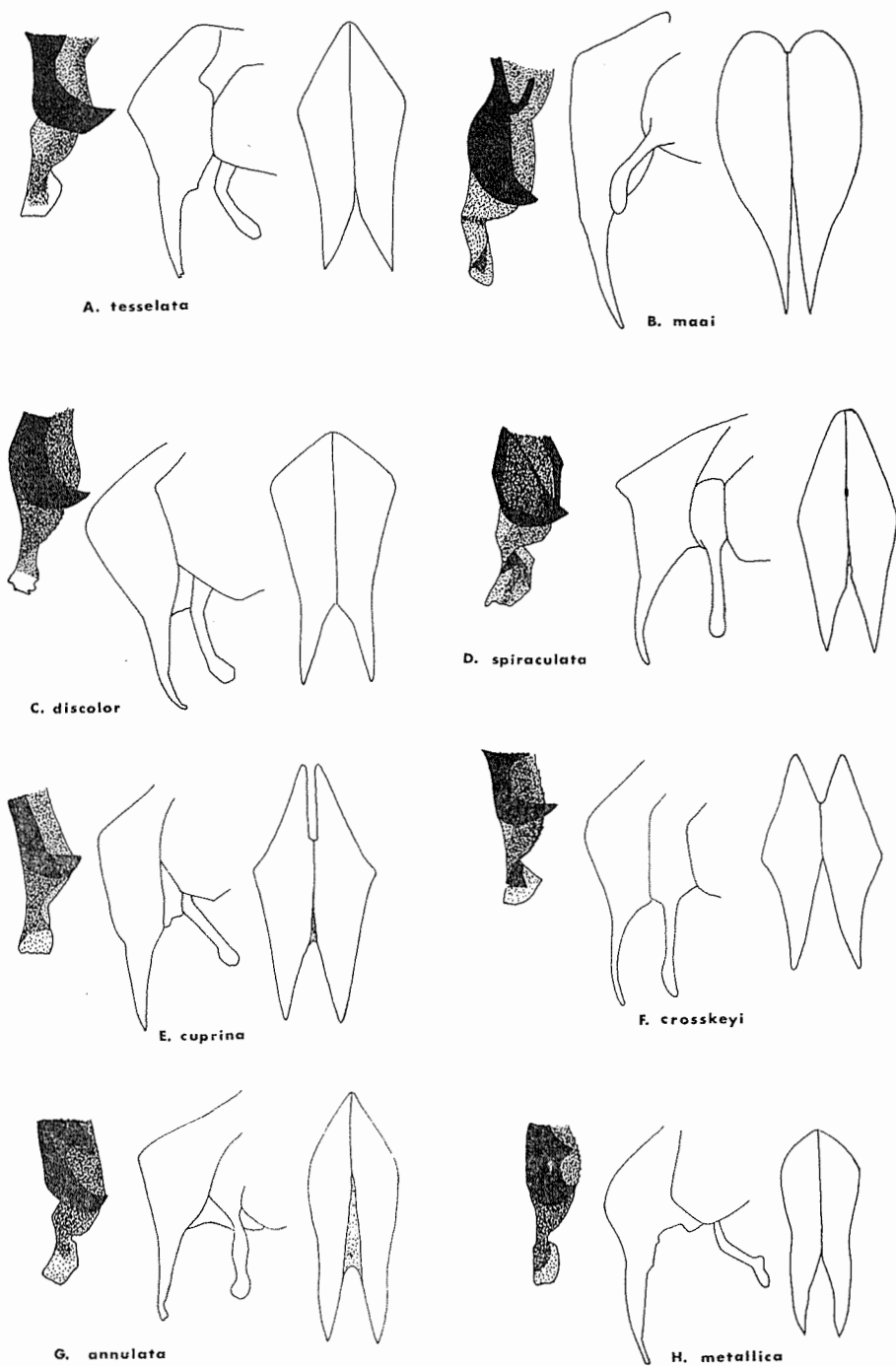


Fig. 2. *Euphmosia*, genital complex of male (bristles and setulae omitted). A, *tessellata*; B, *maai*; C, *discolor*; D, *spiraculata*; E, *cuprina*; F, *crosskeyi*; G, *annulata*; H, *metallica*.

semitransparent fascia usually visible only at certain angles, remainder of these tergites metallic black and blue green. Sternites yellowish brown becoming darker posteriorly. Genitalia as in fig. 2G; inner forceps widely separated apically and continuing basad as a groove (indicated by stipling), outer forceps clubbed apically and with a slight lateral swelling proximal to apical club; lateral guard not extending beyond edge of aedeagus from a lateral view. Length 8-9 mm.

♀. Very slightly larger than ♂. Frons gradually widening from vertex downward, at vertex, 28 and at antennal base, 35. Two reclinate fronto-orbitals with anterior bristle much stronger than posterior one and 1 strong proclinate fronto-orbital bristle; outer verticals slightly weaker than inner verticals. Except sexually otherwise as ♂.

Holotype ♂ (BISHOP 7147), NE New Guinea, Torricelli Mts., Siaute, sea level, 9-17.X. 1958, W. W. Brandt; allotype ♀ (BISHOP), same data. Paratypes: NW New Guinea: 3♂♂, Nabire, Geelvink Bay, 0-30 m, 2-9.VII.1962, J. L. Gressitt (BISHOP). SW New Guinea: 1♂, Vogelkop, Fak-Fak, S. coast of Bomberai, 100-700 m, 4-11.IV.1959, and Agric. Station, 1. VI.1959, T. C. Maa (BISHOP); 2♂♂, 1♀, Fak-Fak, A. E. Pratt; 1♀, Wataekwa River, VII.1910, A.F.R. Wollaston (BMNH); 1♀, Hunkool, G. V. Hanson.

In Paramonov's key, *annulata* will trace to *obscura* and superficially they are very similar. Two characteristics which will easily differentiate them are: (1) in *obscura* the transverse black band on the mesonotum reaches the 3rd row of postsutural acrostichals and dorso-centrals which it does not in *annulata* and (2) the 4th tergite in *annulata* has a tawny brown semitransparent fascia which is completely covered with yellow pollen, while the 4th tergite of *obscura* is metallic green with no pollen.

#### ***Euphumosia discolor* Torgerson and James, new species**

♂. Head yellowish in ground color; parafacials, parafrontals, genae, and lower occipital orbits with a dense whitish pollinose covering, occipital orbits becoming golden pollinose above; facialia brownish black; interfrontalia orange brown; pollen of face whitish; occiput with a black ring posterior to hind margin of eye, central portion with whitish pollen; cerebrale brownish black. Frontal bristles 7-9; ocellars strong, postocellars weak; inner verticals quite strong, outer verticals much weaker, but distinguishable from postoccipital fringe. Vibrissae separated by a distance about equal to that of each from eye margin. Head measurements: head width, 108; frons width, 3; of parafacials at narrowest, 7; between vibrissae, 26; vibrissae to eye margin, 23; vibrissae to prelabrum, 9. First and 2nd antennal segments tawny at base with brownish upper side. Palpi yellow. Proboscis dark brown.

Thorax mostly golden yellow in ground color, black or blackish on most of mesonotal disc; pleura sometimes lighter in color than mesonotum and sides of mesonotum posterior to suture sometimes brownish black. Pollen of mesonotum bright yellow sharply contrasting with whitish pollen of pleura. Mesonotum with 3 longitudinal black vittae; 2 broad lateral and a narrower median vittae joined posterior to suture by a transverse band of same color which extends posteriorly to a level slightly beyond 2nd row of postsutural acrostichals and dorsocentrals (fig. 5F). Two isolated, submedian, yellow pollinose vittae extend posteriorly beyond suture to level half way between 1st and 2nd row of postsutural acrostichal or dorsocentrals. Lateral and prescutellar aspects of mesonotum also covered with yellow pollen which when viewed from front almost completely disappears leaving

ground color exposed. Scutellum dull black. Acrostichals usually 2 : 1 with a weak bristle sometimes present in presutural acrostichal row. Postsupraalar row with weak bristle sometimes present posterior to 3rd strong bristle. Upper and lower squamae yellowish. Epauklet and basicostal sclerite black, subcostal sclerite yellow. Halteres yellow. Wings with heavy infuscation along major longitudinal veins. Femora and coxae yellow, tibia brown, tarsi black.

Abdomen variable; 1st abdominal tergite, except for darkened dorsal and lateral patches, and anterior 1/2 of 2nd tergite pale yellow, semitransparent. Semitransparent area of 2nd tergite with a yellow or white pollen which is denser on anterior margin and sometimes, particularly, ventrally where it may completely mask the background. Remainder of 2nd tergite black with some metallic reflections. Third and 4th tergites each with an anterior ring of yellow pollen, which sometimes may be whitish, and remainder of tergites black with metallic green or purple reflections. Abdominal sternites yellow becoming darker posteriorly. Third and 4th tergites each with well developed row of marginal bristles. Genitalia as in fig. 2C; lateral guard of aedeagus extending beyond lateral edge, intromittent organ becoming narrow towards apex and widening apically with several apical notches; inner forceps widely separated at apex with sharp basal angles; outer forceps with a quite large distal club. Length 9-10 mm.

♀. Width of frons at vertex, 26; at base of antennae, 35. A strong anterior and weak posterior proclinate frontoorbital bristle; 1 strong reclinate frontoorbital; inner and outer verticals of equal strength. Except sexually very similar to ♂.

Holotype ♂ (BISHOP 7148), Papua, Kiunga, Fly River, 14.X.1957, W. W. Brandt; allotype ♀ (BISHOP), NW New Guinea, Vogelkop, Kebar Val., W of Manokwari, 550 m, 4-31. I.1962, S. & L. Quate. Paratypes: Papua: 5♂♂, 5♀♀, same data as holotype but 15-21. VII, 26-30.VII, 8-10.VIII, 4-5.IX, 1-7, 21-24, 26-28.X.1957 (BISHOP). NW New Guinea: 1♂, 2♀♀, same data as allotype; 1♀, Waris, S of Hollandia, 400-500 m, 1-7.VII.1959, T. C. Maa (BISHOP); 1♂, Nabire, S. Geelvink Bay, 10-80 m, 7.VII.1962, J. L. Gressitt; 1♀, Bodem, 100 m, 11 km SE of Oeberfaren, 7-17.VII.1959, Maa (BISHOP).

#### ***Euphumosia illucens*** Torgerson and James, new species

♂. Head tawny in ground color; parafacials with pale yellowish white pollen; parafrontals with bright yellow pollinose covering; pollen of face whitish; interfrontalia brown; facialia brownish; occiput blackish around posterior margin of eye, central portion with a whitish pollen; cerebrale blackish. Frontal bristles, 9; ocellers strong, postocellars weak; inner verticals strong, outer verticals about 1/2 as strong as ocellars and distinctly distinguishable from postoccipital fringe. Vibrissae situated above oral margin and separated by a distance distinctly greater than that of each from eye margin. Genae slightly broader than length of 3rd antennal segment and covered with a dense yellowish-white pollen. Head measurements: head width, 118; frons width, 1; of parafacials at narrowest, 5; between vibrissae, 28; vibrissae to eye margin, 22; vibrissae to prelabrum, 8. First and 2nd antennal segments brown, 3rd segment tawny. Palpi slender, yellow. Proboscis brownish black.

Mesonotum mostly bright yellow in ground color, only areas under black vittae and postalar calus black, and postsutural lateral margins brown; propleuron, mesopleuron, and anterior part of sternopleuron yellow in ground color, pleura otherwise mostly brownish

black becoming black with a metallic sheen posteriorly. Mesonotum, mesopleura, and upper part of sternopleura with golden pollinosity contrasting with whitish pollen on remaining 2/3 of sternopleura. Mesonotum with 3 longitudinal black vittae; 2 lateral vittae slightly broader and longer than median which extend posteriorly to 2nd row of postsutural acrostichals or dorsocentrals. Two golden yellow submedian yellow vittae joined posteriorly by 2 lateral vittae of same color, thus isolating the black vittae and creating a prescutellar band of golden pollen (fig. 7B). Scutellum black in ground color with some metallic purple reflections. Hairs of mesonotum short, dark, while those of pleura longer, yellowish, except for upper part of mesopleuron where they are black. Post supraalar row with 2 additional weak bristles. Squamae yellowish at base, otherwise brownish, the lower one the darker. Epaulet and basicostal sclerite black, subcostal sclerite brownish, pubescent, but without bristles. Coxae and femora yellow, tibia and tarsi dark brown, hind femur brownish on apical 1/3, especially above, with metallic reflections.

First abdominal tergite excluding small dark lateral patches and anterior 1/2 of 2nd tergite pale yellow, semitransparent. Posterior 1/2 of 2nd tergite and all of 3rd tergite, except for small pale yellow, semitransparent patch ventrolaterally, dark metallic green and purple. Anterior 1/2 of 4th tergite yellow overlaid by yellow pollen, remaining area dark metallic purple. Abdominal sternites pale yellow. Genitalia unavailable. Length 9 mm.

♀. Frons gradually widening from vertex downward. At vertex, 25, and at base of antennae, 31. Two proclinate frontoorbitals, a very strong anterior and a weaker posterior one; 1 strong reclinate frontoorbital; inner and outer verticals of equal strength. Metallic purple reflections of abdomen more prevalent in ♀. Anterior dorsal margin of 3rd tergite with 2 small patches of yellow pollen.

Holotype ♂ (BISHOP), NE New Guinea, Wau, Morobe Distr., 1200 m, 16.X.1961, J. S. Sedlacek; allotype ♀ (BISHOP), same data but 8-9.II.1963; paratype ♂, same data but 26.X.1961. Paratype: NE New Guinea: 1♀, Bulolo, 732 m, 27.VIII.1956, E. J. Ford (BISHOP).

#### ***Euphumosia intermedia* Ségué**

*Euphumosia intermedia* Ségué, 1935, Encycl., Entomol., Dipt. ser. B, 8: 147.

No available material.

#### ***Euphumosia eristoloides* (Walker)**

*Musca eristoloides* Walker, 1858, Proc. Linn. Soc. Zool. 3 (10): 106-7.

The type species, in the British Museum (Nat. Hist.), was examined by James, who supplies this additional descriptive material; very similar to *papua* (in leg and abdominal coloration), but whole thorax except scutellum yellow; 3 light brown stripes end free unless one views them from an angle, almost straight behind, where a transverse band appears (ending almost mid-way between the 2nd and 3rd postsuturals). Median brown stripe about equal in width to yellow areas between stripes and distinctly narrower than lateral brown stripes. Scutellum black.

#### ***Euphumosia leopoldi* Malloch**

*Euphumosia leopoldi* Mall., 1934, Mem. Mus. Roy. Hist. Nat. Belg. (1935), hors ser. 4, 10: 13.

No available material.

***Euphimosia microtesselata*** Torgerson and James, new species

♂. Head yellow in ground color; parafacials, parafrontals, and face covered with a dense pale yellowish-white pollen; interfrontalia orange brown; occiput with a brownish-black ring posterior to hind margin of eye; central portion with whitish pollen, cerebrale brownish. Frontal bristles usually 7-9; ocellars strong, postocellars weak; inner verticals strong, outer verticals weak, but distinguishable from those of postoccipital fringe. Vibrissae situated low, above oral margin and separated by a distance about equal to that of each from eye margin. Genae much narrower than length of 3rd antennal segment and covered with dense pale yellowish pollen. Head measurements: head width, 127; frons width, 1; of parafacials at narrowest, 7; between vibrissae, 27; vibrissae to eye, 27; vibrissae to prelabrum, 7. First and 2nd antennal segments yellow, 3rd yellow with brownish upper side and quite long extending almost to vibrissae. Palpi yellow. Proboscis yellow.

Thorax mostly golden brown in ground color; mesonotum brown under brown pollinose areas and middle of most pleural sclerites behind propleuron more or less extensively blackish. Mesonotum with 3 broad brownish-black vittae joined posteriorly by a transverse band lighter in color and extending posteriorly to 3rd row of postsutural acrostichal and dorsocentrals. Two isolated submedian, yellowish-white pollinose vittae extending posteriorly beyond suture to a level halfway between 2nd and 3rd row of postsutural acrostichals and dorsocentrals (fig. 5D). When viewed from front pollen of submedian vittae disappears leaving only golden-brown ground color. Lateral and prescutellar aspects of mesonotum with pale yellowish pollen which also disappear when viewed from front leaving traces of pollen only visible on ground color. Scutellum with very thin yellowish pollen partially masking golden brown ground color. Intraalars 1:1, postsupraalars with 2 weaker bristles between 2nd and 3rd and following 3rd stronger bristles. Upper and lower squamae uniformly yellow. Epaulet, basicostal sclerite, and subcostal sclerite yellow. Halteres yellow. Wings heavily infuscated along costal margin and major longitudinal veins. Legs yellow, tarsi becoming dark apically.

Abdominal tergites uniformly opaque brownish to brownish black without any metallic colorations. Instead tergites are dusted with a pale yellowish pollen which cause small subshining spots to appear first on one side and then on the other, of the individual abdominal setulae, depending on angle of light incidence, forming a finely tessellated pattern. Abdominal sternites yellowish brown. Genitalia as in fig. 3C; lateral guard of aedeagus pointed, extending beyond lateral edge, intromittent organ below guard heavily sclerotized becoming membranous apically; inner forceps widely separated at apex becoming quite pointed and with a slight hook which is visible from lateral view. Length 10-11 mm.

♀. Frons at vertex, 27 and at base of antennae, 36. Strong anterior and weaker posterior proclinate fronto-orbital bristles; 1 strong reclinate fronto-orbital bristle. Scutellum darker brown than in ♂. Except sexually, similar to ♂.

Variation: 1 ♂ with black pigmentation around one vibrissae extending to prelabrum and onto genae.

Holotype ♂ (BISHOP 7150), NE New Guinea, Finisterre Range, Saidor, Sibog Vill., 27.V-5.VI.1958, W. W. Brandt; allotype ♀ (CSIRO), NE New Guinea, Jimmi Riv., VIII.1961, Brandt. Paratypes: NE New Guinea: 1 ♀, Tsenga, 1200 m, Upper Jimmi Vall., 14.VII.



1955, J. L. Gressitt (BISHOP); 1♂, Karimui, 1080 m, 14.VII.1963, M. Sedlacek (BISHOP); 1♀, Wau, Morobe Distr., 1100 m, 31.I.1963, J. Sedlacek (BISHOP); 1♂, Finisterre Range, Saidor, Kiambavi Vill., 22-29.VII.1958, Brandt (BISHOP).

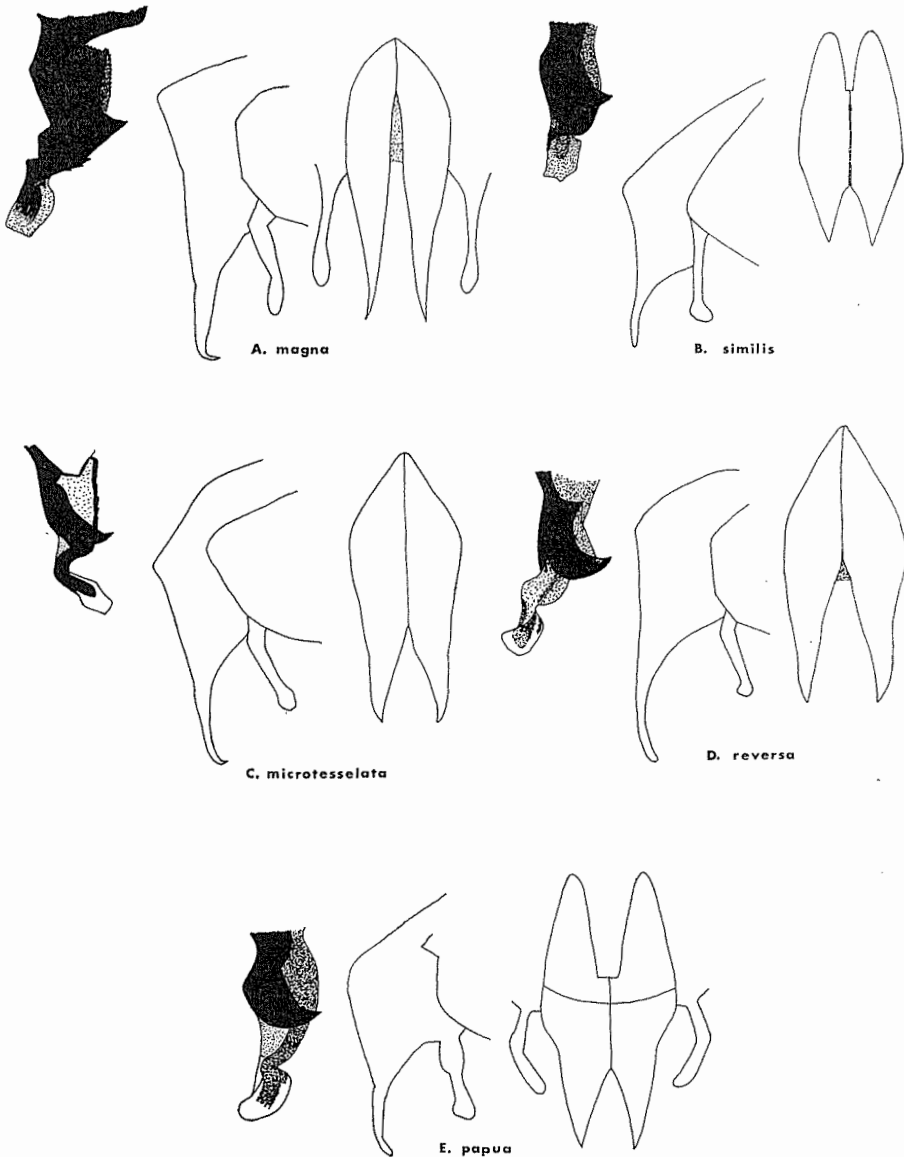


Fig. 3. *Euphimosia*, genital complex of male (bristles and setulae omitted). A, *magna*; B, *similis*; C, *microtesselata*; D, *reversa*; E, *papua*.

**Euphmosia tesselata** Torgerson and James, new species

♂. Head bright yellow in ground color; parafacials with shiny pale, whitish-yellow pollen becoming yellowish above; parafrontals with yellow pollen; face densely white pollinose; interfrontalia orange yellow; occiput with a blackish arch posterior to hind margin of eye, central portion with whitish pollen; cerebrale blackish brown. Frontal bristles 8-9; ocellars moderately strong, postocellars weak, sometimes ocellars also weak; inner verticals strong, outer verticals very weak or absent. Vibrissae separated by a distance about equal to that of each from eye margin. Genae about as wide as length of 3rd antennal segment and covered with dense, pale, whitish-yellow pollen; posterior part of genae with long, dense, pale yellow hairs. Head measurements: head width, 116; frons width, 2; of parafacials at narrowest, 8; between vibrissae, 26; vibrissae to eye margin, 24; vibrissae to prelabrum, 8. First and 2nd antennal segments yellow, 3rd yellow with a brownish upper side. Palpi yellow. Proboscis yellow.

Mesonotum mostly golden in ground color, but blackish under black stripes; pleura bright yellow in ground color with a pale whitish-yellow pollinose covering; upper 1/3 of mesopleuron darkened. Mesonotum with 3 longitudinal blackish-brown vittae joined posteriorly to level almost reaching 3rd row of postsutural acrostichals of dorsocentrals. Two isolated, submedian, whitish-yellow vittae extending posteriorly beyond suture to level slightly more than halfway between 1st and 2nd row of postsutural acrostichals or dorsocentrals (fig. 7E). Lateral and prescutelar aspects of mesonotum also with pale whitish-yellow pollinose covering. When viewed from front only traces of mesonotal pollen visible leaving golden ground color almost completely exposed. Scutellum with brownish pollen except on posterior margin where it is whitish yellow. When tilted sharply forward brown pollen disappears leaving a blackish ground color. Acrostichals 2 : 1, sometimes presutural acrostichals with 1 very strong bristle and 1 or 2 weaker bristles. Postsupraalars with a weak bristle following 3rd strong and sometimes between 2nd and 3rd strong bristles. Squamae uniformly yellowish. Epaulet, basicostal sclerite, and subcostal sclerite yellow. Halteres yellow. Wings distally infuscated along costal margin and major longitudinal veins, especially near middle of wing where effect of a poorly defined transverse band is produced. Coxa and femur yellow, tibia brown, and tarsi becoming almost black apically.

First and basal 1/2 of 2nd tergites pale yellow, semitransparent. Semitransparent area of 2nd tergite with a whitish pollen being denser on anterior margin and particularly laterally and ventrally where it may completely mask background. Remainder of tergites blackish brown with a tessellated pattern of yellow pollen. Abdominal sternites yellow becoming brownish posteriorly. Second tergite with moderately developed row of marginal bristles. Genitalia as in fig. 2A; intromittent organ of aedeagus moderately sclerotized below lateral guard becoming almost membranous apically. Length 9-10 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7151), NE New Guinea, Finisterre Range, Sidor, Sibog Vill., 27. V-5.V.1958, W. W. Brandt; paratopotypes 5♂♂, same data except 6-16.VI. Paratype ♂, Eliptamin Vall., 1200-1350 m, 16-30.VIII.1959, Brandt (BISHOP).

Although *microtesselata* and *tesselata* appear similar, the genitalia would suggest two distinct species. In *microtesselata* the intromittent organ is much broader than that of *tesselata* and appears to be less heavily sclerotized. The inner forceps are also more divaricate and do not become as slender apically in *microtesselata*. In the key, the two

are separated by leg color. In the former the legs are entirely fulvous or tawny yellow with at most certain tarsi darkened, while in the latter the hind tibia and tarsi are definitely brown to black with the tibia very distinctly darker than the femora. There is also a very prominent darkening of the last two abdominal segments in *tesselata* which is not found in *microtesselata*.

### *Euphumosia papua* (Guérin)

*Calliphora papua* Guérin Meneville, 1830, Voyage Coquille, Zool. Ins., p. xxi.

*Musca calliphoroides* Walker, 1861, Proc. Linn. Soc. Lond. 5: 245.

*Phumosia papua*: Surcouf, 1919 (1914), Nouv. Arch. Mus. Hist. Nat. ser. 5, 6: 50 (a full redescription and original quotation).

*Euphumosia papua*: Malloch, 1934, Mem. Mus. Hist. Nat. Belg. 1935, hors ser. 4, 10: 12.—  
Séguy, 1935, Encycl. Entomol. Dipt., ser. 5, 8: 147.

Thoracic pattern as in fig. 6D. Genitalia fig. 3E; genitalia quite large; inner forceps divaricate basally forming a large median notch which continues apically to a point almost reaching a lateral suture which bisects each cercus; outer forceps tawny with a lateral enlargement proximal to apical club; bristles and hairs black.

SPECIMENS EXAMINED: NE NEW GUINEA: 1♂, 1♀, Bulolo, 732-1000 m, 14, 15.VIII.1956, E. J. Ford, Jr. (BISHOP); 2♀♀, Madang Distr., nr. Madang, 9-14.VI.1965, R. W. Crosskey (BMNH); 1♀, Wewak, F. H. Taylor (USNM). WEST NEW GUINEA: 1♂, Vogelkop, Jef Lio I., Sele Straits, 1-5 m, 15.VIII.1957, D. E. Hardy (BISHOP); 1♂, Cyclops Mts., 300 m, 2.III.1945, Jean Laffoon (USNM); 1♂, 1♀, Hollandia area, Hollandia Binnen, 20-50 m, 23.VII.1959, J. L. Gressitt (BISHOP); 2♀♀, Sentani, 90+m, 15, 24.VI.1959, ex human excrement and malaise trap, T. C. Maa (BISHOP); 1♂, 1♀, Waris, S of Hollandia, 400-500 m, 16-23.VIII.1959, Maa (BISHOP); 1♀, Eramboe, 80 km from Merauke, 29.I.1960, Maa (BISHOP); 4♀♀, Wailibut, Batanta, 13, 17.VI.1949, Sten Bergman (RMS); 1♀, Vogelkop Manokwari, 75 m, 18.VII.1957, Hardy (BISHOP); 1♀, Ifar, Cyclops Mts., 300-500 m, 28-30.VI.1962, Gressitt (BISHOP); 2♀♀, Japen I., SSE of Sumberbaba, Dawai Riv., X.1962, Wilson (BISHOP); 1♀, Lake Sentani, Ifar, VIII.1936, L. E. Cheesman (BMNH); 1♂, 2♀♀, Waigau, Camp Nok., 750 m, IV.1938, Cheesman (BMNH); 3♂♂, Humboldt Bay, 60-90 m, IV.1936 and Hollandia, sea level, II.1936, Cheesman (BMNH); 1♂, 1♀, Cyclops Mts., Sabron, 279 m, V.1936, Cheesman (BMNH); 1♀, Maffin Bay, 12.VI.1944, E. S. Ross (CAS). PAPUA: 5♂♂, 5♀♀, Central Distr., Gaile Forest, 28 m, SE of Port Moresby, 7, 8.V and 17.VII.1965, Crosskey (BMNH); 4♂♂, 2♀♀, Central Distr., Brown Riv., 7.V.1965 and Musgrave Riv., 10.V.1965, Crosskey (BMNH); 3♀♀, Kiunga, Fly River, 5-7.VIII.1957, W. W. Brandt (CSIRO); 2♀♀, Kokoda, 360 m, IX-X.1933, Chessman (BMNH); 1♀, Aroa Estate, W. of Redscar Bay, 1 m, 29.X.1958, Gressitt (BISHOP); 2♂♂, 2♀♀, Laloki, II-IV.1910, F. Muir (BISHOP); 2♀♀, Brown River, 23.X.1960, Gressitt (BISHOP); 3♂♂, 2♀♀, Laloki Riv., nr. Port Moresby, VII.1962, R. Pullen (CSIRO); 3♀♀, Rouku, V.1962, Brandt (CSIRO); 3♀♀, Doa Estate, 80 km W of Port Moresby, 2.IX.1962, R. Straatman (BISHOP); 1♂, Rigo Distr., SE of Port Moresby, VII.1962, Pullen (CSIRO); 1♂, Kokoda-Pitoki, 400 m, 23.III.1965, Gressitt (BISHOP); 1♀, Milne Bay, XII.1944, G. H. Bick (USNM); 2♀♀, Oriomo Gov't. Stat., 26-28.X.1960, ex human excrement, Gressitt (BISHOP); 2♂♂, Finschhafen, 13.XII.1944, D. G. Hall (USNM).

AUSTRALIA: 1♂, 1♀, Northern Territory, 1914, G. F. Hill (USNM); 1♂, Mellville I., Northern Territory, Hill (USNM).

***Euphumosia nitens*** Torgerson, new species

♂. Head yellowish in ground color; parafacials with shiny, pale yellowish pollen; parafrontals and face with yellowish pollen, with that of parafrontals more nearly golden; interfrontalia brown; occiput with a blackish arch posterior to hind margin of eye, central portion with whitish-yellow pollen; cerebrale blackish brown. Frontals 7-8. Ocellars and inner verticals moderately strong, postocellars weak, outer verticals absent. Vibrissae separated by a distance equal to that of each from eye margin. Genae covered with whitish-yellow pollen. Head measurements: head width, 91; frons width, 1; of parafacials at narrowest, 6; between vibrissae, 21; vibrissae to eye margin, 19; vibrissae to prelabrum, 6. First and 2nd antennal segments yellowish brown, 3rd yellowish with a brownish upper side. Palpi yellow. Proboscis blackish brown.

Mesonotum yellowish in ground color except under black stripes where it is blackish; pleura yellow in ground color with a golden pollinose covering, except for lower 1/2 of sternopleura which has a yellowish-white pollinose covering. Mesonotum with 3 longitudinal black vittae which are joined posteriorly by a transverse band of the same color extending posteriorly to a level almost reaching 3rd row of postsutural acrostichals or dorso-centrals. Two, isolated, submedian, golden-yellow vittae extend posteriorly beyond suture to a level halfway between 1st and 2nd row of postsutural acrostichals or dorso-centrals (fig. 5C). Lateral and prescutellar areas of mesonotum covered with golden-yellow pollen which when viewed from certain angles from front largely disappears exposing brownish-yellow ground color. Scutellum dark, shiny, metallic blackish to bluish green. Presutural acrostichals with a weak bristle anterior to 2 strong bristles. Squamae yellowish. Epaulet, basicostal sclerite, and subcostal sclerite yellow. Halteres yellow. Wings moderately infuscated throughout entire wing. Coxae and femora yellow, tibia brown, and tarsi becoming almost black apically.

First abdominal tergite yellowish, semitransparent, except for a darkened apical band on posterior margin which broadens laterally. Anterior 1/2 of 2nd tergite yellowish, semitransparent, with posterior 1/2 being metallic blue and purple. Anterior 1/3 of tergites 3 and 4 also with a yellowish semitransparent band situated exactly on anterior margin with remainder of tergites dark metallic blue and purple. Abdominal sternites yellowish brown.

The blue areas, especially on scutellum and abdomen, may have a coppery or reddish reflection in certain lights. Genitalia as in fig. 1G; aedeagus from lateral view quite broad basally and with angular apical margins, lateral guard moderately sclerotized; outer forceps long, slender, easily visible from a dorsal view. Length 6-7 mm.

♀. Distinctly larger than ♂ (9-10 mm). Frons widening only slightly from vertex downward. At vertex, 27 and at base of antennae, 30. Two proclinate frontoorbitals with anterior bristle stronger than posterior, 1 reclinate frontoorbital. Inner and outer verticals of equal strength. Except sexually otherwise as ♂.

Holotype ♀ (BMNH), NE New Guinea, Madang Distr. near Madang, 4-14.VI.1965, R. W. Crosskey; allotype ♂ (BMNH), Papua, Kokoda, 360 m, IX-X.1933, L. E. Cheesman (BMNH). Paratopotype ♀, same data as holotype. Paratypes: NW New Guinea: 1♂ Waris, S of Hollandia, 450-500 m, 1-7.VIII.1959, T. C. Maa, (BISHOP); 1♀ Wailibut, Batanta, 19.VI.1949, Sten Bergman (RMS). Papua Records: 1♀, Central Distr., Musgrave River, 10.V.1965, Crosskey (BMNH); 1♂, 1♀, Musgrave River, nr. Pt. Moresby, 25.II.

1964, D. H. Collins (CSIRO); 1♀, Kiunga, Fly River, 11-14.VII.1957, W. W. Brandt (BISHOP).

This species is very similar to *Euphumosia papua* (Guerin) but clearly distinct in the position of the semitransparent bands on the 3rd and 4th tergites which are exactly on the anterior margin, while in *papua* they are slightly apical from the anterior margin; the mesonotal cross band which reaches the 3rd row of postsutural acrostichals and dorsocentrals; the great variation in sizes and shape of the inner forceps. Usually specimens of *nitens* are much smaller than those of *papua* and the dark metallic areas have a distinct glossy sheen, especially the scutellum.

### *Euphumosia spiraculata* Paramonov

*Euphumosia spiraculata* Paramonov, 1961, Nova Guinea, Zool. 12: 221.

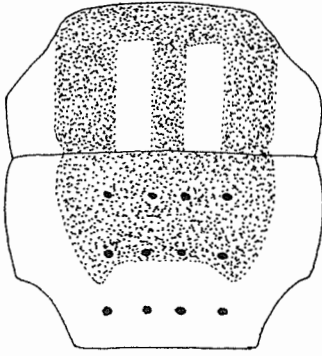
Thoracic pattern as in fig. 6E. Genitalia as in fig. 2D; aedeagus moderately sclerotized throughout with some heavier areas of sclerotization along edges of lateral guard; intromittent organ with a small apical projection; from a lateral view inner forceps with a very sharp basal angle; outer forceps only slightly enlarged apically.

SPECIMENS EXAMINED: W. NEW GUINEA: Paratype ♂ (CSIRO), Rattan Camp, 1150 m, 11. II. 1939, J. L. Toxopeus; 1♂, 2♀♀, Cyclops Mts., 1050 m, III. 1936, L. E. Cheesman (BMNH).

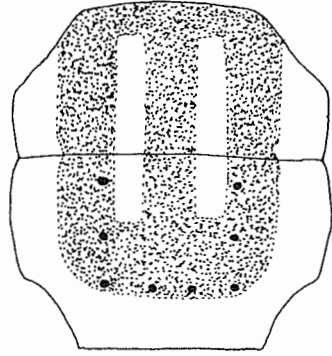
### *Euphumosia crosskeyi* Torgerson and James, new species

♂. Head tawny in ground color; pollen of parafacials and parafrontals varying from pale yellowish white to whitish; facialia brownish; interfrontalia orange brown; pollen of face whitish; occiput black posterior to hind margin of eye, central portion with a whitish pollen; cerebrale blackish. Frontal bristles 7-8; ocellars strong, postocellars weak, inner verticals slightly stronger than ocellars; outer verticals absent. Vibrissae situated above oral margin and separated by a distance about equal to that each is from eye margin. Genae slightly broader than length of 3rd antennal segment and covered with dense yellowish-white or whitish pollen, the color of which seems to vary from specimen to specimen. Head measurements; head width, 104; frons width, 2; of parafacials at narrowest, 6; between vibrissae, 25; vibrissae to eye margin, 24; vibrissae to prelabrum, 10. First and 2nd antennal segments blackish brown, 3rd segment tawny brown to dark brown. Palpi yellow. Proboscis brownish black.

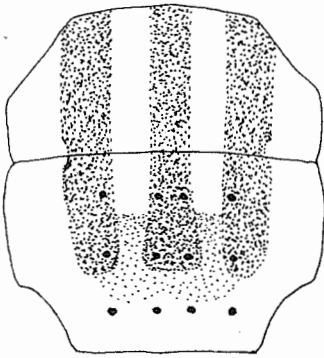
Entire humerus, mesopleura, notopleura, and sides of the mesonotum from humerus to suture bright yellow in ground color. Mesonotum and mesopleura with golden pollinosity contrasting distinctly with white pollen of sternopleura. Mesonotum with 3 short black vittae; 2 broad lateral and a narrower median which are joined directly behind suture by a broad transverse band of same color extending posteriorly to 2nd row of postsutural acrostichals or dorsocentrals. The 2 submedian golden vittae a little narrower than lateral black vittae, extend very slightly beyond suture, (fig. 6F). Scutellum black in ground color with metallic purple and blue reflections. Hairs of mesonotum short and black, those of pleura longer and yellowish except for those on upper edges of mesopleura and pteropleura. Upper squama whitish, somewhat darkened towards apex, and lower squama black. Epaulet and basicostal sclerite black, subcostal sclerite brown with a strong curved bristle originat-



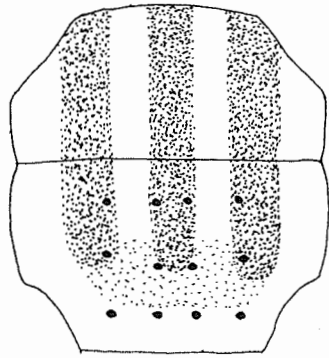
**A.** *variegata*



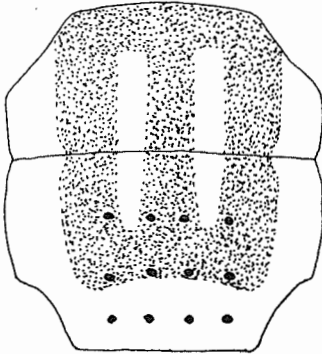
**B.** *similis*



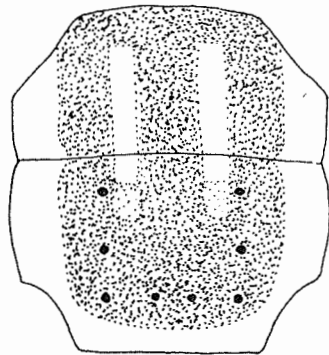
**C.** *flavida*



**D.** *phantasma*



**E.** *magna*



**F.** *metallica*

Fig. 4. *Euphrosia*, thoracic pattern and postsutural bristle arrangement. A, *variegata*; B, *similis*; C, *flavida*; D, *phantasma*; E, *magna*; F, *metallica*.

ing medially on sclerite and extending beyond its apex (this character seems to be variable as in 1 specimen 2 such bristles were found and in 2 other specimens no such bristle was present). Stem vein bare. Legs brownish with tarsi becoming darker apically.

First abdominal tergite, except for small dorsolateral metallic patches, and anterior 1/2 of 2nd tergite pale yellow and semitransparent; the semitransparent area of 2nd tergite covered with a whitish pollen which is denser on anterior margin and particularly laterally and ventrally, where it may completely mask background. Remainder of abdominal tergites bright metallic green or blue green with some metallic purple reflections, except for anterior margin of 4th tergite which has a whitish pollinose layer extending around complete tergite partially masking metallic reflections. Anterior sternites yellowish becoming gradually darker posteriorly. Genitalia as in fig. 2F; lateral guard heavily sclerotized, quite pointed, extending beyond edge of aedeagus from a lateral view; inner forceps with a sharp median angle, basally cerci separated forming a v-shaped notch; outer forceps quite long and slender with a slight apical club; numerous black hairs and bristles. Length 7-8 mm.

♀. Very slightly larger than ♂. Frons gradually widening from vertex downward; at vertex, 23; at base of antennae 32. Frontal bristles usually 8-10. Two proclinate fronto-orbitals; a strong anterior bristle and a weaker posterior. One strong reclinate fronto-orbital. Inner and outer verticals about equal in strength. Subcostal sclerite with 2 strong medial bristles. Metallic reflections of abdomen more prevalent than green as in ♂.

Variation: 1♀ with a brown pollinose area extending across genae from eye to oral margin; this is unlike other specimens except for 1♂ which has a very slight darkening of the pollen in this same area.

Holotype ♂ (BMNH), Papua, Central Distr., Musgrave River, 10-11.V.1965, R. W. Crosskey; allotype ♀ (BMNH), same data as holotype; paratype 1♂, same data as holotype. Paratypes: NE New Guinea: 1♀, Eliptamin Vall., 1200-1350 m, 16-31.VII.1959, W. W. Brandt (BISHOP). NW New Guinea: 1♂, 1♀, Waigeu, Camp Nok., 750 m, IV.1938 and 300 m, VIII.1938, L. E. Cheesman (BMNH); 2♀♀, Ifar, 300-600 m, 22.VI.1959, ex human excrement, T. C. Maa (BISHOP); 1♂, 1♀, Bodem, 100 m, 11 km, SE of Oerberfaren, 7-17.VII.1959, Maa (BISHOP); 1♀, Hollandia (Kota Baru), 25-28.VI.1962, J. L. Gressitt (BISHOP). Papua: 3♂♂ Kiunga, Fly River, 8-13.VIII.1957, Brandt (BISHOP).

### *Euphumosia variegata* (Bigot)

*Phumosia variegata* Bigot, 1888 (1887), Bull. Soc. Zool. France 12: 610.—Surcouf, 1919, Nouv. Arch. Hist. Nat. ser. 5, 6: 117.

*Phumosia papuana* Bigot, 1888 (1887), Bull. Soc. Zool. France 12: 610.—Surcouf, 1919, Nouv. Arch. Hist. Nat. ser. 5, 6: 117.

*Euphumosia variegata*: Malloch, 1934, Mem. Mus. Hist. Nat. Belg., hors ser. 4, 10: 13.

Thoracic pattern as in fig. 4A. Genitalia as in fig. 1B; inner forceps widely separated basally, becoming slightly narrower medially where cerci fuse, apical 1/2 of inner forceps very slender, glossy black; intromittent organ squarish apically.

SPECIMENS EXAMINED: SW NEW GUINEA: 3♂♂, 2♀♀, Vogelkop, Bomberi, 700-900 m, 7, 10, 9.VI.1959, T. C. Maa (BISHOP); 4♂♂, 8♀♀, Vogelkop, Fak-Fak, S. Coast of Bomberi, 100-700 m, 4, 5, 7, 8.VI.1959, Maa (BISHOP).

**Euphumosia metallica** Paramonov

*Euphumosia metallica* Paramonov, 1961, Nova Guinea, Zool. 12: 222.

Thoracic pattern as in fig. 4F. Genitalia as in fig. 2H; inner forceps quite small, basal angle rounded; outer forceps slender with a "boot-shaped" apical end; intromittent organ from lateral view very slender below, lateral guard becoming quite large apically, upper inner margin with serrated edge.

SPECIMENS EXAMINED: PAPUA: 2♂♂, 3♀♀, Mafulu, 1200 m, XII.1933, I.1934, L. E. Cheesman (BMNH).

**Euphumosia nigrifacies** Malloch

*Euphumosia nigrifacies* Malloch, 1934, Mem. Mus. Roy. Hist. Nat. Belg. (1935), hors ser. 4, 10: 15.

No available material.

**Euphumosia paramonovi** Torgerson and James, new species

♂. Head pale yellowish in ground color; parafrontals, parafacials, genae, and occipital orbits covered with a pale yellowish pollen; facialia yellowish brown; interfrontalia reddish brown; occiput black, whitish pollinose except laterally, but with upper portions and cerebrale less densely covered with white pollen; face above epistoma whitish pollinose. Frontal bristles 10-12; ocellars and inner verticals strong; postcellars weak; outer verticals weak; but distinguishable from postoccipital fringe. Vibrissae set low, almost at oral margin and separated by a distance about equal to that of each from eye margin. Hairs on anterior part of genae partly to mostly black, those on posterior pale yellow and abundant. Bristles alongside mouth cavity black. Head measurements; head width, 100; frons width, 2; parafacials at narrowest, 7; between vibrissae, 24; vibrissae to eye, 22; vibrissae to prelabrum, 7. Antennae brownish black, apex of 2nd and base of 3rd segments yellowish brown. Palpi yellow, quite slender, longer than antennae. Proboscis brownish black.

Thorax in ground color mostly black; prothorax, humeri, and sides of mesonotum to suture yellow, pleura otherwise tending in places to brownish or yellowish brown; pleura covered with a dense yellow to yellowish-white pollen on mesopleura and sternopleura, otherwise less dense and with metallic reflections showing through pollen. Mesonotum with 3 longitudinal black vittae, broadly confluent behind suture; these vittae with somewhat purplish reflections, becoming green posteriorly, separated by yellow pollinose vittae, each a little narrower than median black vittae, and extending beyond suture to a point about halfway between 1st and 2nd postsutural acrostichals or dorsocentrals (fig. 5B). Sides of mesonotum and apex beyond transverse black band, yellow pollinose; ground color beneath this transverse prescutellar band with metallic green reflections showing through pollen though the latter dense. Scutellum metallic green, sometimes metallic blue green. Hairs and bristles of thorax black except some on upper part of pteropleura and those on lower part of sternopleura which are pale yellow. Posterior supraalars with 2 weak bristles located between 3 strong ones. Both upper and lower squamae brown. Halteres slender, yellow. Wings lightly infuscated. Epaulet black, basicostal and subcostal sclerites yellow. Legs brownish black; coxae and trochanters brownish yellow.

Abdomen yellow and semitransparent basally; 2nd tergite at apex with a transverse



black band, with bluish reflections, half or more its broadest length, but becoming very narrow medially and not extending laterally onto ventral side of tergite. Posterior 1/2 of 2nd tergite and all of 3rd and 4th each metallic green at base, becoming blue or purple at apex. Fourth tergite with a patch of dense white pollen on each lateroventral surface, with a less evident extension of this pollen extending dorsally and forming a continuous band when viewed in proper light. First abdominal sternite yellow with remaining sternites becoming gradually darker from apex of 2nd to apex of 5th. Genitalia as in fig. 1D; inner forceps narrow basally, becoming quite broad medially, and narrowing again apically, cerci divaricate becoming narrowed towards median where they become contiguous; outer forceps only slightly enlarged apically; intromittent organ serrated along inner margin, almost membranous-like apically. Length 8-10 mm.

♀. Frons at vertex, 28 and at base of antennae, 35. Pollinosity of face more brightly golden color than in ♂. Second antennal segment more yellowish. One strong and 1 weak proclinate fronto-orbital and 1 strong reclinate fronto-orbital bristle. Outer vertical strong. Metallic colorations sometimes not present on sides of abdominal tergite. Except sexually, very similar to ♂.

Holotype ♂ (BISHOP 7152), SW New Guinea, Vogelkop, Fak-Fak, S. Coast of Bomberri, 100-700 m, 8.VI.1959, T. C. Maa; allotype ♀ (BISHOP), NE New Guinea, Wau, Morobe Distr., 1700 m, 7.II.1963, J. Sedlacek; paratopotypes, 8♂♂, same data as holotype. Paratypes: NE New Guinea: 1♀ Adelbert Mts., Wanuma, 800-1000 m, 26.X.1958, ex fresh human excrement, J. L. Gressitt (BISHOP); 1♂, Wau, Morobe Distr., 1050-1200 m, 23.I.1965, R. W. Crosskey, (BMNH). West New Guinea: 1♂, 1♀, Vogelkop, Bomberri, 700-900 m, 5, 10.VI.1959, Gressitt, Maa (BISHOP); 1♂, Cyclops Mts., 1050 m, III.1936, Cheesman (BMNH).

#### *Euphumosia magna* Torgerson and James, new species

♂. Head bright yellow in ground color; parafrontals yellow, parafacials yellow with yellow pollen; facialia and interfrontalia brownish black; occiput black posterior to hind margin of eye, central portion covered with pale yellowish pollen; cerebrale blackish brown; face densely white pollinose. Frontal bristles usually 10-12; ocellars strong, postocellars weak, inner verticals not as strong as ocellars, outer verticals absent. Vibrissae separated by a distance slightly greater than that of each from eye margin. Genae about as broad as length of 3rd antennal segment with numerous pale yellow setulae and covered with a dense whitish-yellow pollen. Head measurements: head width, 138; frons width, 3; of parafacials at narrowest, 9; between vibrissae, 33; vibrissae to eye, 28; vibrissae to prelabrum, 13. First and 2nd antennal segments blackish brown, 3rd dark brown. Palpi slender, golden yellow with scattered black bristles toward apical end. Proboscis black. Thorax black in ground color, except humerus and area back of it which are yellow; propleura and anterior part of sternopleura brown pollinose, mesopleura and notopleura densely golden pollinose, sternopleura golden pollinose on upper 1/2 becoming whitish pollinose on lower part; mesonotum from posterior view with 3 well defined black vittae separated by two narrow submedian yellow vittae which continue beyond suture a little beyond 1st postsutural dorsocentral and acrostichals. The 3 black vittae, parallel sided, broader than submedian yellow vittae, and broadly confluent behind, extending beyond suture to 2nd row of postsutural acrostichals and dorsocentrals (fig. 4E). Scutellum black in ground color with dark metallic purple reflections. Hairs of mesonotum minute, black, those on pleura yel-

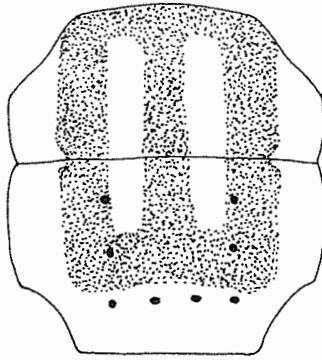
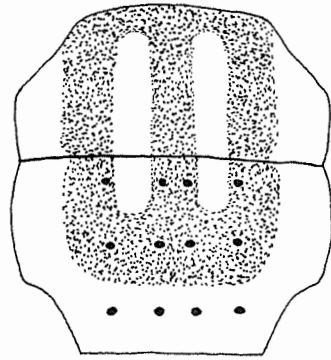
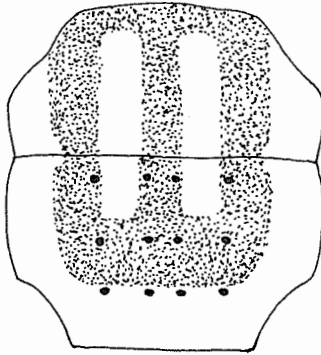
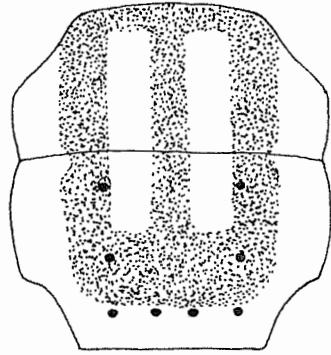
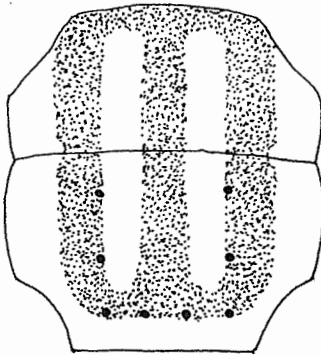
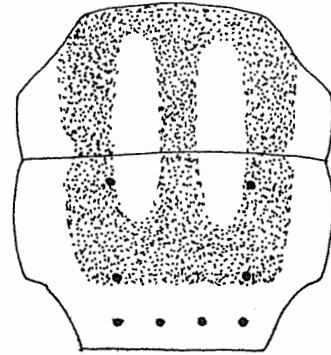
A. *annulata*B. *paramonovi*C. *nitens*D. *microtesselata*E. *abbreviata*F. *discolor*

Fig. 5. *Euphrosia*, thoracic pattern and postsutural bristle arrangement. A, *annulata*; B, *paramonovi*; C, *nitens*; D, *microtesselata*; E, *abbreviata*; F, *discolor*.

lowish except for those on pteropleura and upper margins of mesopleura and sternopleura which are black. Dorsocentrals 2 : 3. Upper squama white at base, becoming yellow then black towards apex, lower squama entirely black. Halteres slender, brownish, except at base of stalk which is yellowish. Epaulet, basicostal sclerite, and subcostal sclerite black. Wingslightly infuscated. Legs brownish black, tarsi slightly darker than femora and tibia; front coxa largely brown to brownish black.

Abdomen dull black in ground color with extensive metallic blue and purple reflections. First tergite dull black dorsally with some metallic reflections, pale yellow, semitransparent, lateroventrally and ventrally. Anterior 1/3-1/2 of 2nd tergite with a semitransparent, whitish pollinose fascia encircling complete tergum. Posterior 1/2 of 2nd and all of 3rd tergite with metallic purple or blue reflections. Fourth tergite very bright metallic purple and blue with patches of white pollen dorsolaterally which sometimes forms a complete band around anterior 1/2 of tergite. Abdominal sternites brownish. Genitalia as in fig. 3A; genitalia quite large; aedeagus heavily sclerotized throughout, except for inner lateral margin and apex of intromittent organ which are moderately sclerotized; inner forceps divaricate past median where they continue basad as a groove (indicated by stipling), from lateral view inner forceps hooked apically. Length 10-12 mm.

♀. Distinctly larger than ♂ (14-15 mm). Frons gradually widening from vertex downward; at vertex, 33; and at base of antennae, 45. Pollen of head much paler than in ♂, mostly varying from pale yellow to whitish. Two strong proclinate and 1 reclinate fronto-orbital bristles, the anterior proclinate especially strong; outer verticals well developed, about same strength as inner verticals. An additional very weak bristle anteriorly located in each presutural acrostichal and dorsocentral row. Last 3 abdominal sternites tending more to blackish color. Except sexually otherwise as ♂.

Holotype ♂ (BISHOP 7153), SW New Guinea, Vogelkop, Fak-Fak, S. Coast of Bomberi, 100-700 m, 4.VI.1959, T. C. Maa; allotype ♀ (BISHOP), same data as holotype; paratopotypes, 2♂♂, 2♀♀, same data as holotype. Paratypes: NE New Guinea: 1♀, Kassam, 1350 m, 48 km, E of Kainantu, 30.X.1959, ex human excrement, Maa (BISHOP). SW New Guinea: 3♀♀, Vogelkop, Bomberi, 700-900 m, 7.VI.1959, Maa (BISHOP); 1♂, 1♀, Star Mts., Sibil Val., 1245 m, 18.X, 8.XI.1961, S. & L. Quate, malaise trap (Bishop).

### *Euphumosia abbreviata* Paramonov

*Euphumosia abbreviata* Paramonov, 1961, Nova Guinea, Zool. 12: 224.

Thoracic pattern as in fig. 5E.

SPECIMENS EXAMINED: NW NEW GUINEA, paratype ♀, Sigi Camp, 1500 m, 26.II.1939, J. L. Toxopeus (CSIRO). PAPUA: 2♀♀, North Distr., The Managalase, SSW of Popondetta, 750-900 m, VIII.1954, R. Pullen (CSIRO).

In the original description Paramonov states that the 2nd tergite of the male has a semitransparent fascia which he found to be absent in the female. From an examination of a female paratype and two other female specimens this appears to be the case. The description also states that the wings are only slightly smoked in the basal area, but in the three females examined the wings appear heavily infuscated along the costal margin and major longitudinal veins, otherwise mostly light brown, and the prescutellar band has a metallic green color partially masking the pollen, of which no reference is made in the

description of the male. There are probably two distinct species represented here, the male with the semitransparent fascia being closely related to the new species *magna*, *paramonovi*, and *subalba*, and the female, related to *cuprina*, in which a distinct pollinose fascia is present, but not semitransparent. Without examining the holotype, which was not available, a definite conclusion could not be reached.

***Euphmosia subalba*** Torgerson and James, new species

♂. Head largely yellow in ground color; parafrontals and parafacials with golden pollen; facialia brown; occiput black except central portion (sometimes almost all) which has pale yellow pollen; face with pale yellow pollen. Frontal bristles usually 10-11; ocellars strong, postocellars moderately strong, inner verticals stronger than ocellars, outer verticals weak, but distinguishable from postoccipital fringe. Vibrissae separated by a distance slightly greater than that of each from eye margin. Genae about as broad as length of 3rd antennal segment, covered with bright golden pollen, small black hairs and numerous dense pale yellow setulae along ventral margin. Head measurements; head width, 110; frons width, 2; of parafacials at narrowest, 6; between vibrissae, 25; vibrissae to eye, 22; vibrissae to prelabrum 9. Antennal segments becoming increasingly lighter starting with 1st which is almost black to the 3rd which is brownish. Palpi slender, golden in color with scattered black bristles ranging in length from 1-10 micrometer units. Proboscis dark brown.

Thorax blackish brown in ground color; prothorax, humeri, and lateral aspects of mesonotum yellow, mesopleura except margins yellow, densely golden pollinose, sternopleura and pteropleura with dark metallic ground color and a dense whitish pollinose covering, the extent of which varies with the angle of the light. From posterior view, 3 well defined black vittae separated by 2 narrower yellow vittae. Submedian yellow vittae extend beyond suture to a point between the 1st and 2nd row of postsutural acrostichals or dorsocentrals; 3 black vittae confluent behind suture, the posterior aspect of these vittae with bluish-green and purple metallic reflection (fig. 6B). The area posterior to this dark transverse band with a distinct greenish tinge contrasting with bright yellow mesonotum metallic blue and purple reflections of scutellum, its pollen much less dense than elsewhere on mesonotum. Acrostichals 2:3 with anterior bristle in preacrostichal row being weaker than posterior. Upper squama brownish with white near base, lower squama brownish black. Halteres slender, yellowish brown. Subcostal sclerite brown, basicostal sclerite and epaulet black. Wings lightly infuscated. Legs blackish brown.

Abdomen largely metallic purple and blue-green. All of 1st tergite, except a mid-dorsal and ventrolateral area, and anterior 1/2 of 2nd, semitransparent, with covering of pale yellowish-white pollen. Anterior 1/2 of 4th tergite with ring of white pollen which may sometimes be broken medially on dorsal surface. First and 2nd abdominal sternites yellowish, remaining blackish. Genitalia as in fig. 1C. Length 8-10 mm.

♀. Of about same size as ♂. Frons gradually widening from vertex downward; width at vertex, 27 and at base of antennae, 35. Two proclinate frontoorbital bristles, 1 stronger than the other, and 1 reclinate frontoorbital bristle. Outer vertical about same strength as inner vertical. An additional weak bristle may be present in preacrostichal row. Legs are more brownish. Except sexually otherwise as ♂.

Holotype ♂ (BISHOP 7154), SW New Guinea, Vogelkop, Fak-Fak, S. Coast of Bomberri,

100-700 m, 4, 5, 8.VI.1959, T. C. Maa (BISHOP); allotopotype ♀, same data as holotype; paratopotypes, 5♂♂, same dates as holotype. Paratypes: SW New Guinea: 3♂♂, 2♀♀, Vogelkop, Bomberi, 700-900 m, 4, 7, 10.VI.1959, Maa (BISHOP).

Although *subalba* is similar to *paramonovi* the two can very easily be separated by the color of the basicostal sclerite (black in *subalba*, yellow in *paramonovi*) and both species are considerably smaller than *magna* which also has the sclerite black.

#### ***Euphumosia bivittata* (Doleschall)**

*Musca bivittata* Doleschall, 1885, Nat. Tijdschr. Ned. Ind. **17**: 111.

*Euphumosia bivittata*: Paramonov, 1961, Nova Guinea, Zool. **12**: 221.

No available material.

#### ***Euphumosia similis* Paramonov**

*Euphumosia similis* Paramonov, 1961, Nova Guinea, Zool. **12**: 225.

Thoracic pattern as in fig. 4B. Genitalia as in fig. 3B; inner forceps separated basally, forming a basal notch, from a dorsal view each cercus quite broad apically, widely separated and continuing basad as a slight groove to a point almost reaching basal notch where they become contiguous; outer forceps with a large apical club.

SPECIMENS EXAMINED: PAPUA: 1♀, Madire Ptn, West Distr., X.1961, M. G. Meadown (CSIRO). AMBOINA ISLAND: 4♂♂, 7♀♀, V.1909, F. Muir (BISHOP). CERAM ISLANDS: 3♂♂, Peroe, I-II.1909 (BISHOP).

#### ***Euphumosia cuprina* Torgerson, new species**

♂. Head mostly brown in ground color; parafacials and parafrontals with tawny pollen which only partially masks the ground color; genae with yellowish pollen becoming very sparse anteroventrally exposing a shiny brownish ground color; facial pollen very fine, whitish; facialia brown, interfrontalia reddish brown; frontal bristles 8-9; ocellars strong, postocellars weak, inner verticals strong and outer verticals, weak, but easily distinguishable from postoccipital fringe; cerebrale and dorsal areas of occiput black, occipital orbits grayish black with sparsely tessellated pattern of yellowish-white pollen the extent of which varies with the angle of light. Vibrissae separated by a distance slightly greater than that of each from eye margin. Head measurements: head width, 120; frons width, 2; of parafacials at narrowest, 8; between vibrissae, 26; vibrissae to eye, 22; vibrissae to prelabrum, 6. First and 2nd antennal segments brown, 3rd yellow basally becoming brownish apically. Palpi tawny. Proboscis brown.

Thorax mostly dark brown to black in ground color except for humeri and area immediately behind them which are tawny; pleura variable with dark brown finer than usual pollen that appears almost as a pubescence with yellow pollen present on large parts of mesopleura, sternopleura, and pteropleura. Mesonotum with 3 black vittae: 2 broad lateral and a narrower median vittae joined posteriorly by a transverse area of same color extending posteriorly to 3rd row of postsutural acrostichals and dorsocentrals. The 2 submedian grayish-yellow vittae about 1/2 as wide as median black vittae and extend posteriorly beyond suture to a level slightly beyond the forest row of postsutural acrostichals and dorsocentrals (fig. 7D). Extreme lateral area of mesonotum and area posterior to

transverse black vittae with sparse covering of yellowish-white pollen which only partially masks the ground color. Scutellum shiny black with whitish pollen along posterior apical edge, but when viewed from front at a sharp angle it along with the black vittae appear to be covered with a coppery pollen; this same coppery pollen also appears, from the same angle, over the black areas of mesonotum. Upper squama whitish, lower squama yellowish brown. Halteres yellowish. Epaulet and basicostal sclerite black, subcostal sclerite brown. Wings heavily infuscated along costal margin and major longitudinal veins, otherwise light brown throughout. Legs becoming progressively darker from tawny coxae to tibia and tarsi which are black.

Abdomen variable, 1st tergite entirely metallic black, except extreme ventrally where it is tawny with a grayish dusted effect. Second tergite when viewed laterally or posteriorly at certain angles, with a whitish pollinose fascia along anterior margin, the fascia when viewed anteriorly replaced by a metallic coppery-green ground color on anterior 2/3, remainder of tergite metallic blue green and black. Third and 4th tergites also metallic green with coppery reflections on anterior 1/2-2/3 with yellowish to whitish pollen dorsally and laterally, becoming very dense ventrally, but interrupted at middle dorsally, remainder of tergite metallic blue green and black. Sternites blackish in ground color with yellowish-gray dust. Genitalia as in fig. 2E; inner forceps with a sharp median angle, basally each cercus slightly separated forming a narrow basal notch which continues proximally for about a 4th of the entire length; intromittent organ becoming quite broad apically, moderately sclerotized. Length 10-12 mm.

♀. Slightly larger than ♂. Frons gradually widening from vertex downward; at vertex, 27, at base of antennae, 37. Pollen of head brighter yellow and more extensive; occipital orbits with yellowish-white pollen. Outer verticals as strong as inner verticals. First and 2nd antennal segments tawny. Yellowish pollen of mesonotum and pleura much more extensive than in ♂. An additional very weak bristle located anteriorly in each of pre-sutural acrostichal and dorsocentral rows. Except sexually otherwise as ♂.

Holotype ♂ (CAS), Noemfoor I., II.1945, H. H. Blakemore; allotype ♀, same data as holotype. Paratype: 1♀, NW New Guinea, Nabire, Geelvink Bay, 0-3 m, light trap, J. L. Gressitt (BISHOP).

Although this species is very similar to *similis*, the two may be differentiated by the fact that in *cuprina* the pollen on the second abdominal tergite is present as a distinct fascia, but in *similis*, if present at all, it will not be as a fascia.

### ***Euphmosia elegans* Paramonov**

*Euphmosia elegans* Paramonov, 1961, Nova Guinea, Zool. 12: 223.

No available material.

### ***Euphmosia femorata* Torgerson, new species**

♀. Head brown in ground color; parafacials and parafrontals with bright yellow pollen; a brown pollinose area at lower anterior margin of eye which extends part way across genae with a bright yellow pollen in front of this spot and a contrasting dense white pollen of occipital orbits; facialia dark brown which along with face are covered with a fine layer of whitish pollen; interfrontalia reddish brown. Frontal bristles 7-8; ocellars

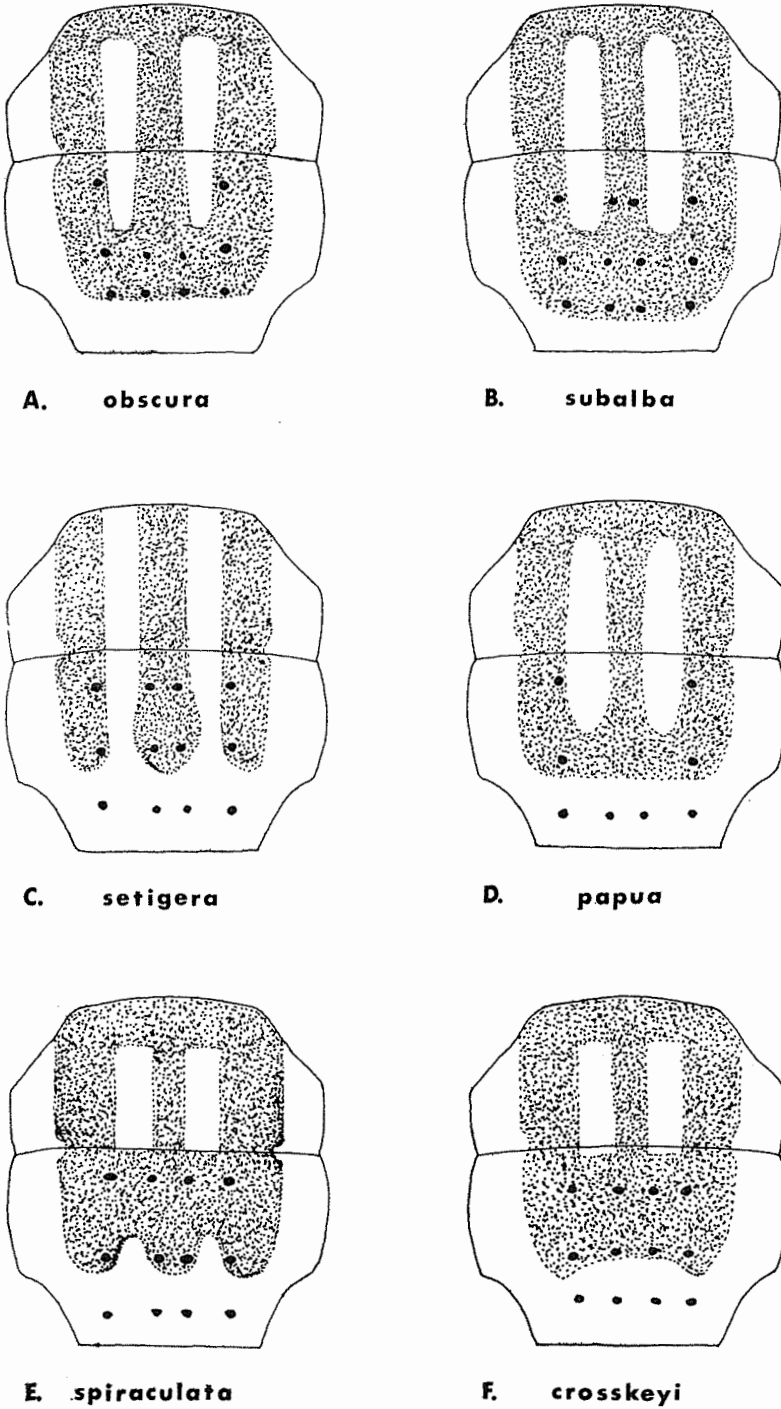


Fig. 6. *Euphumosia*, thoracic pattern and postsutural bristle arrangement. A, *obscura*; B, *subalba*; C, *setigera*; D, *papua*; E, *spiraculata*; F, *crosskeyi*.

moderately strong, postocellars weak; 2 proclinate fronto-orbitals, a strong anterior and weaker posterior, and 1 reclinate fronto-orbitals, inner and outer verticals of equal strength. Vibrissae separated by a distance about equal to that of each from eye margin. Head measurements; head width, 114; frons width, 29; of parafacialia at narrowest, 12; between vibrissae, 28; vibrissae to eye, 27; vibrissae to prelabrum, 10. First and 2nd antennal segments dark brown to black, 3rd brown. Palpi tawny. Proboscis dark brown.

Thorax black in ground color except for humeri and immediate surrounding area which is tawny; mesopleura with golden-yellow pollen except for lower border which along with entire sternopleura is covered with a contrasting dense white pollen; hypopleura and pteropleura with very fine whitish pollen appearing as a micropubesence covering a metallic bluish-black ground color. Mesonotum with 3 longitudinal black vittae, not confluent behind, and extending posteriorly to a point almost reaching 3rd row of postsutural acrostichals and dorsocentrals (fig. 7A); 2 submedian and 2 lateral yellow vittae isolate black vittae which in turn are likewise nearly isolated by a presutural band of whitish pollen which is visible upon tilting specimen sharply downward; through the whitish pollen a metallic purple ground color is sometimes visible. Scutellum black with metallic purple and blue-green reflections. Acrostichals 2:1 with anterior preacrostichal very weak; posterior presutural intraalar also very weak. Upper squama white, lower blackish. Femora metallic blue, tibia and tarsi blackish brown.

First abdominal tergite mostly black with metallic blue reflections dorsolaterally and a fine white pollen laterally and ventrally. Anterior 1/2 of 2nd tergite with white pollinose fascia which when viewed anteriorly at a sharp angle is replaced by the metallic purple and blue-green ground color as found on posterior 1/2 of tergite. Third tergite metallic blue green and violet with a median white pollinose area on the anterior border which is visible only in certain light. Fourth entirely white pollinose which becomes quite sparse at posterior margin revealing a metallic blue-green and purple ground color. Abdominal sternites black and covered with a fine whitish pollen. Length 8 mm.

♂. Unknown.

Holotype ♀ (BMNH), NE New Guinea, Wau, Morobe Distr., 1050-1200 m, 14-23.V.1965, R. W. Crosskey.

Superficially *femorata* is very similar to *setigera*. Although only one specimen was available, close examination revealed several salient characters which make it very distinct from *setigera*. These are: (1) the complete pollinosity of the 4th abdominal tergite, (2) the absence of a median bristle on the subcostal sclerite in *femorata*, (3) the lack of a semitransparent yellow fascia on the 2nd tergite, and (4) the distinct white upper squama which in *setigera* is quite brownish.

#### ***Euphumosia albula* Torgerson, new species**

♂. Head dark brown to almost black in ground color; parafacials and parafrontals with a white pollinose covering, with parafrontals appearing to have a yellowish sheen in certain light; a brown pollinose area extending across genae from eye to oral margin with a dense white pollen on either side of spot; facialia dark brown, almost black; face with a very fine whitish pollen; cerebrale and dorsal area of occiput black, occipital orbits with dense white pollen. Frontal bristles 7-8; ocellars moderately strong, postocellars weak, inner verticals stronger than ocellars, outer verticals absent. Vibrissae situated above



oral margin and separated by a distance distinctly greater than that of each from eye margin. Head measurements; head width, 110; frons width, 2; of parafacials at narrowest, 6; between vibrissae, 29; vibrissae to eye, 20; vibrissae to prelabrum, 9. First and 2nd antennal segments black, 3rd dark brown. Palpi brownish. Proboscis dark brown.

Thorax dark brown to black in ground color, except for humeri which are tawny; pleura mostly with a very fine grayish-brown pollen, except for a broad band of dense white pollen extending from notopleural suture, between fore and middle coxae, to notopleural suture on other side, and covering all of mesopleura and posterior 2/3 of sternopleura. Mesonotum with 3 longitudinal black vittae, parallel sided, not confluent behind, lateral slightly longer than median which becomes slightly wider posteriorly and continues to a point about halfway between 2nd and 3rd row of postsutural acrostichals and dorsocentrals. Two submedian yellow vittae joined posteriorly to 2 lateral vittae of the same color thus isolating black vittae (fig. 7C); prescutellar band formed by union of submedian and lateral vittae, metallic blue green in ground color with a very thin to quite dense pollinose layer which varies from white to yellow, the density of pollen determining amount of visible metallic coloration. Scutellum metallic purple and blue green. Upper squama white basally becoming slightly darker apically, lower squama black. Halteres tawny proximally becoming brown distally. Epaulet and basicostal sclerite black, subcostal sclerite brown. Wings heavily infuscated along costal margin and from center of wing, where the effect of a poorly defined transverse band is produced, to the outer margin. Legs black.

First abdominal tergite black with metallic blue-green reflections dorsally, except for 2 brownish semitransparent spots on either side of the median, becoming yellowish semitransparent lateroventrally. Anterior 1/3 of 2nd tergite with semitransparent yellow fascia covered with white pollen, the extent of which varies with the angle of the light; remainder of 2nd tergite along with 3rd metallic green, blue green, or violet. Fourth tergite with a white pollinose fascia on anterior margin which approaches the median from either side, but does not touch, in certain light this white pollen may appear metallic green or blue green; remainder of tergite metallic blue green or violet. Abdominal sternites yellowish brown anteriorly becoming very dark posteriorly. Genitalia as in fig. 1H; inner forceps contiguous for only a short distance medially with a wide U-shaped basal notch making each cercus separated greater basally than apically; from a lateral view cerci very slender below lateral guard with a broad semi-membranous apical flap. Length 7-8 mm.

♀. Similar to ♂ except slightly larger. Frons gradually widening from vertex downward, at vertex, 26 and at antennal base, 35. Pollen of parafrontals more yellow than in ♂. Proclinate frontoorbitals: 1 moderately strong and 1 weak bristle; inner and outer verticals slightly stronger than anterior proclinate frontoorbital.

Holotype ♂ (BMNH), NW New Guinea, Japen I., Camp 2, Mt. Eiori, 600 m, X.1938, L. E. Cheesman; allotype ♀ (BMNH), Japen I., Camp 1, 300 m, VII.1938, Cheesman; paratopotypes, 3♂♂, 3♀♀, same data as holotype. Paratypes: NW NEW GUINEA: 3♂♂, 2♀♀, Seroei, Camp 1, Mt Baduri and Tree Fern Forest, Aiam Range, 300 m, VIII-IX.1938, Cheesman (BMNH); 1♀, Japen I., Camp 3, Central Range, Mt Oud., 1050 m, IX.1938, Cheesman (BMNH).

Although *albula* seems closely related to *setigera* and *femorata*, two outstanding characteristics which seem to separate them are the white pollinose band on the mesopleura and sternopleura and the brown haired anterior spiracle which is yellow in both *setigera*

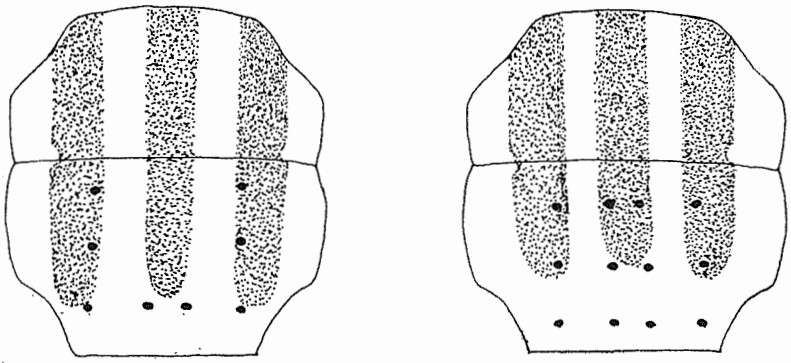
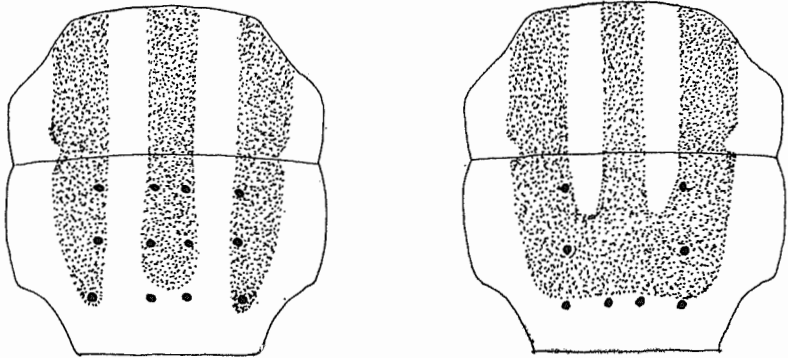
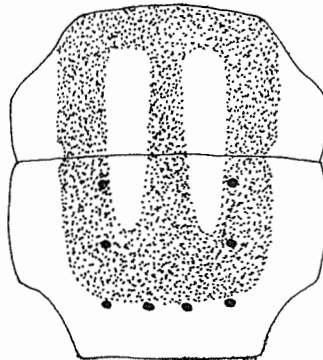
A. *femorata*B. *illucens*C. *albula*D. *cuprina*E. *tesselata*

Fig. 7. *Euphrosia*, thoracic pattern and postsutural bristle arrangement. A, *femorata*; B, *illucens*; C, *albula*; D, *cuprina*; E, *tesselata*.

and *femorata*. As in *femorata* the white upper squama also serves to distinguish it from *setigera*.

***Euphumosia setigera* Torgerson and James, new species**

♂. Head brownish yellow in ground color; parafacials and parafrontals covered with a dense yellow golden pollen; a brownish pollinose area extending across genae from eye to oral margin; pollen of genae behind this spot varying from golden to whitish; facialia brownish black; face with a pale yellowish-white pollen; occiput black immediately posterior to occipital fringe, central portion densely white pollinose; cerebrale black. Frontal bristles 8-10; ocellars long and slender, postocellars weak, inner verticals strong, outer verticals absent. Vibrissae separated by a distance greater than that of each from eye margin. Head measurements; head width, 110; frons width, 1; of parafacials at narrowest, 6; between vibrissae, 27; vibrissae to eye, 20; vibrissae to prelabrum 10. First and 2nd antennal segments black or blackish brown, 3rd segment distinctly brown. Palpi golden with numerous small black setulae. Proboscis blackish brown.

Thorax except humerus black in ground color; humeri, notopleura, and mesopleura densely golden pollinose, sternopleura with metallic reflections showing through silvery white pollen. Mesonotum with 3 broad black vittae, parallel sided, not confluent behind, but continuous beyond suture to a level slightly beyond 2nd row of postsutural acrostichals or dorsocentrals (Fig. 6C). Two bright golden pollinose submedian yellow vittae joined posteriorly to 2 lateral vittae of the same color, thus isolating black vittae; thin prescutellar band formed by union of submedian and lateral vittae, metallic green in ground color with a very thin to moderately dense yellow pollinose layer. Scutellum metallic blue green or purple. All hairs and bristles on thorax black, with those on mesonotum being much shorter than those on pleura. Upper squama brownish. Haltere with a darkened knob. Epaulet and basicostal sclerite black. Subcostal sclerite brownish black with a strong median black bristle. Wings lightly infuscated particularly near the costal margin. Legs blackish brown.

Abdomen with a dull black ground color and metallic blue, purple, or blue-green reflections usually masking ground color. First tergite a dull subshining black with metallic reflections dorsally and dorsolaterally and yellowish, semitransparent ventrally. Anterior 1/2 of 2nd tergite forming a yellowish, semitransparent fascia which may have a white pollinose covering. Posterior 1/2 of 2nd tergite, all of 3rd, and dorsal aspect of 4th tergite with bright metallic colorations, the specific color varying from specimen to specimen. Dorsolateral areas of 4th tergite with white pollinose covering which sometimes forms a complete ring around the anterior margin of the tergite. Three anterior sternites pale yellowish white and semitransparent; remaining sternites dull black. Genitalia as in fig. 1F; intromittent organ with quite large membranous apical projection, lateral guard large and heavily sclerotized; inner forceps from lateral view slightly hooked; outer forceps clavate. Length 7-8 mm.

♀. Slightly larger than ♂ (8-9 mm). Frons gradually widening from vertex downward. At vertex, 22 and at base of antennae, 31. Two proclinate frontoorbitals with one much stronger than the other, one reclinate frontoorbital. Inner and outer verticals of equal strength. Except sexually similar to ♂.

Holotype ♂ (BISHOP 7155), NE New Guinea, Kassam, 1350 m, 48 km E of Kainantu, 30.

X.1959, ex fresh human excrement, T. C. Maa; allotype ♀ (BISHOP), same data as type; paratopotypes, 1♂, 3♀♀, same data as type except 7.XI.1959. Paratypes: NE New Guinea: 1♂, 2♀♀, Finisterre Range, Saidor, Funyende, 1200 m, 24-30.IX.1958, 2♂♂, 2♀♀, Kiambavi Vill., 22-20.VIII.1958, 1♀, Matoko Vill., 6-24.IX.1958, W. W. Brandt (BISHOP); Bokondini, 40 km W of Baliem Val., 1300 m, 1962, L. Quate; 1♂, Karubaka, 1400-1600 m, 9.XI.1958, ex human excrement, J. L. Gressitt (BISHOP); 1♂, Feramin, 120-150 m, 15-18.VI.1959, Brandt (BISHOP); 1♂, Sakulange, Salawaket, 10.IX.1956, E. J. Ford, Jr. (BISHOP); 1♂, W. Highlands, Goiburung, E of Korn Farm, 1560-1650 m, 16.X.1958, Gressitt (BISHOP); 2♀♀, Morobe Distr., Wau, 1050-1200 m, 14-23.V.1965, R. W. Crosskey (BMNH); 3♂♂, 1♀, Kumdaurong, Morobe Distr., 1350 m, XI.1963, B. McMillan (BMNH); 5♂♂, 5♀♀, Finisterre Range, Madang Centr. Subdistr., nr. Butemu Vill., 1200 m, X.1954, R. Pullen (CSIRO); 17♂♂, 5♀♀, Wau, Morobe Distr., 1250 m, 7, 18-20.XII.1961, 5, 13.X.1962, 4-7, 30.I, 9.VII.1963, 18-21.VIII.1965, J. Sedlacek (BISHOP). West New Guinea: 1♂, Bivach, 20.VIII, X.1949, Sten Bergman (RMS). Papua: 1♀, Owen Stanley Range, Goilala, Tapini, 957 m, 16-25.XI.1957, Brandt (BISHOP); 1♂, Tapini, 1200 m, 17.V.1961, Gressitt (BISHOP); 4♂♂, 2♀♀, Mafulu, 1200 m, XII.1933, I.1934, Cheesman (BMNH); 1♂, 1♀, North Distr., The Managalse, SSW of Popondetta, 750-900 m, VIII.1964, Pullen (CSIRO).

The median bristle present on the subcostal sclerite in *setigera* seem to be a characteristic of this species. A similar bristle was noted in *crosskeyi* and a female specimen of *phantasma* had two such bristles, but in the latter two species this character does not hold true for all specimens.

#### **Euphmosia phantasma** Torgerson and James, new species

♀. Head tawny in ground color; parafacials and parafrontals covered with a very dense, pale whitish-yellow pollen; facialia tawny; face pale yellow with whitish pollen; occiput with a dark blackish arch posterior to post occipital fringe and extending to lower postocular orbit; central portion with whitish pollen; cerebrale blackish brown. Frontal bristles 8; ocellars strong, quite slender, postocellars weak, but much more robust than ocellars; 2 proclinate frontoorbitals with anterior bristle much stronger than posterior and 1 reclinate frontoorbital equal in strength, but not in length to anterior most reclinate; inner and outer verticals equal in strength. Vibrissae separated by a distance greater than that of each from eye margin. Genae about as broad as length of 3rd antennal segment and covered with a shiny, pale, whitish pollen. Head measurements; head width, 107; frons width, 25; of parafacials at narrowest, 7; between vibrissae, 26; vibrissae to prelabrum, 8; vibrissae to eye margin, 28. First and 2nd antennal segments brown, 3rd yellowish with darker brownish upper side. Palpi yellow. Proboscis dark brown.

Thorax except humerus brownish yellow in ground color, except in areas of black stripes, also mostly brown on pleura, dark brown on anterior part of pteropleuron; humeri, notopleura, and mesopleura golden yellow pollinose; sternopleura and pteropleura with metallic reflections showing through whitish pollen, except for upper anterior corner of pteropleura which in the right light show a thin pollen which is brownish and appears as a microscopic pubescence rather than the usual pollen. Mesonotum with 3 black vittae; 2 broad lateral and a narrower median which appear to be isolated, except at a certain angle and under certain light intensity, at which time a grayish phantasma connects the vittae at a level slightly beyond 2nd row of postsutural acrostichals and dorsocentrals; (fig. 4D), median black vittae, very weak anterior to suture becoming obscure, except in certain light, at

level of 1st row of presutural acrostichals or dorsocentrals. Two bright golden, pollinose, submedian yellow vittae joined posteriorly to 2 lateral vittae of same color forming a dense golden prescutellar band that conceals ground color. Scutellum metallic blue green and violet. Postsupraalars with 2 very weak bristles located between latter 2 strong bristles. Upper squama white with a brown tip; lower squama also whitish with a black area, subcostal sclerite brown with 2 strong median bristles. Wings lightly infuscated. Legs dark brown to black, femora with a metallic bluish sheen.

First abdominal tergite except for 2 dark metallic lateral spots and anterior 1/2 of 2nd tergite pale yellow, semitransparent; the 2nd tergite with traces of whitish pollen especially on anterior margin. Posterior half of 2nd and all of 3rd tergite with bright metallic purple and blue-green reflections. Fourth tergite with a dense white pollinose ring on anterior 1/2 partially masking metallic purple and green reflections. First sternite yellow with a brown median stripe, remaining sternites brownish with a shiny silvery dust. Length 9-10 mm.

♂. Eyes contiguous. Postocellars strong, outer verticals weak, but easily distinguished from postoccipital fringe. Subcostal sclerite without strong median bristles. Genitalia as in fig. 1A; inner forceps slender, divaricate basally forming a v-shaped notch; intromittent organ serrated along inner basal margin, quite membranous apically; outer forceps slightly clubbed distally.

Holotype ♀ (BISHOP 7156), NW New Guinea, Vogelkop, Kebar Val, W of Manokwari, 550 m, 4-31.I.1962, L. W. Quate; allotype ♂ (BISHOP), NW New Guinea, above Ifar, 400-750 m, 23.VI.1959, J. L. Gressitt (BISHOP).

As in *crosskeyi* the median bristles of the subcostal sclerite seem to be a variable character which does not hold true throughout the species. The lack of a continuous distinct median black vittae anterior to the suture in the female, would seem to be an aberration in this specimen as the vittae is continuously present in the single male specimen and at a certain angle in the right light it is also present in the female.

#### ***Euphmosia flavida* Torgerson, new species**

♀. Head brownish in ground color; parafacials, parafrontals, and genae with golden-yellow pollen; facial pollen a paler yellow; interfrontalia dark brown becoming lighter anteriorly; facialia light brown; cerebrale and dorsal area of occipital orbits golden pollinose becoming somewhat yellowish at lower posterior margin of eye. Frontal bristles 10-12; ocellars strong, postocellars weak, inner and outer verticals strong. Vibrissae separated from eye margin by approximately the distance between them. Head measurements: head width, 123; frons width, 25; of parafacials at narrowest, 14; between vibrissae, 33, vibrissae to eye, 32; vibrissae to prelabrum, 8. Antennae black except basally on underside of 3rd segment which is tawny. Proboscis dark brown. Palpi tawny.

Mesonotum anterior to suture golden brown in ground color except under stripes where it is black, posterior to suture also black in ground color. Pleura mostly golden yellow pollinose, except for lower 2/3 of sternopleura and all of hypopleura which have a greenish background showing through the golden pollen. Mesonotum with 3 black vittae; two broad lateral and a slightly narrower median which broadens posteriorly. At a certain angle under certain light intensity these vittae which appear to be isolated are connected by a grayish phantasma extending from slightly beyond the 1st row of postsutural acrostichals

and dorsocentrals (fig. 4C). The 2 bright golden, pollinose, submedian yellow vittae joined posteriorly to 2 lateral vittae of same color forming a golden prescutellar band which has a slight metallic coloration showing through the pollen immediately in front of scutellum. Scutellum metallic purple. Preintraalar, 1. Upper squama yellowish, lower squama whitish basally, black on apical 2/3. Epaulet and basicostal sclerites black, subcostal sclerite brownish black with strong median black bristle extending beyond its apex. Wings lightly infuscated. Legs except coxae black.

First abdominal tergite largely metallic black except for 2 yellowish, semitransparent areas on posterior margin on each side of median, and ventrolaterally. Anterior 1/2-2/3 of 2nd and 3rd tergites also yellowish, semitransparent with a tessellated pattern of whitish-yellow pollen. Fourth tergite entirely tawny, except for a minute metallic spot at very tip of abdomen, and covered with a dense golden yellow pollen the extent of which varies with the angle of light. First sternite yellowish, semitransparent, remaining sternites brownish. Length 10-12 mm.

♂. Unknown.

Holotype ♀ (CSIRO), Papua, North Distr., The Mangalase, SSW of Popondetta, 750-900 m, VIII.1964, R. Pullen.

Although the phantasma is unique in *flavida* and *phantasma* the two species are easily separated by the color of the anterior spiracle (yellow haired in *flavida*, brown haired in *phantasma*); the pollen on the sternopleura (white in *phantasma*, golden with metallic green showing through in *flavida*); and the distinct tawny ground color and golden pollen of the fourth tergite in *flavida* which in *phantasma* is metallic with only a band of whitish or yellow pollen on the anterior margin.

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